

Association of Age and Gender with Pattern of Tooth Loss

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ABSTRACT

Background: Tooth loss has multi-factorial etiology. Epidemiological evidence suggests association of tooth loss with age, gender, education, socioeconomic status, access to dental care, and health care system. A number of studies have been conducted worldwide to determine the pattern of tooth loss but recent data from Pakistan is not available. **Objective:** This study aims to find the association of age and gender with pattern of tooth loss. **Study Design:** A cross sectional study. **Settings:** Institute of Dentistry (IOD), CMH Lahore Medical College, Lahore Pakistan. **Duration:** Six months from January 2021 till July 2021. **Methods:** 335 participants for partially dentate arches were examined and information was recorded according to Kennedy's classification system. Chi-square test was applied to determine significance and correlation of Kennedy's class with gender and different age groups. **Results:** Most common pattern seen was Kennedy's class III in both maxilla (65.7%) and mandible (62.7%) followed by Kennedy's class II in maxilla (18.5%) and mandible (20.9%), then Kennedy's class I in maxilla (14%) and mandible (14.9%) and lastly class IV in maxilla (1.8%) and mandible (1.5%). With increase in age, there was increase in Class II and Class I pattern respectively. Partially dentate arches were more common in females than males. All results were statistically significant, P-value ≤ 0.05 . **Conclusion:** There is a significant association between pattern of tooth loss and gender. Class 1 is more frequent in older age group as compared to the younger in which class III is more commonly present. Caries is the most common cause of tooth loss followed by periodontal disease

Keywords: Removable partial denture, Partially dentate arch, Tooth loss, Periodontal disease, Age, Gender.

INTRODUCTION

Teeth play a vital role in maintaining esthetics, social relations and general health of an individual.¹ Tooth loss most commonly occurs due to periodontal problem, caries, traumatic accidents and iatrogenic factors.^{2,3,4,5} The state of missing teeth in oral cavity is known as partial edentulism. Lost teeth, if not restored have direct effect on masticatory efficiency, food selection, nutritional status, esthetics, phonetics and psychological discontentment thus affecting quality of life.^{2,3}

There is a notable variation in distribution of tooth loss.^{6,7} There could be multiple combinations of partially dentate arches.^{1,8} This distribution of pattern of partially dentate arch has been investigated in many selected populations

of different countries with the Kennedy's classification system as the most commonly applied in all studies.^{1,3,8,9,10} This classification system, based on four main classes provided the benefit of immediate visualization of edentulous regions as well as differentiation between type of prosthesis support.³

Epidemiological evidence suggests association of tooth loss with age, gender, education, socioeconomic status, access to dental care, and health care system. Although studies have been conducted worldwide to determine the pattern of tooth loss but frequent fresh upgrade of data from Pakistan is required to trace the trends. The rationale of this study is to investigate the pattern of tooth loss and its consequences in CMH Lahore, Pakistan. This

study will help the patients, dentists and health care system. This study is a fresh insight into the relevant data on the topic and it provides an upgrade that would help the practitioners in addressing the relative management needs of patient presenting with such conditions.

The objectives of this study were to determine pattern of tooth loss according to Kennedy's classification in partially edentulous subjects and to determine the association of age and gender with pattern of tooth loss.

METHODS

A cross sectional study was conducted at outpatient department (OPD), Institute of Dentistry (IOD), CMH Lahore Medical College. Approval was taken from ethical committee of the Institute of Dentistry, CMH Lahore Medical College Reference no.7/ERC/CMHLMC over a period of six months i.e. from January 2021 till July 2021. Inclusion criteria comprised of partially dentate patients or the patients having at least one missing tooth within the age range of 20 to 70 years. Subjects having wisdom tooth as only missing tooth or missing 2nd molar that will not be replaced, congenitally missing teeth, edentulous patients or patients who are physically and mentally challenged were excluded from the study. A sample size of 335 subjects was selected by non-probability, consecutive sampling technique. Sample was estimated using 95% confidence level, 3% margin of error and least frequency of mandible Kennedy's class- IV i.e., 2%.⁹

After taking an informed consent, necessary data like age, gender, occupation, duration and reason for tooth loss was taken from every patient. Intra oral examination was performed by the researcher using the diagnostic kit and the data of all subjects with partially dentate arches meeting the inclusion criteria was noted on a self-designed patient proforma. Kennedy's classification system was used for classifying arches. Modification areas were not included to simplify the study.

