Assessment of Partial Edentulism Based on Kennedy's Class III Classification

Palak Mayur Shah[1], Revathi Duraisamy[2], Manjari Chaudhary

[1]Research Associate, Dental Research Cell, [2]Senior lecturer, Department of Prosthodontics, Saveetha Dental College and hospitals, [3]Senior lecturer, Department of Oral Medicine, Saveetha Dental College and hospitals, Saveetha Institute of Medical and Technical Sciences (SIMATS), Saveetha University, Chennai, India

Abstract

Edentoulousness falls in a different category among the various conditions of dental origin. A partially edentulous arches classification helps to identify the possible combinations of teeth to edentulous ridges, thus facilitating discussion and communication among dental professionals. Kennedy's classification provides immediate visualisation and assessment of design features of removable partial dentures. The aim of the study was to assess the prevalence of partial edentulism based on Kennedy's class III situation in the upper arch among the patients visiting a private dental hospital. This retrospective study included 10,327 subjects who reported during June 2019 to March 2020. The sample size was collected and retrieved from the online database. Tabulation of data was done followed by statistical analysis. Out of the 10,327 subjects reported to the dental hospital, 6453 subjects were diagnosed with Kennedy's class III (62.4%). It was most commonly seen in age groups of 50-59 years (26.7%), and in males (54%). There was a significant association between gender and Kennedy's class III (p=0.000) and age and Kennedy's class III (p=0.000) Within the limits of the study, it was found that there was a significant relationship between gender and Kennedy's class III and age and Kennedy's class III.

***Keywords**: Upper arch, Kennedy's class III, Prevalence, Age, Gender*

Introduction

Tooth loss has an impact on an individual's oral health related to the quality of life at biological, social and psychological levels. [1,2] The teeth in the oral cavity provide the main functional component of the oral cavity. It provides various functions such as mastication, speech and esthetics. [3,4] Therefore, absence in the teeth results in difficulty in chewing, alteration of speech and esthetics. [5,6]. According to the World Health Organisation, it was stated that an adult should have a minimum of 21 teeth which are functional for a good dietary intake. Therefore, oral health plays an important role in the quality of life [7].

Tooth loss occurs in the oral cavity by various causes like dental caries, pulpal and periradicular, periodontal disease, trauma and various systemic diseases. [8,9] Tooth loss creates a space in the oral cavity which is called as edentulous spaces. Edentulism indicates the awareness of the oral health and treatment required and provided in the population.[10,11] The variation and location of the teeth and edentulous spaces is necessary to classify the partially edentulous arches. The purpose of classification provides communication between dental colleagues, students and technicians regarding the case, for a good treatment planning. It also predicts the difficulties which occur commonly with a particular removal partial denture. [12] People living in rural and remote areas may follow a form of healthcare based on ancient traditions, beliefs and cultural habits. A major challenge for the dental profession will be to plan oral healthcare for this

Corresponding author:
Revathi Duraisamy MDS
Senior lecturer, Department of Prosthodontics,
Saveetha Dental College and hospitals,
Saveetha Institute of Medical and Technical Sciences (SIMATS), Saveetha University,
Chennai, India
Email id: revathid.sdc@saveetha.com

group of patients, and the attitudes of adults to healthcare and acceptance of treatment will be of fundamental interest. To organize and implement adequate strategies for the prevention and treatment of oral diseases more information is required about the reasons for extraction of permanent teeth. [13]

Partially edentulous arches have been classified by various methods. The possible combinations of partial edentulism depending upon their incidence in maxillary and mandibular arches. [14] Among the various classifications like Kennedy's, Applegates, Avant, Eicher, American college of Prosthodontics, Kennedy's classification is widely studied and most accepted in the Dental community. [15,16,17] As per Kennedy's classification, there are four main types of partial edentulous arches such as Class I, Class II, Class III, Class IV. It is known to be widely accepted due to immediate visualisation and recognition of prosthesis support. Kennedy's class III is a unilateral edentulous space which is bound with natural teeth anterior and posterior to the edentulous space. It is known as tooth-borne support to remaining natural teeth. [18,19] The frequency of partial edentulousness seems to vary widely between different countries. The prevalence and patterns of tooth loss have been studied to a certain extent in western countries and a few such studies have been carried out in this country.

