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Assessment of Partial Edentulism Based on Kennedy's Class I - A Retrospective Study

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Abstract

Tooth loss is mainly due to the incidence of carious lesions or teeth, periodontal diseases. The aim of the study was to evaluate the edentulous status and assessment of Kennedy's class I in patients visited to saveetha dental college for the last 3 months. Records of 86000 patients who visited saveetha dental college between June 2019 and March 2020 were reviewed and the data for the present study was segregated from Nov 2020- Jan 20120 with the input data being the presence of kennedy's class 1 findings. Data collected was calculated, tabulated, analysed and compiled using the SPSS statistical software. The prevalence of partial edentulism based on kennedy's class I findings was 14.3%, was more in old aged individuals above 60 years with a frequency of 40.5% and between age 51-60 at a frequency of 35.7%. Association was done between gender, age and partial edentulism with Kennedy's class I findings in maxillary and mandibular arch.The association between age and arch partial edentulism showed there was no statistical significance since p=0.051. The association between gender and arch partial edentulism was statistically significant since p=0.021. Within the limitations of this study, the prevalence of partial edentulism based on Kennedy's class I was more in males than females and the maxillary arch was commonly affected than the mandibular arch.

Keywords: *Age, Gender, Kennedys class I, Maxilla, Mandible, Prosthodontic rehabilitation, Tooth loss*

Introduction

Tooth loss is a general phenomenon that occurs due to physical, physiological, social causes [1]. The general causes for tooth loss are mainly caries and periodontal disease and other causes like trauma, etc [2]. Partial edentulism is one or more teeth missing in the oral cavity. It can be pertaining to an arch or a quadrant. Kennedys class I partial edentulism is seen in a patient who has bilateral free-end saddles, i.e. they have missing teeth in posterior areas bilaterally. There are no further posterior teeth to the edentulous area. It is defined as a bilateral edentulous area posterior to the remaining natural teeth [3].

The major drawbacks of tooth loss to a particular individual are drifting and tilting of adjacent teeth, supra eruption of opposite teeth, altered speech, changes in facial appearance and psychological dissatisfaction [4]. Lack of confidence, weight loss and restricted dietary and social activities are some of the major impacts adversely affecting the quality of life. The various causes and patterns of tooth loss in the population aid in indicating the levels of oral hygiene, dental health awareness and the management of exodontias [5]. The level of oral health status and hygiene, indicated the treatment regimen for the patient.

Various patterns of tooth loss vary in the prevalence between various countries and geographic areas with countries and depends on demography [6]. Tooth Loss has its prevalence in the elder age groups due to various

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reasons, and has been present evidently in patients of older age groups [7]. The studies also indicate that the incidence of partial edentulism is different between males and females [8]. Males have higher incidence, due to increased exposure to different environment like working environment, social and personal habit with increased incidence to smoking habit, alcohol abuse, etc [9,10,11].

Prevalence of class I kennedy's classification was seen with lesser incidence with compared to kennedy's class II and kennedy's class III incidence[12]. This was observed both in maxillary and mandibular arches with the gender prevalence of males over females[13]. Males showed increased prevalence of partial edentulism in both arches[14].

Treatment planning for Kennedy Class I cases provides a challenge to the restoring dentist. After carefully listening to the patient's desires and fully analyzing the patient's study models, radiographs, periodontal charting, dexterity, and medical history, a successful prosthesis can be fabricated that will meet and exceed the patient's desires and will play a significant role in preserving the patient's remaining dentition[15]. The treatment modalities for kennedys class I indicated partial edentulism are replacement with removable partial dentures, precision attached removable partial dentures, implant supported rehabilitation [16].

