Partial Edentulism Patterns in Pakistan-Stratified by Age and Gender

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ABSTRACT

Objective: To determine the frequency of various patterns of partial edentulism in maxilla and mandible.

Study Design: Descriptive cross-sectional study

Place and Duration of Study: This study was conducted at the Rehmat Memorial Dental Teaching Hospital, Women Medical and Dental College, Abbottabad from 1st June 2020 to 30th December 2020.

Materials and Methods: A total 369 patients with at least loss of one tooth, both genders, age from 15 to 70 years were included. Patients with loss of all teeth, with missing third molar, with physical or mental disability were excluded. Partial edentulism was recorded. It was centered on a visual examination of the chosen subjects according to Kennedy's Classification System. Data was stratified in SPSS 20.0 by age and gender with respect to patterns and analyzed, chi square test at 5% significant level was used.

Results: The mean age of the study was 37.51 ± 11.47 years. The females (n=202, 54.7%) were more than males (n=167, 45.3%). In mandible the most pattern was Kennedy's class III which was present in 111(53.8%) followed by class I having 43(20.8%) patients, class 2 having 28(13.7%) and class IV having 24(11.7%) participants. In maxilla the most pattern was Kennedy's class III (n=102, 62.5%) followed by class I having 22(13.4%) patients and class II having 21(12.8%) participants, whereas class IV has 18(11.3%) participants. Age groups has significant association with partial edentulism (P<0.05).

Conclusion: The most prevalent type of partial edentulism in both maxillary and mandibular arches is Kennedy's Class III. Gender and Age group have significant relationship with the pattern of partial edentulism.

Key Words: Kennedy's classification, partial edentulism, maxilla, mandible

INTRODUCTION

The condition of missing one or more teeth, partial or complete loss of teeth is known as edentulism. There are many causes of tooth loss. Some of the significant reasons for the loss of teeth include dental caries and periodontal disease.[1]

Loss of teeth has a significant impact on biological, psychological, and social level of dental health-related quality of life.[2] This can cause severe dysfunction in the form of compromised daily life activities, such as poor food mastication, dietary limitations, and impaired speech.[3] It is a sign of both populace wellbeing and the working and ampleness of a country's oral medical services framework.[4]

There are many classifications for patterns of partial edentulism, but the most widely used is Kennedy's Classification. In this classification, the partial edentulism is divided into four different classes which areas under: Class-I: Area of missing teeth present on both sides of the arch which is posterior to remaining teeth, Class-II: Area of missing teeth present on one side of the arch which is posterior to remaining teeth, Class-III: Area of missing teeth present on one side of the arch which has remaining teeth anterior and posterior to it, Class-IV: Missing teeth area is single but spreads across the midline and has natural tooth present posteriorly on both sides.[5] There are many occasions, in which Kennedy's classification is hard to apply. For such extraordinary circumstances, Applegate's rules are applied.[6]

Many studies have been performed around the world to see the exact frequency of different patterns of partial edentulism. The Kennedy class 3 was found to be most prevalent i.e., 56.5%.[7] The prevalence of Kennedy class 1, 2, and 4 were 19.2%, 23.6% and 0.7%, respectively.[7] In a study conducted in Pakistan the prevalence was 15.86%, 8.93%, 71.2% and 4% for class 1, class 2, class 3 and 4 respectively.[8] In another study conducted

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in Pakistan the prevalence of partial edentulism was found to be more in the mandible than maxilla in our population.[9]

This study aims to know the exact frequency of the patterns of partial edentulism to create awareness among general population and counter the diseases causing tooth loss as early and timely as possible.

MATERIALS AND METHODS

Design of the research was descriptive cross-sectional study which was carried out in department of Prosthodontics, Women Medical and Dental College, Abbottabad using non probability consecutive sampling technique, in a period of seven months from 1st June 2020 to 30th December 2020. Inclusion criteria was all patients with at least loss of one tooth, both Genders, having age range of 15 – 70. Patients with loss of all teeth having severe trauma to the face/neck with missing maxillary or mandibular third molar and with any physical or mental disabilities were excluded. Sample Size was calculated as 369 by using the WHO software with the confidence level= 95%, prevalence of pattern of class II= 4% [9] and Absolute Precision= 2%

The data was examined using SPSS 20.0. The mean and standard deviation were used to characterize quantitative variables like age. Categorical variables like gender, different patterns of partial edentulism were described as frequencies and percentages. Data were stratified by age with respect to patterns and analyzed. To understand the substantial difference between patterns of different partial edentulism levels by age and gender, chi square test at 5% significant level was used.

