ISSN: 2581-5989
PubMed - National Library of Medicine - ID: 101738774

International Journal of Dental Science and Innovative Research (IJDSIR)
IJDSIR : Dental Publication Service
Available Online at: www.ijdsir.com
Volume – 5, Issue – 2, March - 2022, Page No. : 146 - 151

Prevalence of pattern of partial edentulism based on Kennedy's classification among patients in Yamuna Nagar city – A Prospective Cross-Sectional Study

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Citation of this Article: Dr. Smriti Kapur, Dr. Varsha Sharma, Dr. Aman Arora, Dr. Monika M. Sehgal, Dr. Viram Upadhyaya,"Prevalence of pattern of partial edentulism based on Kennedy's classification among patients in Yamuna Nagar city – A Prospective Cross-Sectional Study", IJDSIR- March - 2022, Vol. – 5, Issue - 2, P. No. 146 – 151.

Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

Background: Edentulism follow tooth loss that result in impairment of normal function, aesthetics and phonetics. Numerous unnoticed and undesirable consequences like occlusal disharmony, migration and spacing in adjacent teeth, supra eruption, loss of interarch space, temporomandibular joint disorders and others can further complicate the treatment procedures. Little is known about the prevalence of patterns of edentulism in Yamuna Nagar, Haryana.

Objectives: To assess the prevalence of Kennedy's classification in partially edentulous patients.

Methodology: A prospective cross-sectional study was carried out among 200 patients within the age of 21-80 years visiting the Department of Prosthodontics, Crown & Bridge, And Oral implantology, J. N. Kapoor DAV© Dental College, Yamuna Nagar Haryana with at least one missing tooth from Oct 2021-Dec 2021.

Results: Out of 200 patients enrolled in the study, 116 were female whereas males were 84. Patients in the age group of 51-60 yrs were highest (27.0 %) number of partially edentulous cases whereas 21-30 yrs age group had minimum (6.1%) partially edentulous patients. Mandibular arch (29.7%) was found to be more affected by partial edentulism in comparison to maxillary arch (23.3%) and most common was involvement of both arches (47.0%). Class III (Kennedy class) was found common in maxilla (29.0%) and mandible (30.3 %) as well. Class II 1 was found least common in maxilla (0.6%) whereas Class I 3 was found least common in mandible (0.6%).

Conclusion: Females were comparatively more and early affected by partial edentulism then males. Mandibular arch was found to be more affected by partial Edentulism in comparison to maxillary arch. Class III Kennedy Class was found to be most common in maxilla and mandible.

Keywords: Applegate rule; Kennedy's class; Partial Edentulism

Introduction

Edentulism is the state of being edentulous due to loss of natural tooth/teeth. Edentulism just not only lead to impairment of normal function, comfort, aesthetics and phonetics, but also present with occlusal discrepancies, tooth movement and spacing of surrounding teeth, supra eruption, loss of mesio– distal and interarch space, temporomandibular joint disorders, and other hostile conditions.

Corroboration of the pattern of tooth loss is very important for identifying the prosthetic requirements of a studied community as well as aiding the provision of educational and preventive materials suitable for that population. Numerous methods of classification of partially edentulous arches have been proposed and are in use e.g., by Beckett, Godfrey, Swenson, Friedman, Wilson, Skinner, Applegate, Avant, Miller and other [1]. Currently, Kennedy's classification is the most vividly used and accepted because of its simplicity, ease of application, immediate visualization of the type of partially edentulous arch being considered and differentiation between tooth borne and tooth tissue borne partial dentures [2]. Keeping an eye on the pattern of partial edentulism is important because it is an indicator of both population health and adequacy of a population's oral health care system [3]. The absence of organized diagnostic criteria for partial edentulism has been a fixed deterrent [4].

The patterns of tooth loss have been studied in many selected populations in different states and countries and the frequency of partial edentulousness seems to alter between different populations. Little is known about the prevalence and patterns of tooth loss in Haryana. We conducted this cross-sectional study among Indian patients visiting J. N. Kapoor DAV© Dental College to estimate the prevalence of the pattern of edentulism among them.