The maintenance of bilateral arches in Kennedy's class I condition presents a challenge to the dentist treating the patients. In implant supported over dentures, to prevent displacement of the denture, precision attachments or conventional clasps have been widely used [17]. The dentures should support from the teeth, the mucosa and the underlying residual alveolar ridges. In removable partial dentures the rotational effect plays a major effect in the displacement of the denture, this cannot be completely eliminated but can be minimised by using single implants placed bilaterally in the distal part of the denture bearing area is a remedy for this problem [18]. For stabilising displacement of dentures in vertical direction, single implant placement chiefly in the first molar region can be done to stabilize the denture [19]. The cost of implants and its placement is costly and individual not able to afford treatment with implant placement and removable partial dentures, alternative treatment involves temporary partial dentures [20]. This dentures are less supporting and is a challenge for stabilization of the denture in kennedy's class I cases. For better stabilization, the prosthesis requires to be a fixed prosthesis with the presence of implants to remove all the vertical, horizontal and torsional forces exerted on the edentulous ridges [21].

This study was conducted to check the prevalence of partial edentulism based on kennedy's class with respect to age of the person and the gender of the individual [22].

Materials and Methods

The study setting consists of patients visiting Saveetha dental college for the last 3 months with Kennedy's class I findings. Also, it is a randomised study. Approval of the data was done by the institutional ethics committee, saveetha university. From the total data of 86000 patients registered from june 2019-march 2020, the sample size for the present study was analysed and retrieved from the student quota report with people undergone RPD from November 2019 to January 2020 and out of which 42 patients had positive kennedys class I partial edentulism findings. These patients were segregated and cross verified through photographs. This data was tabulated and analysed with the SPSSsoftware importing. Variable definition was done with the insertion of tables and graphic importing and illustration. Patients with incomplete data were excluded.

Analytical and statistical testing of the data was done with statistical software SPSS IBM version 20.0. The dependent variable for the subjected study is RPD (removable partial denture) and the independent variable for the study includes age and gender. This study contains a descriptive analysis method. Following software analysis, data transfer is done with SPSS version 20.0.

Results and Discussion

The prevalence of partial edentulism based on Kennedy's class I findings among partially edentulous patients was 14.3%. The prevalence of partial edentulism based on Kennedy's class I was present in most patients above 60 years with a frequency of 40.5% and between age 51-60 at a frequency of 35.7%. (Figure 3- frequency of kennedy's class I incidence based on age). The prevalence of partial edentulism based on Kennedy's class I was seen higher in the maxillary

arch with a frequency of 59.5% and a lower frequency of 40.5% in the mandibular arch. (Figure 5- frequency of kennedy's class I incidence based on maxillary and mandibular arches) The mean age with the evidence of partial edentulism in patients was 62.4 years. In males, prevalence is more in patients who are above 60 years of age. In females, evidence is higher in the 51-60 age group and the above 60 years age group and is more prevalent in the mandibular arch. (Figure 4- association between age and kennedy's class I findings, Figure 2- association between gender and kennedy's class I findings)

The study indicated that the findings were with respect and increased prevalence in the male gender [23]. Kennedys class I finding has a prevalence of male predilection with a frequency of 56% [24]. It was mainly due to the exposure of male population to different environmental consensus which leads to the incidence for caries and other causes due to demographic concerns [25]. The connection between oral health and tooth maintainability is complex [26]. There are various other reasons like economic status of the patient, etc where the patient is not in a position to afford the restorative and preventive treatment which are the causes for the extraction of the respective tooth causing partial edentulism [27,28]. The overall consensus agrees with the respective study [22]. Thus all the responses are implicated in clinical practice.

The study shows more prevalence of kennedy's class I in the maxillary arch and in the older individuals [29]. The incidence of partial edentulism was more in the maxillary arch because of the sequence of tooth eruption and there was increased incidence or carious lesions in the maxillary arch of frequency 62% [30]. Thus , this increases the chances of extraction finding in the particular tooth in the oral cavity respectively [31]. There are chances of caries incidence in the mandibular arch of 53% which is caused as a result of poor oral hygiene [32]. This causes tooth loss in the respective site of incidence of caries [33,34,35]. Thus, overall consensus agrees with the results of the study and evidence adds to the consensus to be recorded in the clinical practice.

This study is a unicentered study and the data is unclear in certain parameters. The particular data is considered among the population. The ethnicity of the population is an important factor of the patient [22]. Thus, in these cases a different set of population is considered.