RESULTS

The mean age of the study was 37.51 ± 11.47 years. The age was ranged from 16 to 65 years. The females (n=202, 54.7%) were more than males (n=167, 45.3%). The most age group was 26 to 35 years (n=137, 37.1%) followed by 36 to 45 years (n=95, 25.7%).

Results of Kennedy class I, II and III between males and females were not significant. Kennedy class IV was statistically significant (P=0.01). The details are shown in Figure No.1.

Pattern of partial edentulism in maxillary arch stratified by gender showed that the results for Kennedy class IV was very highly statistically significant (P=0.01). Rest of statistics is shown in Figure No. 2.

All the results for pattern of partial edentulism in mandibular arch stratified by age groups were statistically significant (P<0.05). Most of the partial edentulism was found in age group 26-35 years. The detailed frequencies with P-values are given in Table No. 1.

All the results for pattern of partial edentulism in maxillary arch stratified by age group were very highly statistically significant (P<0.001). Most of cases of class I was found in age group 36-45years. Most of cases of class II was found in age group 46-55years Most of cases of class III was found in age group 26-35 year (n=48, 46.2%). Most cases of class IV cases were present in age group 46-55 years. (Table No. 2)

Table No. 1: Pattern of partial edentulism in mandibular arch stratified by age group.

Mandibular Arch		Age Group (years)										P-Value
		15-25		26-35		36-45		46-55		56-65		
		n	%	n	%	N	%	n	%	N	%	
Class I	No	44	13.4	123	37.7	88	27	51	15.6	20	6.3	<0.001
	Yes	9	21	14	32.5	7	16.2	0	0.00	13	30	
Class II	No	43	12.6	130	38.1	92	26.9	44	12.9	32	9.5	0.004
	Yes	0	0.00	7	25	13	46.5	7	25	1	3.5	
Class III	No	53	20.0	76	30.1	62	24	36	13.9	31	12.0	<0.001
	Yes	0	0.00	61	54.9	33	29.7	15	13.5	2	1.9	
Class IV	No	48	14.0	134	38.9	85	24.5	48	14.	30	8.6	<0.001
	Yes	0	0.00	02	8.3	9	37.6	11	45.8	2	8.3	

Table No. 2: Pattern of partial edentulism in maxillary arch stratified by age groups.

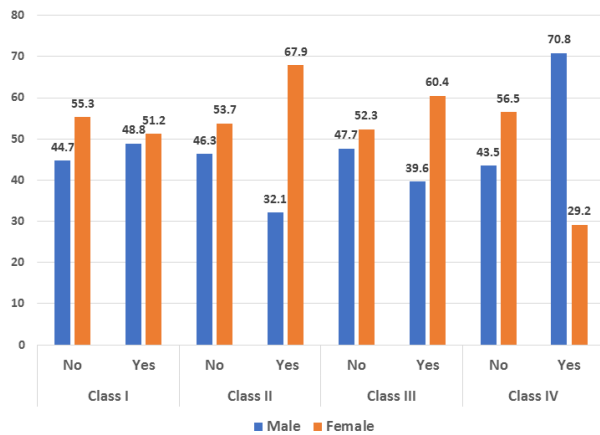| Maxillary Arch		Age Group (years)										P-Value
		15-25		26-35		36-45		46-55		56-65		
		n	%	n	%	N	%	n	%	N	%	
Class I	No	45	12.9	137	39.6	89	25.6	50	14.5	26	7.4	<0.001
	Yes	0	0	0	0	10	45.5	5	22.7	7	31.8	
Class II	No	53	15.2	123	35.5	88	25.3	51	14.6	33	9.4	<0.001
	Yes	0	0	2	9.5	7	33.3	8	38.1	4	19.2	
Class III	No	26	9.7	89	33.3	82	30.7	47	17.6	23	8.7	<0.001
	Yes	25	24.5	48	47.2	13	12.7	6	5.8	10	9.8	
Class IV	No	40	11.4	136	38.7	94	26.8	49	14.0	32	9.1	<0.001
	Yes	01	5.5	03	16.6	5	27.8	7	38.9	2	11.2	

