

ANALYSIS OF PARTIAL EDENTULISM OF KENNEDY CLASS IV BASED ON GENDER AND ARCH- A RETROSPECTIVE STUDY

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Background: Edentulism is a sequel of tooth loss that leads to impairment of function, comfort, esthetics and speech. Kennedy's classification is a common classification used to classify partial edentulism and It helps to understand edentulism in a defined manner. The partial edentulism patients may have physical variations and health that differ for each individual.

Aim: The aims of this study to evaluate the prevalence of Kennedy's Class IV classification based on gender and arch.

Materials and Methods: A retrospective study was conducted among patients visiting Saveetha Dental College and data were retrieved from Dental Information Archiving Software (DIAS). Parameters were assessed including gender and arches of Kennedy's Class IV classification. Data were collected and tabulated in Microsoft Excel sheets and Statistical analysis was done using SPSS Software. The association between study variables was calculated using the Chi-Square test, where $p < 0.05$ was considered statistically significant.

Results: In this study, a total of 96 patients with partial edentulism of Kennedy's Class IV are more common in males (60.4%) than females and the most common arch was found to be mandibular arch (50.1%). There is no significant difference between the gender and arches for patients with Kennedy's Class IV partial edentulism ($p > 0.05$). Hence, statistically not significant.

Conclusion: Within the limits of this study, this study showed that the prevalence of Class IV Kennedy's classification of partial edentulous, male patients is most affected and the lower arch is being the most common arch.

Keywords: Kennedy's classification; Gender; Partial edentulism

INTRODUCTION

Partial edentulous is a dental arch in which one or more not all natural teeth are missing (Ariga *et al.*, 2018). Generally, it occurs by extensively carious or periodontally compromised teeth. It also occurs due to traumatic injuries, impaction, neoplastic and cystic lesions involving the teeth (Jyothi, Robin, Ganapathy and Anandiselvaraj, 2017). Some studies have reported caries as the main causative agent for tooth loss (Kiran Kumar Pandurangan, Veeraiyan and Nesappan, 2020). Other studies also explain dental caries and periodontal disease were the major cause of tooth loss in early childhood and adolescence (Selvan and Ganapathy, 2016a). Studies have shown that age as a factor positively with partial edentulism (Ganapathy *et al.*, 2016).

Partially edentulous arches have been Classified by various methods (Subasree, Murthykumar and Dhanraj, 2016). The possible combinations of partial edentulism are more than 65,000 depending on their incidence in maxillary and mandibular arches (Ranganathan, Ganapathy and Jain, 2017). The primary objective of the classification is to facilitate the communication about the combination of missing teeth to edentulous ridges among students, dental practitioners and laboratory technicians (Ganapathy, Kannan and Venugopalan, 2017). Among the various methods of classification like Kennedy, Applegates, Avant, Neurohar, Eichner, ACP (American College of Prosthodontics) etc, Kennedy's classification is widely studied and clinically accepted by Dental Community (Ashok and Suvitha, 2016). As per Kennedy's classification, there are four main types of partially edentulous arches as Class I, Class II, Class III and Class IV. Kennedy's classification is widely accepted due to its advantages of immediate visualization and recognition of prosthesis support (Ashok *et al.*, 2014). The patterns in the incidence of the various Classes of removable partial dentures should be reviewed periodically to serve as teaching guidelines (Venugopalan *et al.*, 2014b)

Partial edentulism leads to several drawbacks to the subjects including clinical challenges and lifestyle compromises (Kannan and Venugopalan, 2018). Clinically partial edentulism results in drifting and lifting of adjacent teeth, supra eruption of opposing teeth altered speech. Changes in facial appearance and temporomandibular disorders. The loss and continuing degradation of the alveolar bone, the adjacent teeth and also the supporting structures will influence the difficulty to achieve an adequate restoration in a partially edentulous patient. On lifestyle compromises, partial edentulism restricts dietary options, which leads to weight loss. Further, it leads to lack of confidence and confined social activities, which may adversely affect the quality of life and lead to psychological dissatisfaction (Basha, Ganapathy and Venugopalan, 2018)

Partial edentulism is one of the widely studied topics in dentistry. The pattern of partial edentulism has been evaluated in many selected populations in different countries. Several studies have analysed the correlation between partial edentulism and its influencing factors like socio-economic parameters, age, gender, etc. (Vijayalakshmi and Ganapathy, 2016a). Few studies also have analysed the awareness among the subjects to replace the missing teeth. Surveying of RPDs, patients visiting clinics, clinical records and population in a particular locality has been the common method of evaluation of partial edentulism. Most commonly, studies have been done by recording patient details through a questionnaire and then by clinical examination (Ajay *et al.*, 2017).