Methodology/Study Design

The study was conducted at the Department of Prosthodontics, Crown & Bridge, And Oral implantology, J. N. Kapoor DAV© Dental College, Yamuna Nagar, Haryana. A single researcher collected patient's socio-demographic data and conducted clinical examination with the help of diagnostic instruments (mouth mirror and probe) to record Kennedy's classification system and Applegate modifications present. Age and gender were obtained from patients. Data was collected in a three-month period from 1st October to 31th December; 2021. We volunteered 200 patients in this study within the age group of 21-80 years with at least one missing tooth. Completely edentulous patients and those unwilling to participate were excluded.

Ethical consideration

Ethical approval was taken from the Research and Ethical Sub-Committee; J. N. Kapoor DAV© Dental College. Consent of patients was obtained for being a part of this short study.

Results

Out of 200 patients, 41.8% were male and 58.2% were female (Table 1). When categorized by age groups, most patients with partial edentulism belonged in the range of 51 to 60 years (Table 2).

Table 1: Gender Distribution of partially edentulous patients

Gender	Frequency	Percentage
Male	84	41.8%
Female	116	58.2%
Total	200	100.0%

Table 2: Age Distribution of partially edentulous patients

Age	Frequency	Percentage
21-30 Yrs	12	6.1%
31-40 Yrs	32	16.2%
41-50 Yrs	49	24.5%
51-60 Yrs	54	27.0%
61-70 Yrs	36	18.0%
71-80 Yrs	17	8.2%
Total	200	100.0%

Nearly half of the patients had partial edentulism on both arches (94), while 47 had partial edentulism on the maxillary arch only and 59 on the mandibular arch only (Table 3).

Table 3: Arch wise distribution of partial edentulism

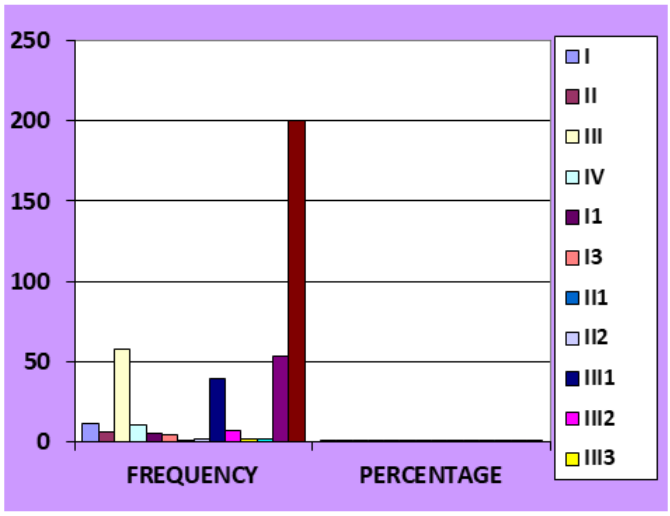
Arch	Frequency	Percentage
MAXILLARY	45	23.3%
MANDIBULAR	59	29.7%
BOTH	94	47.0%
TOTAL	200	100.0%

In the maxillary arch, Kennedy's class III was the most common pattern of partial edentulism followed by Kennedy's class III with modification 1 (Table 4)(Graph 1).

Table 4: Distribution of partial edentulism according to Kennedy's classification and Applegate's rule in maxillary arc

Kennedy Classification With Modification	Frequency	Percentage
I	11	5.3%
II	6	2.6%
III	58	29.0%
IV	10	5.1%
I1	5	2.4%
I3	4	2.0%
II1	1	0.6%
II2	2	1.3%
III1	39	19.7%
III2	7	3.0%
III3	2	1.3%
III4	2	1.2%
None	53	26.5%
Total	200	100.0%

Graph 1: Distribution of partial edentulism according to Kennedy's classification and Applegate's rule in maxillary arch

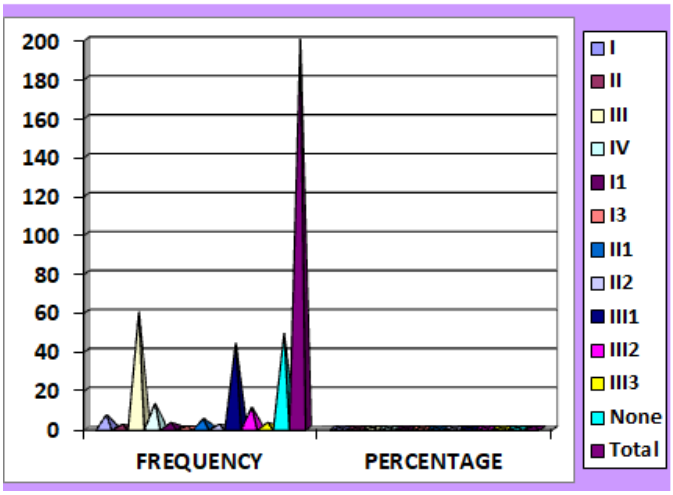


Similarly in the mandibular arch, Kennedy's class III was the most prevalent followed by Kennedy's class III with modification 1 patients (Table 5)(Graph 2).