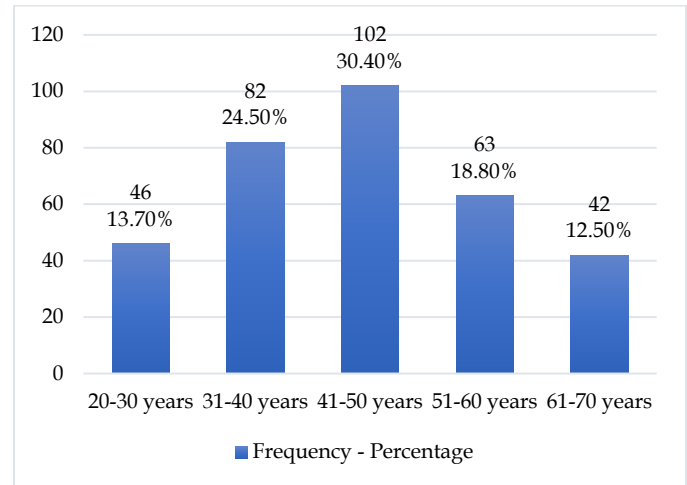
All collected data was entered and analyzed using SPSS version 23. Mean \pm S.D was used for quantitative data e.g., age. Frequency and percentage were used for categorical data like gender, and Kennedy's class I, II, III, IV. Chi-square test was applied to determine the association of tooth loss pattern with gender and different age groups. P-value \leq 0.05 was considered as statistically significant.

RESULTS

The study included a total of 335 patients who were inquired and examined to determine pattern of tooth loss according to different Kennedy's classes in partially dentate subjects and their association with age and gender. Mean age was 46 years with SD \pm 1.22. age distribution is given in figure 1.

There were 146(43.6%) patients were male while 189(56.4%) patients were females.

Figure 1: Frequency and percentage distribution of age (n=335)



Mean age = 46 years with SD \pm 1.22

Common patterns of tooth loss according to Kennedy's classification in maxilla and mandible were seen. Most common pattern seen was Kennedy's class III in both maxilla 220(65.7%) and mandible 210(62.7%). Kennedy's class II was second most common pattern seen in both maxilla 62 (18.5%) and mandible 70 (20.9%). Kennedy's class I was 3rd common in both Maxilla 47(14%) and mandible 50(14.9%) and class IV being the least common in both maxilla 6(1.8%) and mandible 5(1.5%).

Stratification of common patterns of acquired partially dentate arches with reference to age in both maxilla and mandible as shown in figure 2 and 3.

Class III has highest prevalence in younger to middle age groups (20-50 years). With increasing age, a transition of bonded saddles in to free end saddles was seen. Class II being more common in middle age (41-50 years) and increase in Class I trend with increasing age (51-70 years of age). P value was less than 0.001 showing highly significant result.

Stratification of common patterns of acquired partially dentate arches with reference to gender in both maxilla and mandible are given in figure 4.

Partially dentate arches were more prevalent in females than in males. P value was less than 0.05 showing significant correlation of gender with partially dentate arches.

Caries was found to be most common cause of tooth loss followed by periodontal disease as shown in figure 5.