The studies conducted are related to partial edentulousness patterns of tooth loss. The study helps to create an awareness of the importance of oral health and expresses the importance of oral health and the education of the maintenance of oral health. The measures to reduce tooth loss is to be introduced to cause reduced incidence of tooth loss and increased effective introduction of prosthodontic rehabilitation.

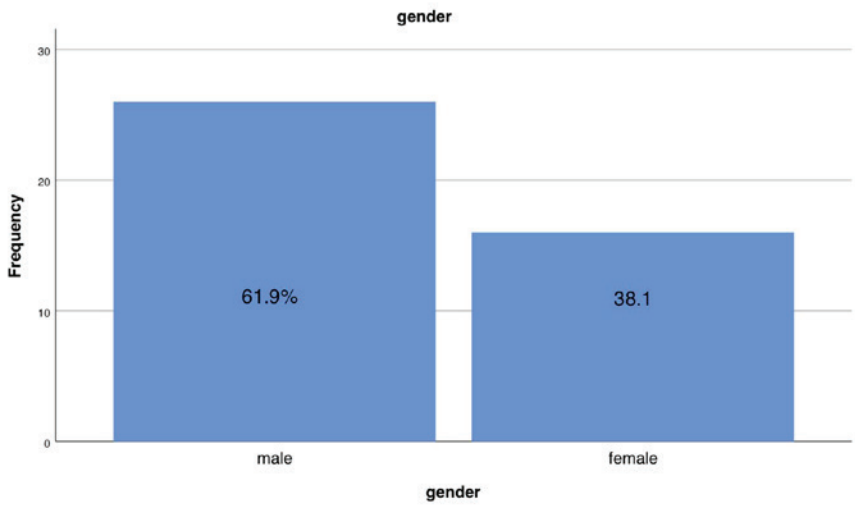

Figure 1- describes the frequency of male and female edentulism. X axis- describes the frequency of gender towards kennedys class I edentulism. Y axis- the frequency of data with respect to gender. Males showed 61.9% incidence where females showed 38.1% incidence.

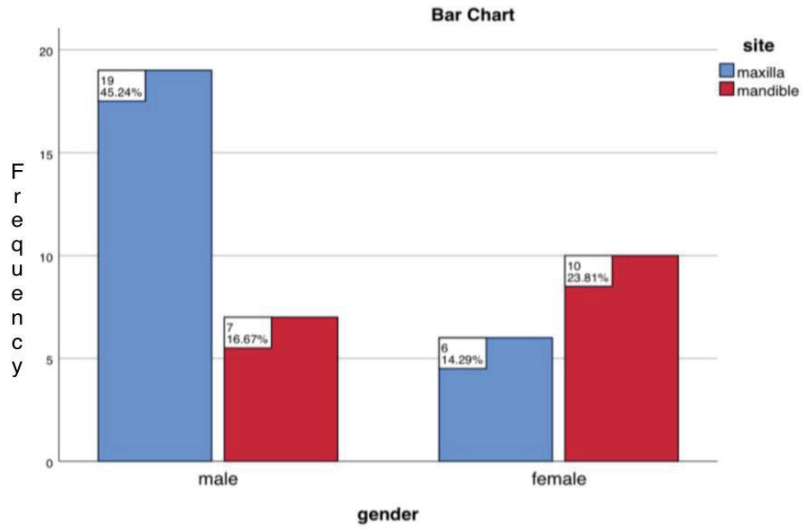

Figure 2: Describes the association between gender and partial edentulism with Kennedy's class I findings in maxillary and mandibular arch. X axis- Describes gender. Y axis- Describes the frequency of partial edentulism based on kennedy's class I in maxillary and mandibular arch. Blue colour denotes maxillary arch and red colour denotes mandibular arch. There was 45.24% incidence of kennedy's class I in maxillary arch and 16.67% incidence of kennedy's class I in the mandibular arch among male individuals and 14.29% incidence of kennedy's class I in the maxillary arch and 23.81% incidence of kennedy's class I in the mandibular arch among the female individuals. Chi-Square test was done and association was found to be statistically significant p=0.021, males had more maxillary arch partial edentulism than mandibular arch partial edentulism among kennedy's class I.