Table 5: Distribution of partial edentulism according to Kennedy's classification an Applegate's rule in mandibular arch

Kennedy Classification With Modification	Frequency	Percentage
I	7	3.8%
II	2	0.8%
III	60	30.3%
IV	13	6.4%
I1	3	0.9%
I3	1	0.6%
II1	5	1.7%
II2	2	0.8%
III1	44	22.5%
III2	11	5.6%
III3	3	0.9%
None	49	25.7%
Total	200	100.0%

Graph 2: Distribution of partial edentulism according to Kennedy's classification an Applegate's rule in mandibular arch



Discussion

Edentulism follow tooth loss that result in impairment of normal function, aesthetics and phonetics. Numerous unnoticed and undesirable consequences like occlusal disharmony, migration and spacing in adjacent teeth, supra eruption, loss of interarch space, temporomandibular joint disorders and others can further complicate the treatment procedures. In this study, it was found that Kennedy's class III and its modification 1 were the two most prevalent types of partial edentulism among patients visiting J.N.Kapoor DAV© Dental College, Yamunanagar. Documenting the pattern of partial tooth loss among patients can be beneficial in recognizing the prosthetic rehabilitative needs and in estimating the requirements for educational and preventive materials. It was found that a higher proportion of females were edentulous when compared to males. This might be because of biological factors like pregnancy, early menopause and also poor hygiene maintainance. Our results are similar to a previous study performed by Sapkota B et al. among Nepalese patients in Dhulikhel Hospital, Kathmandu University[4] However, fewer studies showed more males being edentulous than females[5] . This contradiction might be because more females visit the dental hospital and could also be attributed to the different socio-economic status

and habits like smoking and consumption of high sugar-containing diets among males than previous studies[6]. It was found that partial edentulism was most common in age group of 51 to 60 years, similar to a finding of Mehmood BA et al which showed that the peak age group for tooth loss was in 4th and 5th decade of life[7]. Similar study performed by Rahman H et al among 963 patients in Prosthodontics Department at the College of Dentistry, Hawler Medical University, Erbil, Iraq, they showed that the distribution of partial edentulism as in maxilla and mandible were almost in equal ratio, maxilla 49.63% and mandible 50.36%, supporting our study results[8]. In a study conducted by Naveed H et al at Armed Forces Institute of Dentistry, Pakistan on 1000 partially edentulous patients, Kennedy's class III was found most common in maxilla (60.9%) and mandible (46.8%)[9]. This study is in agreement with our study, as our study also reveals maximum number of cases with Kennedy's class III on both the maxillary and the mandibular arches with 29.0% and 30.3% consecutively. In another study carried out by Al-Dawairi among 200 patients in Jordan observed that Kennedy's class III pattern of partial edentulism was most commonly encountered in both maxilla (47%) and mandible (45%)[10]. Also in a study by Sadig and Idowu in Saudi population on 422 partially edentulous patients concluded that Kennedy's classes III in both arches were more common with 20.3%. Kennedy's Class III was found to be the most common pattern of partial edentulism in this study[11]. Also, in a study by Patel YJet conducted among the patients of Thiruvallur district, Tamil Nadu, India, Kennedy Class III pattern of edentulism was most commonly encountered in both maxilla (56%) and mandible (58%)[12].

In contrast to our study, result of a study conducted by Khalil A et al. in the Department of Prosthodontics at Khyber College of Dentistry, Peshawar, Pakistan, showed that Kennedy's class IV was mostly seen in maxillary arch and Kennedy's class II modification 1 was dominant in mandibular arch [13].

Conclusion

From the results of our study, we observed that Kennedy's class III was found most common in both maxillary and mandibular arches followed by Kennedy's class III modification 1. According to gender, more number of female patients reported with partial edentulism whereas patients with age 51 to 60 were mostly affected.

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