Gender has been one of the key factors analysed by various authors. Most of the authors have concluded that there is no significant gender correlation with the occurrence of partial edentulism. However, few studies have observed that there has been a significant relationship between gender and various Classes of partial edentulism. In addition, studies have reported that women have more awareness to restore the same than men. This may be because women are more conscious about their appearance and have better health-seeking behaviour. Our team has extensive knowledge and research experience that has translate into high quality publications (Kumar *et al.*, 2006; Devi and Gnanavel, 2014; Varghese *et al.*, 2015; Sivamurthy and Sundari, 2016; Chen *et al.*, 2019) (Rao and Kumar, no date; Nair, Jeevanandan and Vignesh, 2018; Anbu *et al.*, 2019; Sekar *et al.*, 2019; Johnson *et al.*, 2020). Now the growing trend in this area motivated us to pursue this project. Hence, this purpose of this study was to evaluate the Kennedy Class IV based on genders.

MATERIALS AND METHODS

Study Setting

A retrospective study was conducted among partially edentulous patients with Kennedy's Class IV who visited Private Dental Hospital, Chennai. Ethical approval for the study was granted by the Institutional Ethical Committee, IEC approval number: SDC/SIHEC/2020/DIASDATA/0619-0320.

Study Subjects

A total of 96 subjects participated in this study, of which 38 were females and 58 were males.

Methodology

The data were reviewed of 86,000 patient records between 01 June 2019 and 31 March 2020 based on data availability from Dental Information Archiving Software (DIAS). Informed consent was obtained from the patients. Clinical examinations were analyzed thoroughly and verified with intraoral photographs by another examiner.

Inclusion criteria:

Patients who are partially edentulous with Kennedy's Class IV (A single but bilateral (crossing the midline) edentulous area located to the anterior of the remaining natural teeth).

Exclusion criteria:

Patients with complete edentulism, missing third molars and Incomplete data were excluded from this study.

Statistical Analysis

The data was collected and imported in Microsoft Excel sheets which were transferred into SPSS Statistics software for Windows, Version 20.0. Chicago (IBM corporation) for statistical analysis Descriptive statistics and Chi-square test was used to determine the correlation between the variables, where p value < 0.05 is considered statistically significant with a confidence interval of 95%.

RESULT AND DISCUSSION

Previously our team has conducted numerous original studies (Ashok *et al.*, 2014), (Venugopalan *et al.*, 2014a), (Ganapathy *et al.*, 2016), (Selvan and Ganapathy, 2016b), (Jyothi, Robin, Ganapathy and Others, 2017), (Reddy, Ganapathy and Kumar, no date; Shree, Kumar and Ganapathy, no date; Subasree, Murthykumar and Dhanraj, 2016; Vijayalakshmi and Ganapathy, 2016b; Ariga *et al.*, 2018; Basha, Ganapathy and Venugopalan, 2018; Anjum,

Ganapathy and Kumar, 2019; Inchara, Ganapathy and Kumar, 2019; Ramya, Pandurangan and Ganapathy, 2019; K. K. Pandurangan, Veeraiyan and Nesappan, 2020) over the past 5 years. The plan for this study stemmed from the current interest in our community.

In this present study, out of 96 patients of Kennedy’s Class IV, we observed that 58 (60.4%) were males have more prevalence (Figure 1). Partial edentulism with Kennedy’s class IV was more common in the mandibular arch (50.1%) (Figure 2). The results of this present study showed that there is no significant association between gender and arches ($p > 0.05$). patients with Kennedy’s Class IV partial edentulism were analysed and correlated with their gender and occurrence in different arches (Figure 3).

In previous studies, the study was done by Jandial et al., In the population of Jammu and Kashmir, India showed similar findings, where males have a higher prevalence (23.3%) compared to females (Zargar, Tantray and Lone, 2019). In contrast, studies done by Sharma et al., showed different findings where females are more prevalent than males (Sharma, 2019).

Comparing the prevalence of arch with Kennedy’s Class IV, a previous study was done by Manal et al., in Pakistan, the population showed similar results. In this study, the mandibular arch has a higher prevalence with 60.0%, compared to maxillary arch (Shubita, 2015). However, in the study of Iraq population, the result showed that maxillary arch was more prevalent than the mandibular arch which is 6.6% with different findings (Saleh, Tahir and Abdel-Rahman, 2013).

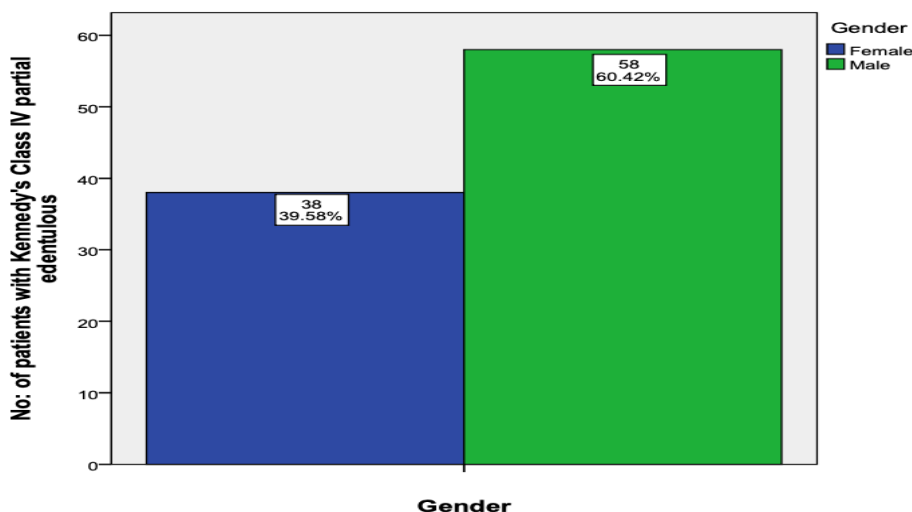


Figure 1: Bar chart depicting the gender wise distribution of patients with Kennedy’s Class IV partial edentulism. X-axis denotes the gender of the patients and Y-axis denotes the number of patients reported with Kennedy’s Class IV partial edentulism. From the graph we infer that the most common gender affected were males with the percentage of 58 (60.42%) (green colour).

