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ASSESSMENT OF EDENTULISM AMONG OUTPATIENTS- AN INSTITUTIONAL STUDY

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Abstract

Background:*The total rate of edentulism is said to be increasing in developing countries and this has been attributed mainly to the high prevalence of periodontal diseases and caries. Several reports have shown that the prevalence of edentulism is higher in males than females.*

Aim: *The aim of this study is to assess the edentulism based on ACP PDI classification among 65-74 yrs old patients visiting a private dental hospital in Chennai*

Materials and methods: *This was a comparative, descriptive study done during April - June, 2020, where all the data of the patient who reported to the dental clinics in Saveetha Dental College, SIMATS, Chennai, India was obtained from the Department of Public Health Dentistry. Patient records were reviewed and analysed between June 2019 and March 2020. Data was collected and tabulated. The collected data was further analysed , recorded in Microsoft Excel software and was subjected to Chi square test for statistical analysis using IBM SPSS software.*

Results: *The total sample size of the current study was 1,244 cases. A male predilection was seen with males making up 68% of the study population. The most common age group that was observed was 65-69 years with 66%. Most commonly seen ACP PDI classification was Class I with 70%. On doing the Chi square test, it was found that among the males, Class I and Class II edentulousness was more prevalent and among the females, Class III and Class IV edentulousness was found to be more prevalent. But it was found to be statistically insignificant (p value >0.05)*

Conclusion: *The study revealed that the Class I ACP PDI classification was more common than other classes. There was no significant association between edentulousness and gender and also between edentulousness and age among the outpatients. Awareness should be created among the public about the factors related to tooth loss and also about the treatment options availability to treat the edentulous state.*

Keywords: *Edentulousness; gender; ACP PDI ; correlation; age.*

Introduction

Fixed prosthodontic treatment deals with the replacement of teeth by artificial substitutes that are not readily removable from the mouth. Its focus is to restore function, esthetics and comfort[1]The fixed partial denture (FPD) is one of the most commonly preferred treatment options for a single missing tooth.[2] FPDs were considered to be the best treatment choice for replacing a single missing tooth[3] Fixed prosthodontics treatment can range from the restoration of a single tooth to rehabilitation [4]

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Edentulism is a debilitating and irreversible condition and is described as the "final marker of disease burden for oral health" [1].Tooth loss can be identified by an edentulous space, which is a gap in the dental arch normally occupied by one tooth or more [2]. It could be partial or complete. A person may be partially edentulous or completely edentulous with all teeth missing in both upper and lower arch. One of the most common causes of tooth loss is dental caries [3] [4] [5] which commonly occur in pits and fissures of the occlusal surfaces in primary and permanent posterior teeth [6] [7]. Other causes for tooth loss are periodontal disease, physical injury or trauma [8], dietary habits [9] [10], and personal habits [11]. This can be prevented at an early stage by using sealants [12] and fluoridated products like fluoride varnish [13] [14] [15]. Although fluorides in excessive amounts can cause conditions like fluorosis [16]. Edentulousness has been found to increase in old age, which may partly be attributable to physical disabilities that could occur in old age [17]. The level of edentulousness is the main indicator for the oral health status of senior citizens. Some countries in Western Europe - Austria, France, Italy, Switzerland - had the lowest percentages of edentulous individuals, while the United Kingdom and the Netherlands had exceptionally high levels [13,18]. Data from several countries have consistently shown that edentulism is more prevalent among lower socioeconomic groups and among women, and that women have tended to become edentulous at a younger age [4,19]. Previous studies have also shown that several non-disease factors such as attitude, behavior, dental attendance, characteristics of the health care system and socio-demographic factors play important roles in the aetiopathogenesis of edentulism [20]. The ACP PDI (American College of Prosthodontists Prosthodontic Diagnostic Index) classification has been used as a diagnostic criteria in this present study for edentulousness. The edentulous span confined to a single arch and not exceeding 2 missing incisors in maxillary arch or 4 incisors in mandibular arch or 2 premolars, or 1 premolar and 1 molar in posterior region was categorized as Class I, single arch with canine missing or both arches with two teeth missing was categorised as Class II, one or two arches with three teeth missing or two molars missing was categorized as Class III and any maxillofacial defect was categorized as Class IV. [21]

Risk indicators of total tooth loss included age, gender, length of education, geographical area, urbanization, marital status, and medication for headache [22]. Previous studies also show that prevalence of edentulism was higher in the males than in the females in all age groups except in the 50-59 age group [23]. Another study showed that more number of men (52%) were partially edentulous when compared to women (48%), this could be because of the poor brushing habits due to their work schedule, and the need to seek treatment among the group of men were more when compared to women [24]. The level of edentulousness was found to be high, more so in rural than in urban people and more so in advancing age, with no significant difference between male and females [25] .