Figure 2: Common patterns in maxilla with reference to age

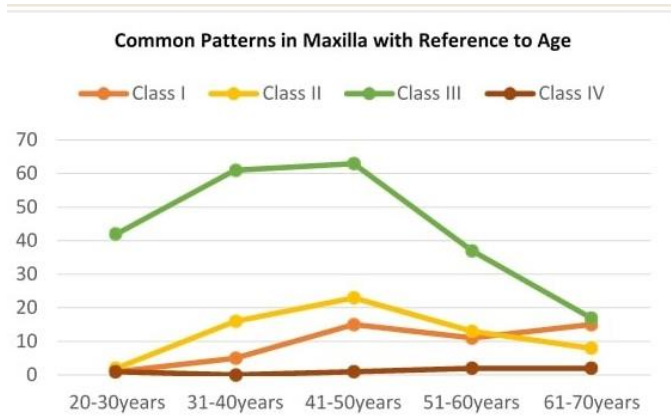


Figure 3: Common patterns in mandible with reference to age

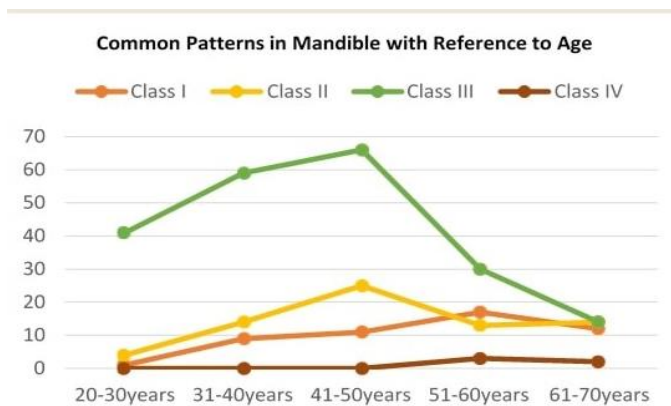
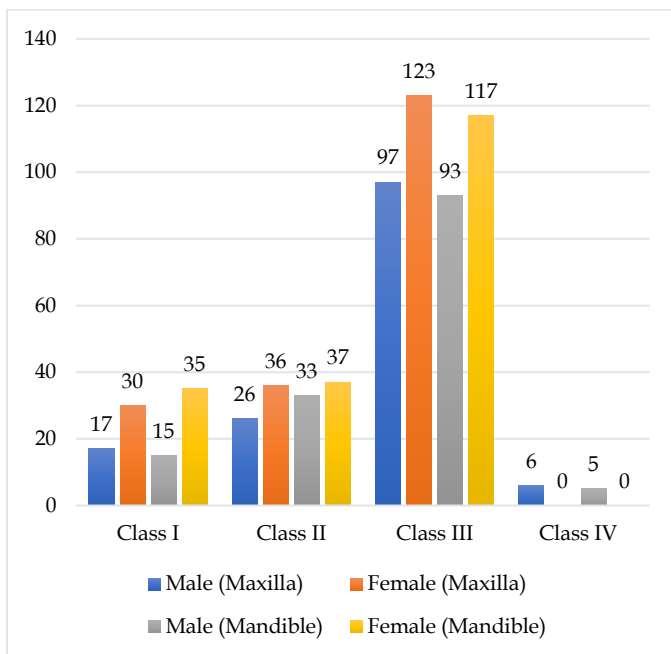
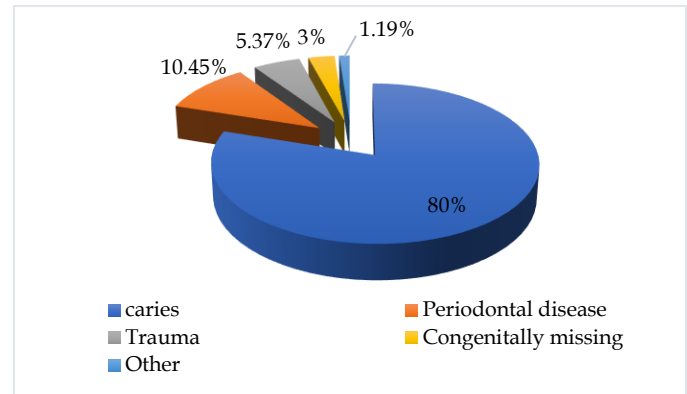