The aim of the study was to assess the prevalence of Kennedy's class III situation in the upper arch among the patients visiting Saveetha dental college and hospitals.

Materials and Methods

The study population consisted of 10,327 patients who reported to the private dental hospital from June 2019 to March 2020. Online database was used for data retrieval. Ethical clearance for this study was obtained from the institutional ethical board. Both males and females of the age group 18-90 years of age were taken into account.

All the case sheets available on the online database were taken for the study. Cross-verification of the data for error was done via photographs, data evaluation and presence of additional reviewers. 10,327 patients were included to minimise the sampling bias. Relevant data such as age and gender were recorded. Patient's Kennedy class III relationship was studied. Repeated and incomplete data records were excluded. Data was verified by an external reviewer.

Data was retrieved and entered in Microsoft Excel sheet and later exported to SPSS software (version 20.0) for statistical analysis. Independent variables included age and gender. Dependent variables included Kennedy's class III in upper arch. Both frequency and chi-square tests were employed. Level of significance was set as $p<0.05$ for this study.

Results and Discussion

Edentoulous arches fall in a different category among the various conditions of dental origin. A partially edentulous arches classification helps to identify the possible combinations of teeth to edentulous ridges, thus facilitating discussion and communication among dental professionals. Kennedy's classification provides immediate visualisation and assessment of design features of removable partial dentures.

This study found that 50-59 years of age was most commonly diagnosed with Kennedy's class III situation. [20] The prevalence rate of Kennedy's class III was found to be 62.1%. In the studies reported by Kruchinin et.al, [21,22] and Fayad et.al [23,24] reported that Kennedy's class III had prevalence of around 50-55% approximately.

According to the study, it was reported that there was a significant relationship between gender of the patient and prevalence of Kennedy's class III situation. Similarly, studies reported by Prabhu et.al, [25,26] that there was a significant relationship between the gender of the patient and Kennedy's class III. Niarchou et.al [27] and Shah et.al, [28] reported that there was no significant relationship between the gender and patient's diagnosed with Kennedy's class III situation.

According to our study, it was seen that males were more commonly diagnosed with Kennedy's class III than female subjects. Similar results were reported by Niarchou et.al, but the studies reported by Sapkota et.al [29] and Caldas et.al [30] reported dissimilar results saying that female subjects were more commonly diagnosed with Kennedy's class III than male patients.

In our study, it was seen that the most common age group to be prevalent to class III situations were 50-59

years. But, the studies reported by Abdel et.al [31] reported that young individuals between 30-40 years were more commonly diagnosed with Kennedy's class III and a statistical relationship was seen.

Further studies on the topic could involve larger sample size, treatment modalities and location could be multi-centre.