A simple estimation of the edentulous condition is a rough indication of the prevalence of dental diseases and success or failure of dental care . Hence the aim of this study was to assess the edentulousness based on ACP PDI classification among 65-74 yr old patients visiting the private dental hospital.

MATERIALS AND METHOD:

This was an institutional study among patients with edentulousness who have visited Saveetha Dental College and Hospitals in between June 2019- April 2020. The approval for this study setting was obtained from the Institution Ethics Board and the study was conducted during April - June, 2020. The sample size of 1244 patients in which sampling bias was minimized with the verification of photos. The study was reviewed by two reviewers and it was cross verified. Records of patients presenting with edentulousness were reviewed and incomplete records in the system were excluded. ACP PDI classification was used to measure edentulousness which was one of the commonly used classification and hence assuring the internal validity of the study. ACP PDI classification system categorizes patients according to complexity of the edentulous condition and helps the clinician to make a diagnostically driven treatment plan. The case records of edentulous patients were collected by reviewing patient records and data of these patients was collected and tabulated. The following parameters including patients ID, age , gender, and ACP PDI Classification were collected from the records. Age was categorized into two groups as 65-69 years and 70-74 years. After further verification by an external reviewer, it was imported to SPSS software by IBM for statistical analysis. Similar methodology was employed in other cross sectional studies as well [26]. Percentage , mean, standard deviation, frequency of parameters were analysed using descriptive statistics.. Chi square test was used to analyse association between age and gender with edentulousness classification. P value less than 0.05 was considered to be statistically significant.

RESULTS:

In the present study, a total of 1,244 patient records were screened. Out of them, the percentage of male patients was found to be 68% and females was found to be 32% [Figure 1]. Out of the total sample size, the maximum number of patients belonged to the age group 65-69 years (66%) and 34% of the patients were between 70-74 years [Figure 2]. When checked for the ACP PDI Classification, 70% of the patients showed Class I edentulousness, 17.4% of the patients showed Class III edentulousness, about 10.5% of the patients showed Class IV edentulousness and 1.2% of them showed Class II [Figure 3]. On correlating edentulousness and gender, among the males, 604 patients had Class I edentulousness (71.5%), 12 patients had Class II edentulousness (1.4%), 142 patients had Class III edentulousness (16.8%), 87 patients had Class IV edentulousness (10.3%) and among the females, 278 patients had Class I edentulousness (69.7%), 3 patients had Class II edentulousness (0.8%), 74 patients had Class III edentulousness (18.5%) and 44 patients had Class IV edentulousness (11%) [Figure 4]. On doing the Chi square test, the p value was found to be 0.628>0.05 which was statistically not significant. On correlating age and edentulousness, 589 patients between 65-69 years showed Class I edentulousness (71.7%), 9 patients showed Class II (1.1%), 144 patients showed Class III edentulousness (17.5%), 79 patients showed Class IV edentulousness (9.6%) and among the age group 70-74 years, 293 patients showed Class I edentulousness (69.3%), 6 patients showed Class II edentulousness (1.4%), 72 patients showed Class III edentulousness (17%) and 52 patients showed Class IV edentulousness (12.3%) [Figure 5]. Although it was found to be statistically not significant. [p value 0.491>0.05].