Figure No. 1: Patterns of Partial Edentulism in Mandibular Arch Stratified by Gender.
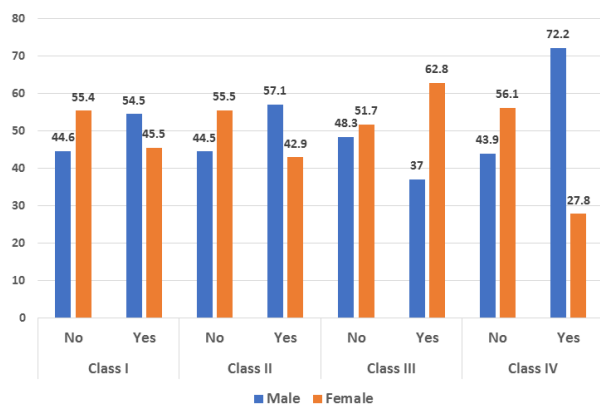

Figure No. 2: Patterns of Partial Edentulism in Maxillary Arch Stratified by Gender

DISCUSSION

The goal of this study was to see how common different types of partial edentulism were among patients attending the Women Medical and Dental College in Abbottabad's Department of Prosthodontics. Our findings showed that in mandible the most prevalent pattern was Kennedy's class III followed by class I and least was class IV. In maxilla Kennedy's class III was the most prevalent pattern, followed by class I, while class IV was the least common.

We utilized Kennedy's classification to record partial edentulism. Kennedy's classification represents the most acknowledged classification and allows prompt representation of the partially edentulous arch.[10,11]Also, it empowers a foundational approach and utilization of sound standards of denture design.[12,13]

Our findings showed that in both arches Kennedy class III was the most common type of partial edentulism. Similar findings were reported. Kennedy Class III was viewed as the most widely recognized pattern (57.14%) in a sample of the Iraqi populace in a review completed and observed that the most frequent reestablished edentulous region was Kennedy's class III (57.3%). In their review Kennedy's Class III was the most prevalent partial edentulism pattern in both the maxillary

(67.2%) and mandibular arches (64.1 %). In another study the commonness of various kinds of partial edentulism in patients looking for dental treatment. A total of 112 patient records, as well as panoramic radiographs, were evaluated. Their outcomes showed that the most common kind of partial edentulism in this population was Kennedy type III, in both the maxilla (50.0%) and the mandible (41.1%). These results are similar to the current study.[14-17]

However, according to other study, Kennedy's Class III was exclusively observed in the maxillary arches, whereas Kennedy's Class I was the most common pattern in the mandibular arches. At the Dental School studied the pattern of partial edentulism and the most common designs of metal cast partial dentures. Their study concluded that the Kennedy Class I was most frequent in the maxilla (50.5 %) and mandible (70 %). The difference can be due to educational, ethnic, genetic and environmental variations.[18-19]

In our study in both mandibular and maxillary arch the most common pattern was Kennedy's class III followed by class I. Similar observations were reported on the frequency of partial edentulism among patients in India. According to our results, the Kennedy class I, II and III between males and females were not significant in mandible. Kennedy class IV was more in males statistically significantly (P=0.01). Patterns of partial edentulism in maxillary arch stratified by gender showed that the results for Kennedy class IV was very highly statistically significant (P=0.01). Similar to our results sexual dimorphism for patterns of partial edentulism was found in previous studies.[1,14] Many authors have studied gender as one of the fundamental factors. The vast majority of the authors have inferred that there is no critical gender significance with the event of partial edentulism. Notwithstanding, few authors have concluded that there has been a critical connection among gender and different classes of partial edentulism.[2] Our study found that Kennedy class III partial edentulism was the most prevalent pattern, while middle age was by far the most common age group.

The findings of this review, which suggest a dominance of Class III partial edentulism, could be explained by the fact that a larger recurrence of younger age groups was detected, whereas older age groups were seen in previous research. The current study also reveals that the younger generation is more conscious of the issue, with a considerable number of young people visiting the prosthodontics department to replace a missing tooth. The data[20] suggest that the higher occurrence of partial edentulism in these younger age groups is attributed to their low socioeconomic level, poor oral health, and less conservative treatment approach, resulting in early tooth loss due to a lack of time.

CONCLUSION

The current findings showed that all the results for patterns of partial edentulism in both arches stratified by age group statistically significant (P<0.05). The

gender distribution of partial edentulism was found significant.

Most of the cases of class III were found in earlier ages 26-35 year. This can be due to the early loss of first molars. The first molar erupts very early, and children are unable to take care of oral hygiene and most of the parents are not educated.

Author's Contribution:

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