Figure 4: Pattern of partially dentate arches with reference to gender (n=335)



P Maxilla < 0.05, P Mandible < 0.05

Figure 5: Causes of tooth loss



DISCUSSION

Knowledge of current trends of tooth loss is necessary to evaluate comprehensive requirement of prosthodontic treatment.¹⁰ This research allows a longitudinal comparison of various classes of removable partial dentures (RPD) to determine whether the teaching of removable partial denture design is consistent with the relative frequencies of removable partial dentures use. Furthermore, this study compares local pattern with pattern of tooth loss in developed countries.

The results of present study show that Kennedy’s Class III is most common pattern seen in both maxillary and mandibular arch which is in accordance with many other studies.^{1,2,5,11,12,13,14,15} A study conducted in 2016 showed that percentage of occurrence of Kennedy Class III was 67.2 % in the maxillary arch and 64.1% in the mandibular arch.¹⁴ 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.¹⁴

The similarities amongst present study and these studies might be due to relatively similar level of awareness for oral hygiene maintenance and esthetic concerns of the targeted population.

A significant association was found between age and pattern of tooth loss. In present study, class III was seen to be highest in middle age group. With increasing age, a shift of bonded saddles to free end saddles was seen. More Class I saddles were observed in age group 51-70 years. This finding is in accordance with other studies.^{9,18,19} This might be related to the inability to maintain proper hygiene in old age as the manual dexterity is decreased or as effect of systemic disease on oral tissues. The mandibular first molars were the most common missing teeth. This can be attributed to early eruption of mandibular first molars at the age of 6 years, at this age it is difficult to maintain oral hygiene without parental help.²⁰ Therefore first molars are prone to early dental decay and possibly accounting for Kennedy’s Class III.²⁰

Partially dentate arches were significantly more common in females than in males this is compliant to results of other studies.^{20,21} In contrary some other studies conduction in past have reported observed that there was statistically no significant correlation between gender and partially dentate arches.^{18,19,22}

CONCLUSION

There is a significant association between pattern of tooth loss and gender. Class 1 is more frequent in older age group as compared to the younger in which class III is more commonly present. Caries is the most common cause of tooth loss followed by periodontal disease. Early diagnosis of conditions leading to tooth loss or factors that lead to caries and periodontology should be diagnosed for preventive measures

LIMITATIONS

The limitation of the study was that it was done in one institute where specific type of people must be reporting.

SUGGESTIONS / RECOMMENDATIONS

This research can be done with increased sample size. Also, the inclusion of sample from multiple cities or institutes might be considered so that the preventive and management strategies can be tailored according to requirements of the population.

CONFLICT OF INTEREST / DISCLOSURE

No conflict of interest to be declared by any author.

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REFERENCES

1. Devishree RA, Sangeetha S, Jain AR. Prevalence of partial edentulism according to Kennedy's classification based on age, gender, and arch. *Drug Invention Today*. 2018 Jan 1;10(1):108.
2. Ashraf J, Jain AR, Ariga P, Nallaswamy D. Prevalence of partial edentulousness and treatment needs in rural population of South India. *World J Dent*. 2017;8(3):213-7.
3. Kumar B, Kumar N, Ali S, Ahmed S. Partial edentulism; exploring partial edentulism patterns in mandibular arch among patients of karachi. *Professional Medical Journal*. 2019 Jun 1;26(5): 764-768.
4. Makkasare S, Kambala SS, Jaiswal T. Prevalence of Partial Edentulism According to Kennedy's Classification in Wardha Population as per Gender, Age and Their Perception towards Replacement of Teeth. *Journal of Evolution of Medical and Dental Sciences*. 2020 Mar 9;9(10):741-5.
5. Jandial S, Gupta R, Sharma S, Mahajan N, Kotwal B, Kharyal S. Incidence of Partial Edentulism Based on Kennedy's Classification