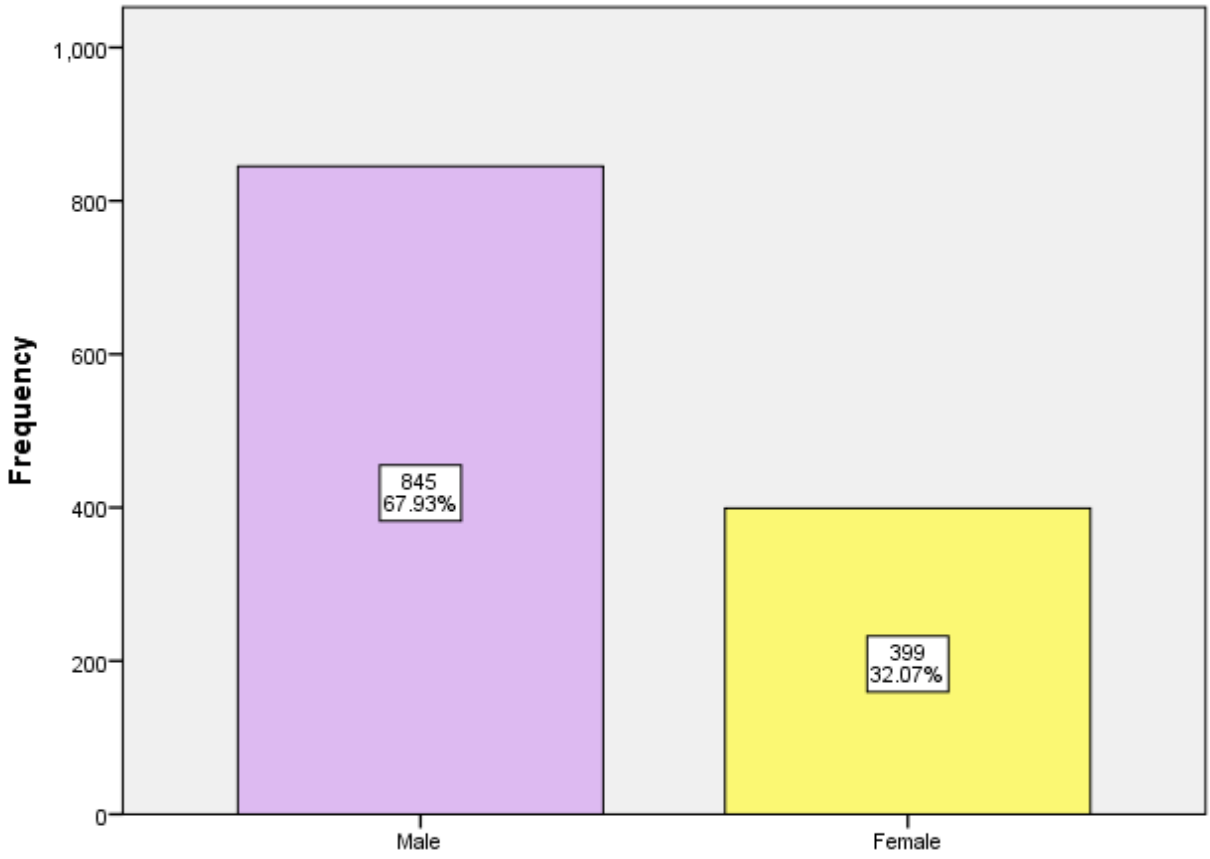

Figure 1: Bar graph representing the frequency of occurrence of edentulousness among different Genders. Y axis represents the count of patients with edentulousness and X axis represents the gender of the patients. The colour purple denotes male patients and yellow denotes female patients.The above graph shows that 68% of the patients were males and 32% were females suggesting males were the more prevalent study participants.