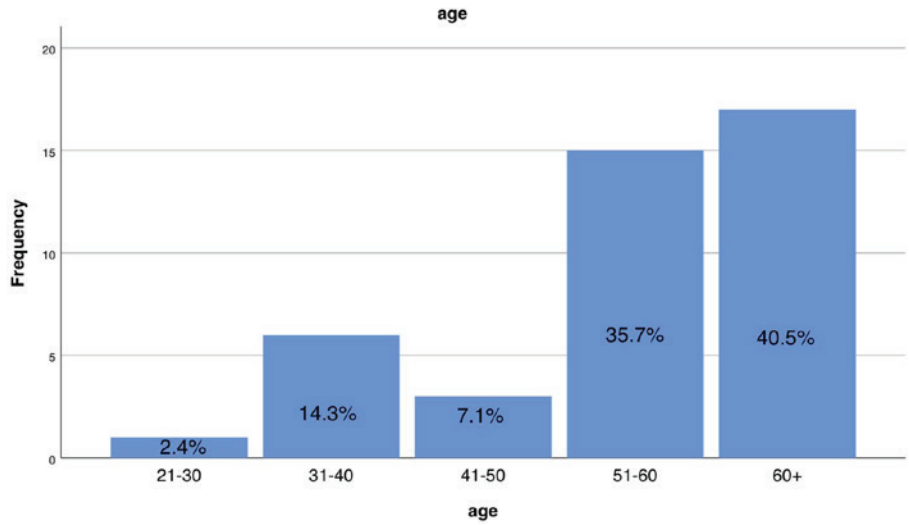

Figure 3: Describes the frequency of partial edentulism with kennedy's class I findings with respect to age. X axis - describes the frequency of age towards kennedy's class I partial edentulism. Y axis - describes the frequency of the respective data. There was an incidence of 2.4% in patients between 21-30 years, 14.3% in patients between 31-40, 7.1% in patients between 41-50 years, 35.7% in patients if age 51-60 years and 40.5% incidence in patients above 60 years of age.

