

ORIGINAL ARTICLE

Prevalence of Kennedy's Classes in Partial Edentulism – A cross-sectional study

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ABSTRACT

Objective: The objective of this study was to evaluate the frequencies and pattern of partial edentulism according to Kennedy's classification in local population and its association with gender or arch type.

Methodology: A cross-sectional study was conducted on 214 patients who visited Outpatient department, Nishtar Institute of Dentistry, Multan from 15-31st January, 2022. Non-probability consecutive sampling was employed. Partially dentate patients of age groups from 21 year onward were included in the study whereas completely edentulous patients or having fixed-prosthesis were not. Pattern of edentulism was evaluated by inspection and visual examination of the patient. Classification of arches was done according to Kennedy's classification in combination with Applegate's rules. To avoid complications, modifications were not considered. Data were analyzed using SPSS version 22 was used to analyze data and, frequencies and percentages were calculated along with association between the Kennedy's class and other variables.

Results: Of the 214 subjects, 108 (50.5%) were male and 106 (49.5%) were female. Majority (25.2%, n=54) of the patients were in their 30s followed by 24.8% in their forties (fig 1). In majority (65.4%, n=140) of the patients Kennedy's class III was seen (fig 2). There was no significant association of Kennedy's class with arch type ($p=0.09$) or gender ($p=0.78$).

Conclusion: Kennedy's class III was the most found partial edentulism pattern. No significant association was found between Kennedy's class and gender or arch type.

Key Words: Partial edentulism, Kennedy's classification, Applegate's rule, tooth loss

INTRODUCTION

Teeth are vital and important part of oral cavity,⁽¹⁾ and depict the excellence of oral health of the population. One or more lost teeth result in disruption of the integrity and functioning of the arch. The articulation and functioning of remaining teeth may also be negatively affected. This situation leads to many esthetic or occlusal complications resulting in individual's compromised health and quality of life.⁽²⁾

On account of improved healthcare, natural teeth can be retained by a large population till elderly years. Over the last two decades, prevalence of edentulism has decreased in most of the western world. Hence, patients with partial edentulism are being reported more than with complete edentulism. On the basis of number and location of lost teeth, a lot of patterns of partial edentulism can be considered.^(3, 4) Over the years, many systems have been devised for classification of partial edentulism and first one by Cummer in 1920.⁽⁵⁾ Other noteworthy classification systems were proposed by Bailyn, Neurohr, Godfrey, Miller, Skinner and Kennedy.⁽⁶⁾ Among them, Kennedy's classification, is universally accepted and mostly used system on account of being simple, easy to use, differentiating the arches regarding supporting teeth and applied to all encountered partial edentulism patterns.⁽⁷⁻¹⁰⁾

Studies have been conducted to evaluate prevalence and pattern of edentulism in different populations. There is a need to do the same in the area of Multan to identify the needs of local population regarding treatment and update

the current knowledge. This study was carried out to evaluate the prevalence of partial edentulism according to Kennedy-Applegate classification for improving the quality of treatment being provided to patients.

METHODOLOG

This was a cross-sectional study carried out at Diagnostic department, Nishtar Institute of Dentistry, Multan from 15-31st January, 2022. A sample size of 214 was calculated keeping confidence level 95%, population proportion 15% and absolute precision 0.05. Type of sampling employed was non-probability consecutive. Partially dentate, patients of age groups from 21 year onward were included in the study whereas patients with missing all the teeth or having fixed-prosthesis were not. Patients were visually examined note the partial edentulism pattern. Classification of arches was done according to Kennedy's classification and Applegate's rules. To avoid complications, modifications were not taken into account. Analysis of data was done by using SPSS version 22. Frequencies of studied variables were calculated. Pearson's Chi-Square test was applied for affecting parameters like gender and type of arch. p -value <0.05 was considered significant.

RESULTS

Out of 214 patients, 108 (50.5%) were male and 106 (49.5%) female. Majority (25.2%, n=54) of the patients were in their 30s followed by 24.8% in their forties (fig 1). In majority (65.4%, n=140) of the patients Kennedy's class III

was seen (fig 2). There was no significant association of Kennedy's class with arch type ($p=0.09$) or gender ($p=0.78$), given in table 1. A non-significantly higher

number of class IV was found in maxillary arch as compared to mandibular arch (table 1).