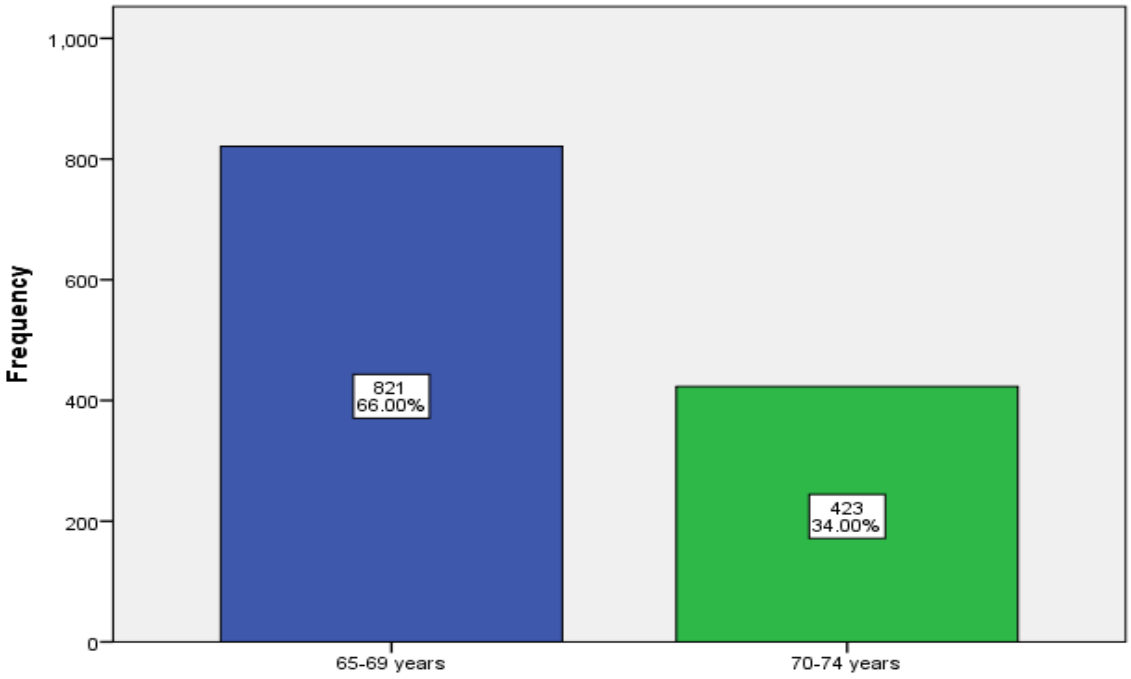

Figure 2: Bar graph representing the frequency of occurrence of edentulousness among different age groups. Y axis represents the count of patients with edentulousness and X axis represents the age group of the patients. The colour blue denotes the age group 65-69 years and green colour denotes patients between 70-74 years. The above graph shows that 66% of the patients are between 65-69 years and 34% of the patients are between 70-74 years. Thus the age group 65-69 years was found to be more prevalent.

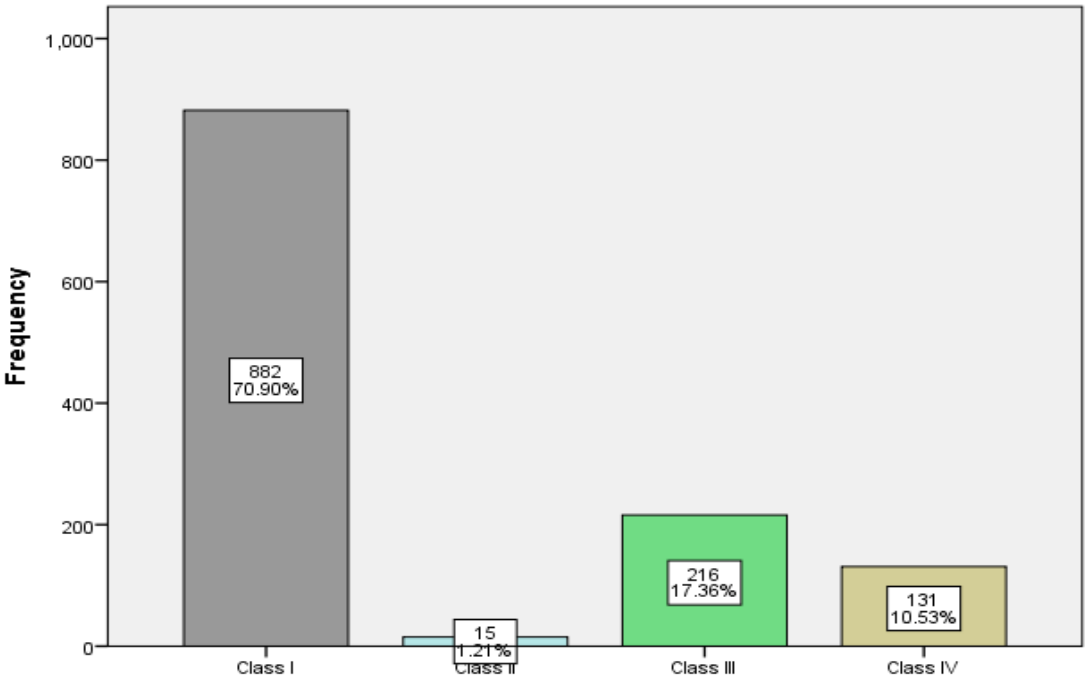

Figure 3: Bar graph representing the ACP PDI classification of edentulous patients. Y axis represents the count of patients with edentulousness and X axis represents the ACP PDI classification of edentulous patients. The colour grey denotes Class I, light blue colour denotes Class II, Light green denotes Class III and brown colour denotes Class IV edentulousness. The above graph shows that 71% of the patients have Class I edentulousness, 1.2% of the patients have Class II edentulousness ,17.3% of the patients have Class III edentulousness, and 10.5% of the patients have Class IV edentulousness. Class I edentulousness was more prevalent among the study population.