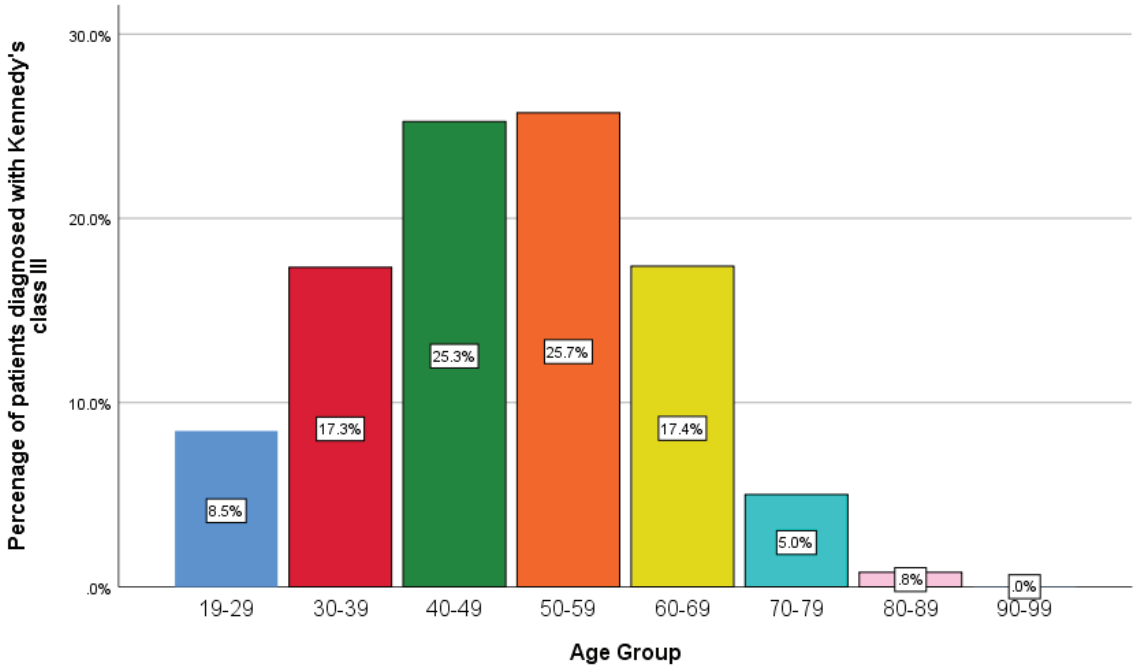

Figure 1: Bar graph showing the age distribution among patients diagnosed with Kennedy's class III in upper arch. X axis represents the age distribution while Y axis represents the count of patients. Highest number of patients seen between 50-59 years (26.7%) followed by 40-49 years (25.3%)

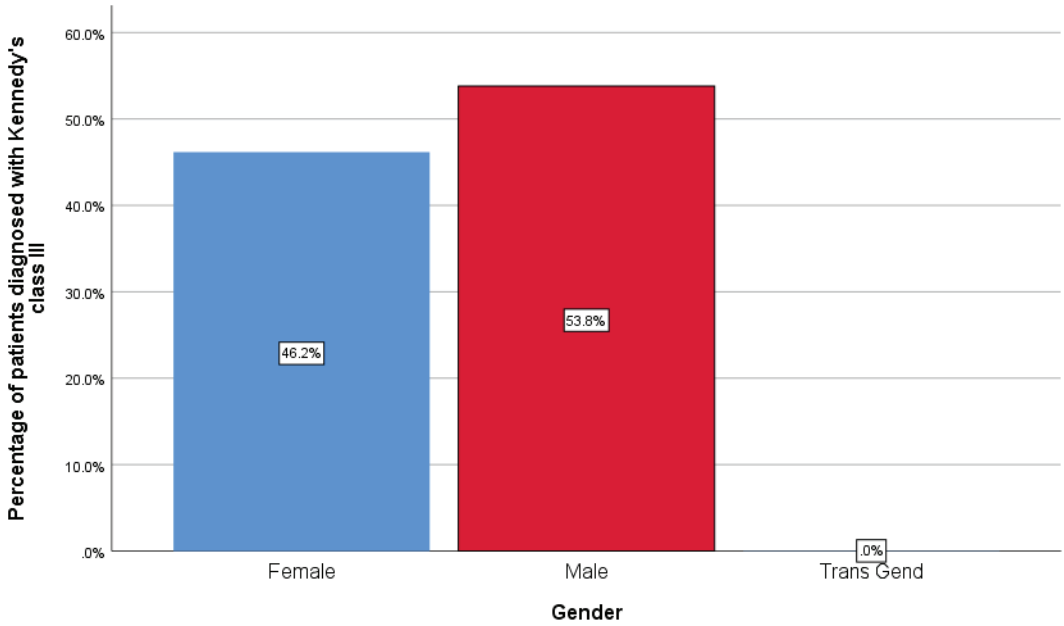

Figure 2: Bar graph showing the gender distribution among patients diagnosed with Kennedy's class III in upper arch. X axis represents the gender distribution while Y axis represents the count of patients. Highest

Kennedy's class III in upper arch was diagnosed in Males (53.8%) followed by female subjects (46.2%)