Table 1 Association of arch type and gender with Kennedy's class

Kennedy class	No. of cases		p-value	Male (%)	Female (%)	p-value
	Maxillary arch (%)	Mandibular arch (%)				
Class 1	7 (53.65)	6 (46.15)	0.09	6 (46.15)	7 (53.65)	0.78
Class 2	19 (51.4)	18 (48.6)		20 (54)	17 (46)	
Class 3	66 (49.2)	74 (52.8)		68 (48.6)	72 (51.4)	
Class 4	18 (75)	6 (25)		14 (58.4)	10 (41.6)	
Total	110 (51.4)	104 (48.6)		108 (50.4)	106 (49.6)	

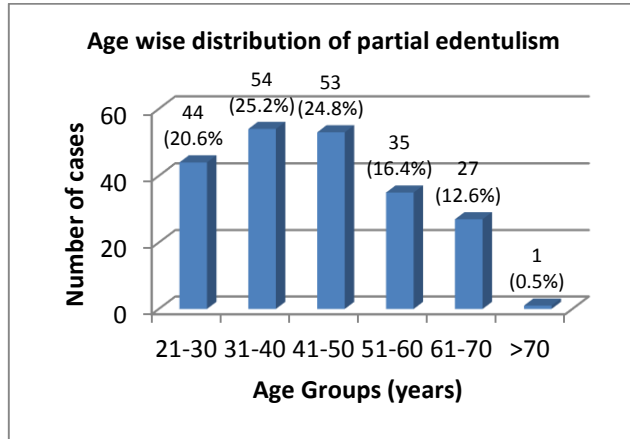


Figure 1 Age wise distribution of edentulism

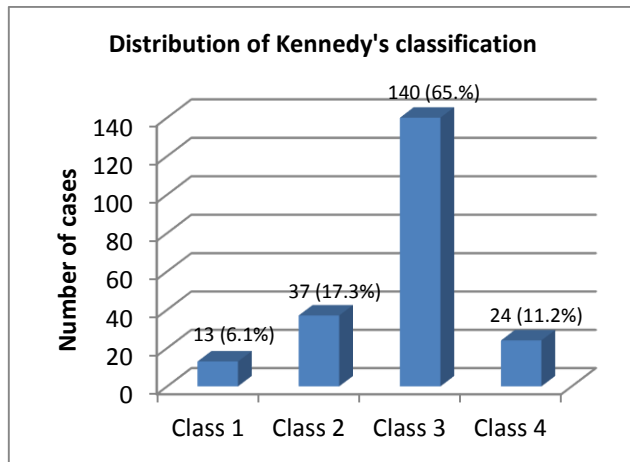


Figure 2 Distribution of Kennedy's classification

DISCUSSION

One of the critical problems throughout the world population is no doubt, partial edentulism. This study was carried out to determine the prevailing patterns of partial edentulism in patients coming to the Nishter Institute of dentistry, Multan. The main purpose of using Kennedy's classification for partial edentulism in the current study was to expedite the identification of partially edentulous cases, permit rapid examination of partially edentulous arch, provide understandable way to assess the difficulties in designing of partial denture.⁽¹¹⁾

This study provided an overview of prevalence of partial edentulism regarding gender, age and arch. In the

overall assessment of partial edentulism, it was found that majority (65%) of the patients had Kennedy's class III arches. This is in accordance with a previous study in which Kennedy's Class III was found dominant in maxillary as well as mandibular arch.⁽¹²⁾ Similar findings have been revealed by other studies.^(8, 13) Nevertheless, contrasting results were reported by a researcher who found class IV and class I predominant ones.⁽¹⁴⁾

In this study, there was no significant association between Kennedy's class and arch type ($p=0.09$). Similar results have been reported in other studies^(15, 16), who revealed similar frequencies of Kennedy's classes in maxilla as well as mandible, supporting the present one. Contrary to this study, other researcher found that maxillary and mandibular arches frequently presented with Class IV and Class I pattern respectively.⁽¹⁴⁾ Although non-significant but the prevalence of Kennedy's class IV in maxillary arch was three times higher than in mandibular arch supported by a previous study.⁽¹⁴⁾ However, contrary to present study, increased frequency of class III in maxillary arch has also been reported.^(8, 17) In the present study, there was no significant association between gender and pattern of partial edentulism ($p=0.78$). This was in agreement with similar studies conducted by others.^(8, 15)

The present study did not find the relation between partial edentulism classes and underlying causes. In order to find the prevalent reason of partial edentulism, it is recommended that further research may be carried out. A large sample size may be used, and a more health facilities may be included. Furthermore, comparison of prevalence of partial edentulism with complete edentulism may also be done. The information gained by this study will enable prosthodontists to amend preventive measures for population and improve prosthodontic treatment.