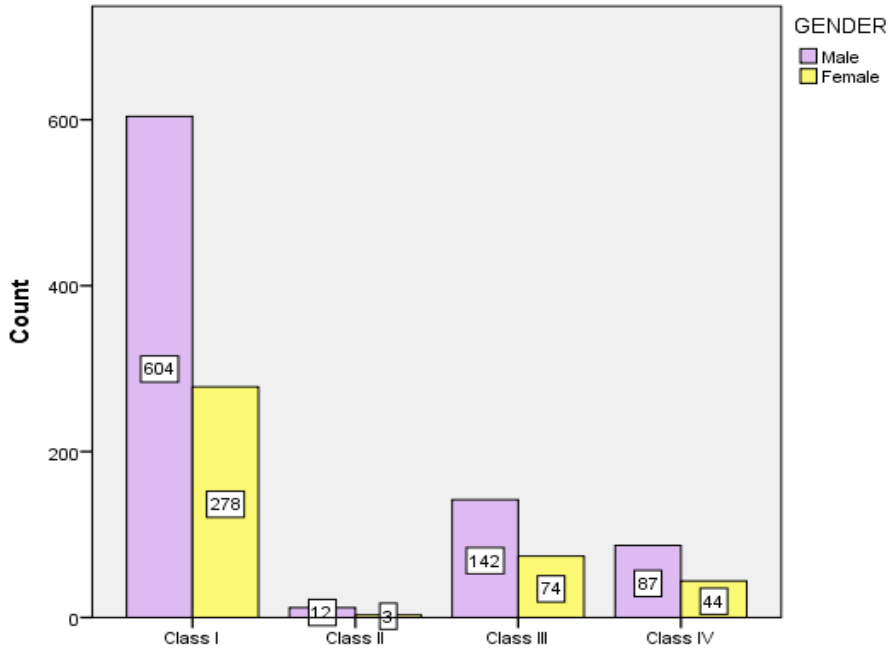

Figure 4: Bar graph representing association between Gender and Edentulousness among patients. X axis represents the ACP PDI classification of edentulousness and Y axis represents the gender of the edentulous patients. The colour purple denotes males and yellow denotes females patients. The above graph shows that Class I [604(71.5%)] and ClassII edentulousness [12 (1.4%) were more prevalent among males whereas Class III [74(18.5%)] and Class IV edentulousness [44(11%)] were more prevalent among females. Chi square test showed there was no significant association between gender and edentulousness among 65-74 yr old patients visiting the private dental hospital ; Pearson Chi Square value- 1.740, p value- 0.628 (>0.05). ClassII edentulousness [12 (1.4%)] were more prevalent among males when compared to other classes.