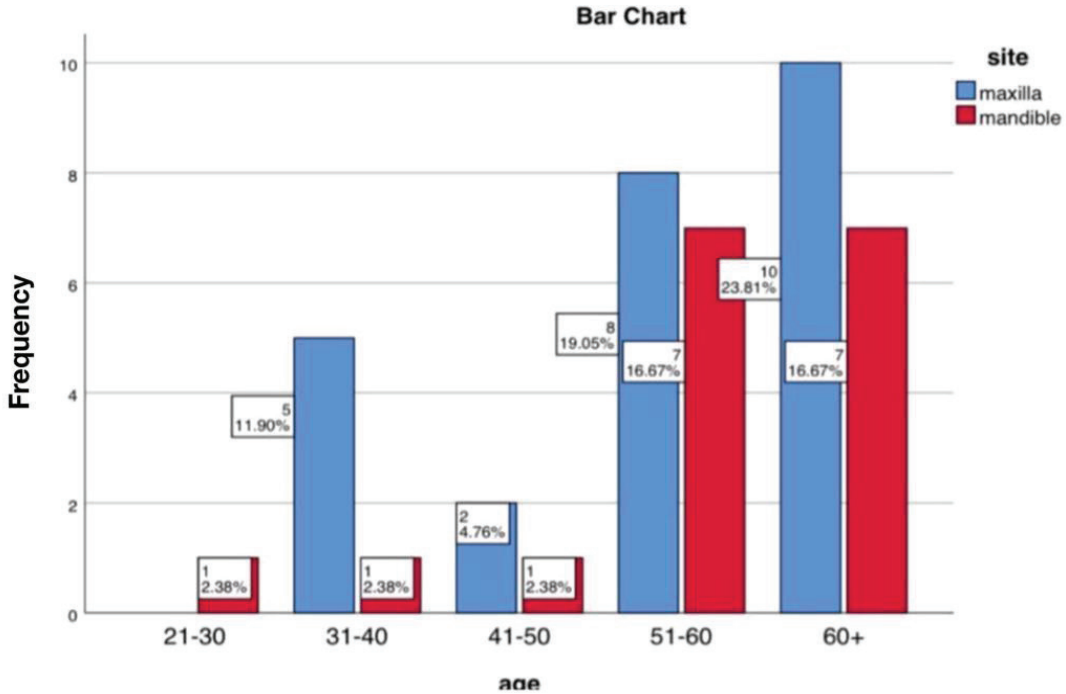

Figure 4: Describes the association between age and partial edentulism based on kennedy's class I findings in the maxillary and mandibular arch. X axis- describes the age groups. 21-30years, 31-40 years, 41-50 years, 51-60 years and 60+ years. Y axis- describes the frequency of partial edentulism based on kennedy's class I in the maxillary and mandibular arch. Blue colour denotes maxillary arch partial edentulism and red colour denotes mandibular arch partial edentulism. Chi square test was done and association was found to be statistically not significant p=0.051. Even though it was not significant, majority of the patients distributed in the age group above 60 years showed higher prevalence of partial edentulism based on kennedy's class I findings in the maxillary arch.

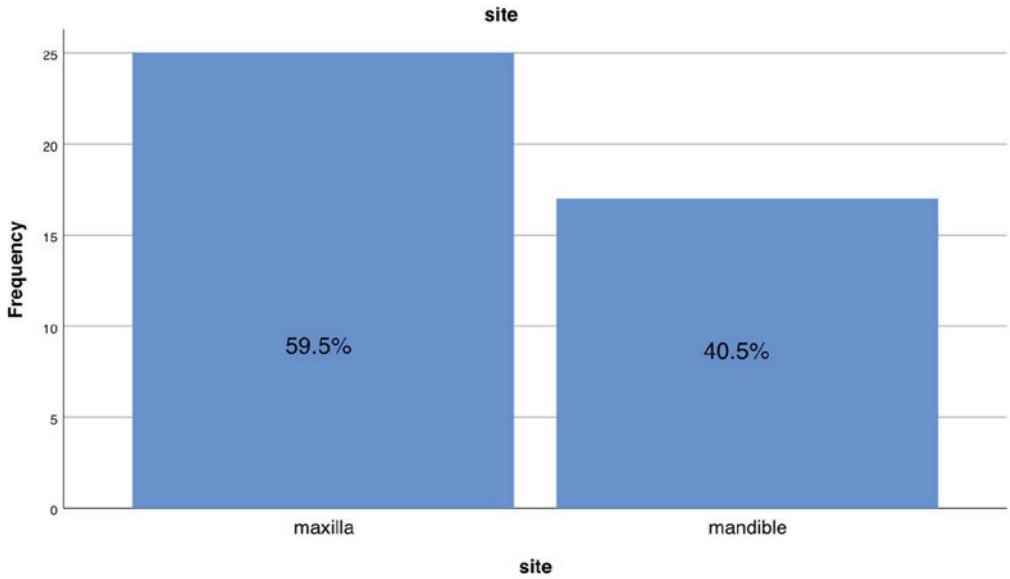

Figure 5: The frequency of partial edentulism with kennedys class I findings with respect to maxillary and mandibular arches. X axis- shows the frequency of kennedy's class I finding in relation to the maxillary and mandibular arches. Y axis- shows the frequency for kennedy's class I findings. There was an incidence of 59.5% in the maxillary arch and 40.5% incidence in the mandibular arch.

Conclusion

Within the limits of the study, male population had a high incidence of partial edentulism with kennedys class I classification and maxillary arch partial edentulism was found to be more common to mandibular arch partial edentulism.

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Ethical Clearance: It is taken from "Saveetha Institute Human Ethical Committee" (Ethical Approval Number- SDC/SIHEC/2020/DIASDATA/0619-0320)

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