CONCLUSION

Within the limitations of this study, following conclusion may be drawn;

- Kennedy's class III was the most found partial edentulism pattern.
- No significant association was found between Kennedy's class and gender or arch type.

Conflict of interest: None declared

REFERENCES

1. Muhammad Tauqeer E, Nusrat J, Shazeb P. Pattern of partial edentulism among female patients seen at dental department of secondary care hospital, Lahore. 2015.
2. Al Moaleem M. Patterns of Partial Edentulism and its Relation to Khat Chewing in Jazan Population—A Survey

- Study. *Journal of clinical and diagnostic research: JCDR*. 2017;11(3):ZC55.
3. Shubita M. Evaluation of partial edentulism based on Kennedy's classification and its relation with age and gender. *Pakistan Oral & Dental Journal*. 2015;35(4).
 4. Shah RJ, Diwan FJ, Diwan MJ, Chauhan VJ, Agrawal HS, Patel GC. A study of the emotional effects of tooth loss in an edentulous Gujarati population and its association with depression. *The Journal of the Indian Prosthodontic Society*. 2015;15(3):237.
 5. Polzer I, Schimmel M, Müller F, Biffar R. Edentulism as part of the general health problems of elderly adults. *International dental journal*. 2010;60(3):143-55.
 6. Jeyapalan V, Krishnan CS. Partial edentulism and its correlation to age, gender, socio-economic status and incidence of various Kennedy's classes—a literature review. *Journal of clinical and diagnostic research: JCDR*. 2015;9(6):ZE14.
 7. Scholar P. Partial Edentulism and its Association with Age and Gender-A Research Article. *International journal of engineering science*. 2017;14883.
 8. Zaigham AM, Muneer MU. Pattern of partial edentulism and its association with age and gender. *Pakistan oral & dental journal*. 2010;30(1).
 9. Al-Johany SS, Andres C. ICK classification system for partially edentulous arches. *Journal of Prosthodontics*. 2008;17(6):502-7.
 10. Galagali G, Mahoorkar S. Critical evaluation of classification systems of partially edentulous arches. *International Journal of Dental Clinics*. 2010;2(3):45-53.
 11. Bharathi M, Babu K, Reddy G, Gupta N, Misuriya A, Vinod V. Partial Edentulism based on Kennedy's classification: an epidemiological study. *The Journal of Contemporary Dental Practice*. 2014;15(2):229-31.
 12. Naveed H, Aziz MS, Hassan A, Khan W, Azad AA. Patterns of partial edentulism among armed forces personnel reporting at armed forces institute of dentistry Pakistan. *Pakistan oral and dental Journal*. 2011;31(1).
 13. Hatim NA, Muhammed SA, Hasan NH. Psychosocial profile of patient with missing teeth and refuses treatment. *Al-Rafidain Dental Journal*. 2003;3(2):88-95.
 14. Khalil A, Hussain U, Iqbal R, Ali W. Patterns of partial edentulism among patients reporting to Department of Prosthodontics, Khyber College of Dentistry, Peshawar. *J Khyber Coll Dent*. 2013;3(2):42-5.
 15. Charyeva OO, Altynbekov KD, Nysanova BZ. Kennedy classification and treatment options: a study of partially edentulous patients being treated in a specialized prosthetic clinic. *Journal of Prosthodontics: Implant, Esthetic and Reconstructive Dentistry*. 2012;21(3):177-80.
 16. Patel JY, Vohra MY, Hussain JM. Assessment of Partially edentulous patients based on Kennedy's classification and its relation with Gender Predilection. *Int J Sci Study*. 2014;2(6):32-6.
 17. Al Moaleem MM, Somaili DM, Ageeli TA, Namis SM, Mobarki AH, Mohamed MS, et al. Pattern of partial edentulism and its relation to age, gender, causes of teeth loss in Jazan population. *American Journal of Health Research*. 2016;4(5):121-6.