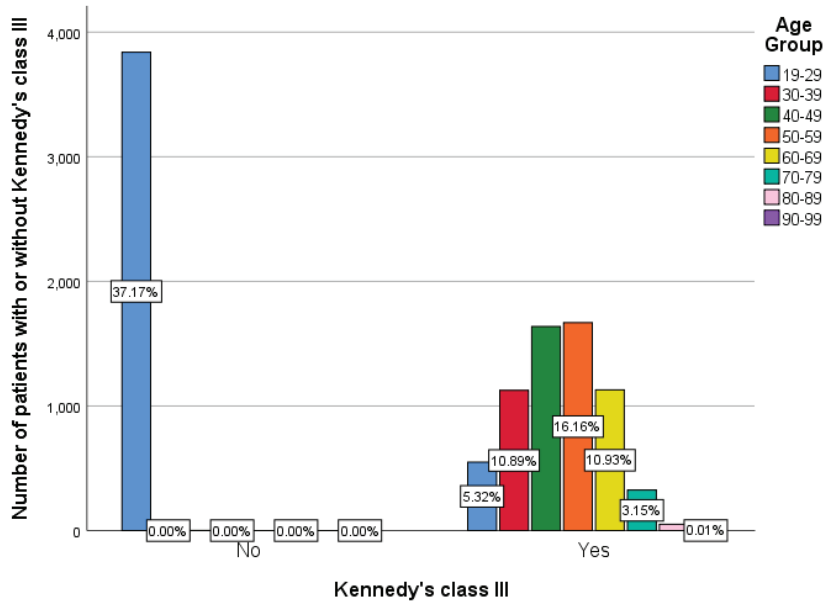

Figure 3: Bar graph showing the association between age group and Kennedy's class III in upper arch. The X axis represents the Kennedy's distribution between the age groups while the Y axis represents the count of patients. Blue represents 19-29 years, red - 30-39 years, green - 40-49 years, orange - 50-59 years, yellow - 60-69 years, light blue-70-79 years, pink - 80-89 years and purple- 90-99 years. Chi-square test was done and association was found to be statistically significant. Pearson's chi-square value: 8265.301,DF:2, p value: 0.000 (p<0.005), proving 50-59 years old were commonly diagnosed with Kennedy's class III.

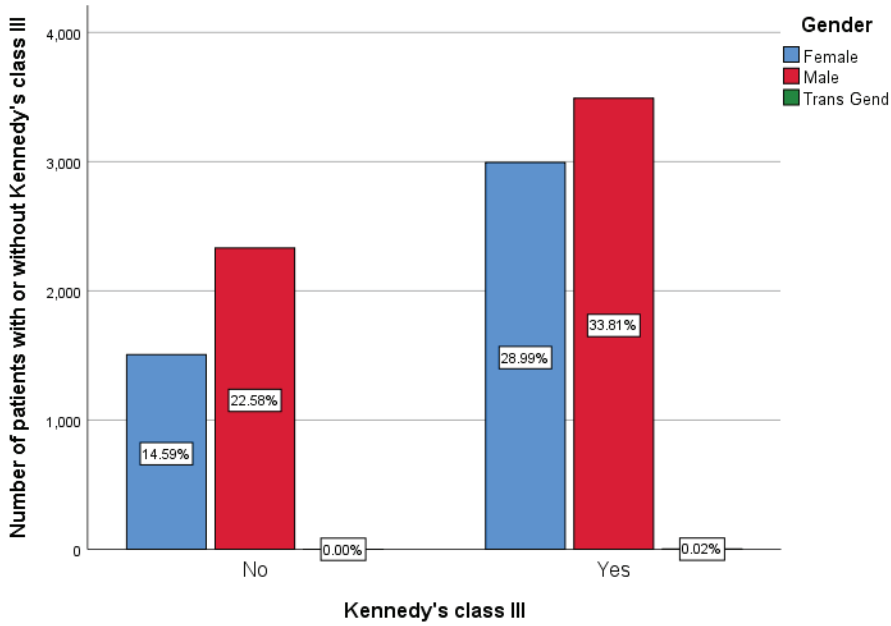

Figure 4: Bar graph showing the correlation between gender and Kennedy's class III in upper arch. The X axis represents the Kennedy's distribution between the gender while the Y axis represents the count of patients. Red represents male subjects, blu - female subjects, green - transgender. Red represents male subjects, blue- female subjects, green - transgender. Chi-square test was done and the association was found to be statistically significant. Pearson's chi-square value: 48.054,DF:2, p value: 0.000 (p<0.005), proving males were more commonly diagnosed with Kennedy's class III.

Conclusion

Within the limits of the study, the prevalence rate of Kennedy's class III situation in the upper arch was found to be 62.4% where the most prevalent age group was found to be 50-59 years with more male predilection. There was a significant association between age, gender and Kennedy's class III.

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

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