- in Jammu. *International journal of preventive and public health sciences*. 2017 Mar 30;3(2):38-40.
6. Khan SA, Hussain MW, Chaudhary MA. Pattern of partial edentulism seen among patients at lahore medical & dental college. *Pakistan Oral & Dental Journal*.2017;37(4):647-9.
7. Rana SB, Acharya B, Bhochhibhoya A, Sharma R, Acharya J, Mainali A. Patterns of partial edentulism based on Kennedy's classification among patients reporting to Nepal Medical College and Teaching Hospital. *Journal of Kathmandu Medical College*. 2018;17(4):153-7.
8. Judy HJ. The incidence of frequency of a various removable partial edentulism cases. *Mustansiriya Dental Journal*. 2018 Mar 26;6(2):172.
9. Rashid R, Ayoub W. Partial Edentulism and its Association with Age and Gender-A Research Article. *International Journal of Engineering Science*. 2017 Sep; 14883.
10. Nayyer M, Khan DA, Gul H, Aslam A, Khan NB, Aslam F. Patterns of partial edentulism according to kennedy's classification-a cross sectional study. *Pakistan Armed Forces Medical Journal*. 2020 Jan 27;70 (Suppl-1):S87-90.
11. Hakeem S, Baqar A, Mirza D. Prevalence of partial dentulism and rehabilitation provided to the patients attending Bahria University Dental Hospital, Karachi. *Int J Dent Health Sci*. 2015;2(5):1102-2.
12. Araby YA, Almutairy AS, Alotaibi FM. Pattern of partial edentulism in correlation to age and gender among a selected Saudi population. *International Journal of Dental Sciences and Research*. 2017 Feb 23;5(1):1-4.
13. 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 Mar;11(3):ZC55.
14. Fayad MI, Baig MN, Alrawaili AM. Prevalence and pattern of partial edentulism among dental patients attending College of Dentistry, Aljouf University, Saudi Arabia. *Journal of International Society of Preventive & Community Dentistry*. 2016 Dec;6: S187-91.
15. Al Moaleem MM, Somaili DM, Ageeli TA, Namis SM, Mobarki AH, Mohamed MS, Saib JA, Matto KA. Pattern of partial edentulism and its relation to age, gender, causes of teeth loss in Jazan population. *American Journal of Health Research*. 2016 Aug 26;4(5):121-6.
16. Pun DK, Waliszewski MP, Waliszewski KJ, Berzins D. Survey of partial removable dental prosthesis (partial RDP) types in a distinct patient population. *The Journal of prosthetic dentistry*. 2011 Jul 1;106(1):48-56.
17. Refaat MM, Al-Shareeda NA, Hussain AM. The incidence of different removable partial denture cases related to age, gender and archin a distinct population in Iraq. *Ann Trop Med Public Heal*. 2020; Sept 23(13): 231-345.
18. Zaigham AM, Muneer MU. Pattern of partial edentulism and its association with age and gender. *Pak Oral & Dent J*. 2010;30(1):260-3.
19. Abdel-Rahman HK, Tahir CD, Saleh MM. Incidence of partial edentulism and its relation with age and gender. *J Med Sci*. 2013;17(2):463-70.
20. Patel JY, Vohra MY, Hussain J. Assessment of Partially edentulous patients based on Kennedy's classification and its relation with Gender Predilection. *Int J Scientific Study*. 2014;2(6):32-6.
21. Sapkota B, Adhikari B, Upadhaya C, et al. A Study of Assessment of Partial edentulous patients based on Kennedy's classification at Dhulikhel Hospital Kathmandu University Hospital. *Kathmandu Univ Med J*. 2013;44(4) 325-27.
22. Prabhu N, Kumar S, D'souza M, Hegde V. Partial Edentulousness in a rural population based on Kennedy's classification: An Epidemiological study. *J Indian Prosthodont Soc*. 2009; 9(1):18-23.