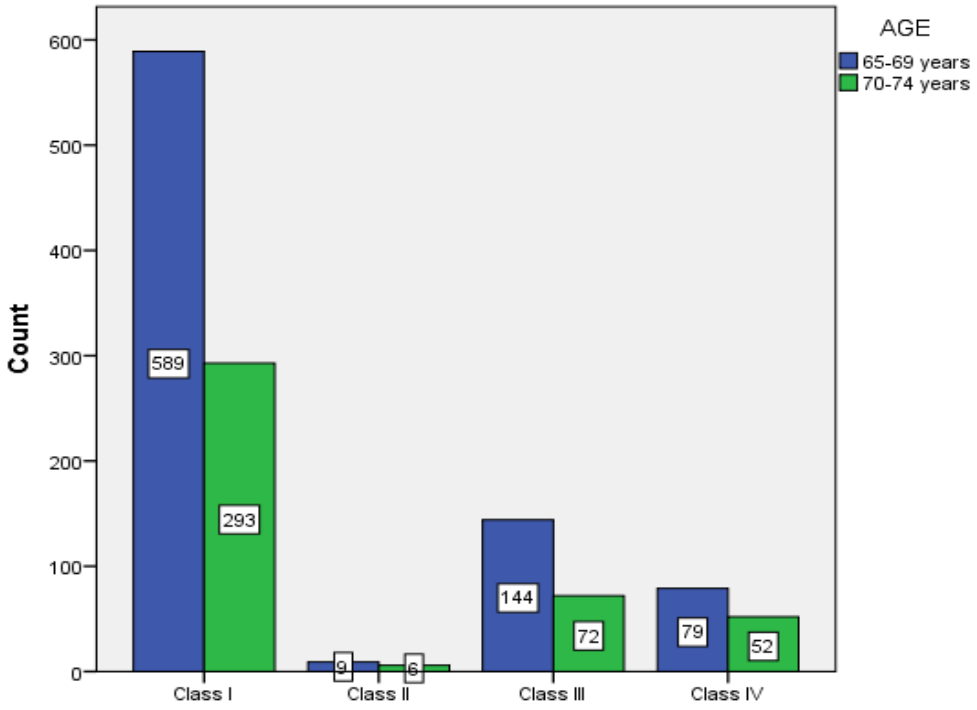

Figure 5: Bar graph representing correlation between Age and Edentulousness among patients. X axis represents the ACP PDI classification of edentulousness and Y axis represents the age group of the edentulous patients. The colour blue denotes the age group 65-69 years and green colour denotes patients between 70-74 years. The above graph shows that Class I and Class III edentulousness were more prevalent among the age group 65-69

years[589 (71.7%) and 144(17.5%)] respectively, Class II and Class IV edentulousness were more prevalent among the age group 70-74 years [6 (1.4%) and 52(12.3%)] respectively. Chi square test showed that there was no significant association between age and edentulousness among 65-74 yr old patients visiting the private dental hospital ; Pearson Chi square value- 2.416, p value- 0.491(>0.05).

DISCUSSION:

The complex interaction between dental diseases, the tendency to use dental care, dental attitude, and affordability of non-extraction treatment have been related to the incidence of tooth loss [27], Oral health is related to diet in many ways, for example, nutritional influences on craniofacial development, oral cancer and oral infectious diseases[28] [29]; Poor education, a risk factor for poverty, has been identified as a major factor in edentulism . The observed prevalence of edentulism was moderate to low in the adult and elderly groups [30]. Clinically, partial edentulism results in drifting and tilting of adjacent teeth , supra eruption of opposing teeth, altered speech, changes in facial appearance and tempero-mandibular disorders [31]. Edentulism has a significant impact on health and the overall quality of life. Studies on self-perception have demonstrated that tooth loss is associated with aesthetical, functional, psychological and social impacts on individuals. Moreover; there is sufficient evidence to indicate that loss of teeth can adversely affect food selection and ultimately result in incidence of various health disorders [32].

Previous literature shows that women were more likely to be edentulous [33]. Another study shows that females and unemployed groups have more edentulousness and upper arch was more common [34]. Whereas another study shows that there is more prevalence of edentulousness in males 64% than in females 35% [35]. This is because females take more care of their oral health than males and in rural areas [36]. A previous study shows that the women show a higher proportion of edentulousness [37]. Edentulism was not associated with total energy or food intake but was associated with the food groups consumed , particularly fat, micronutrients, and hard-to-chew foods [38]. Another study shows that edentulism is more common among those with less education and income [39].

Awareness about medical and dental negligence among the public is growing in India [40]. Hence dental education should be targeted at the uneducated populace, the rural dwellers and low-income groups to reduce the rate of total edentulism.

CONCLUSION:

Class I ACP PDI classification was more common among the study population. Class I and Class II edentulousness based on ACP PDI classification was found to be more prevalent in males than females whereas Class III and Class IV edentulousness were more prevalent among females. Class I and Class III edentulousness were more prevalent among the age group 65-69 years, whereas Class II and Class IV edentulousness were more prevalent among the age group 70-74 years, but these were not statistically significant.

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AUTHOR CONTRIBUTIONS:

Author 1 (Neha Sharma M) carried out the retrospective study by collecting data and drafted the manuscript after performing the necessary statistical analysis. Author 2 (Dr. L. Leelavathi) aided in conception of the topic, has participated in the study design, statistical analysis and has supervised in the preparation of the manuscript. Author 3 (Dr. L. Leelavathi) has participated in the study design, and has coordinated in developing the manuscript. All the authors have discussed the results among themselves and contributed to the final manuscript.

CONFLICT OF INTEREST:

Nil

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