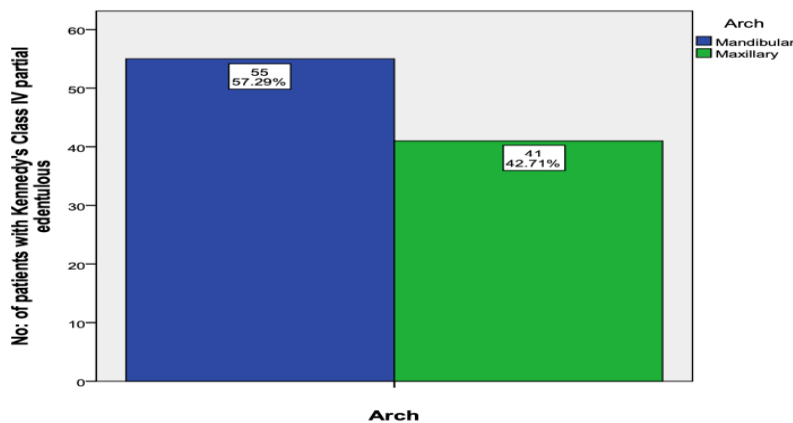


Figure 2: Bar chart showing the distribution of patients reported with Kennedy’s Class IV partial edentulism based on

arch. X-axis denotes the different arches and Y-axis denotes the number of patients reported with Kennedy's Class IV partial edentulism. Kennedy's Class IV partial edentulism was more common in mandibular arch (57.29%).

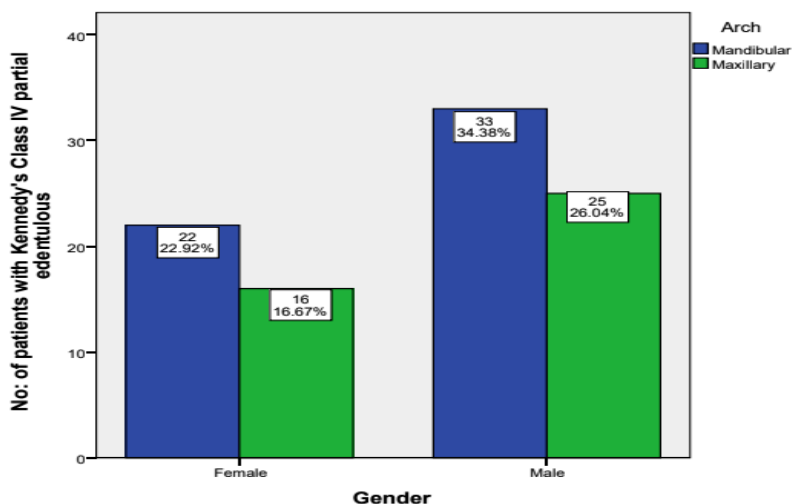


Figure 3: Bar chart depicting the association of the gender and different arch for patients with Kennedy's Class IV partial edentulism. X-axis denotes the gender and Y-axis denotes the number of patients with Kennedy's Class IV partial edentulism. From the graph we can conclude that in males, mandibular arch (blue colour) is more common meanwhile in females, mandibular arch (blue colour) is more common, however it is statistically not significant. (Chi-Square test done, $P > 0.05$, which is statistically not significant).

The limitations of the present study is a limited sample size. It is a single centred study and it does not include other ethnic populations. Further studies can be executed in future scope with larger sample size and will aid in the forethought the need of the community regarding prosthesis which assist in evolving preventive programs to avoid losing their teeth. Our institution is passionate about high quality evidence based research and has excelled in various fields (Pc, Marimuthu and Devadoss, 2018; Ramesh *et al.*, 2018; Ezhilarasan, Apoorva and Ashok Vardhan, 2019; Ramadurai *et al.*, 2019; Sridharan *et al.*, 2019; Vijayashree Priyadharsini, 2019; Mathew *et al.*, 2020). We hope this study adds to this rich legacy

CONCLUSION

Within the limits of this study, the study showed that Kennedy's Class IV of partial edentulism was more common in males than females and most commonly involved in the mandibular arch. There is no significant association between the gender and the different arches for patients with Kennedy's Class IV partial edentulism. There are various factors that contributed to the findings such as different levels of education and socioeconomic status of the patients. The level of awareness of tooth preservation varies from each person as some of the patients tend to be unaware and careless leading to the development of gross dental caries and losing the tooth.

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AUTHOR CONTRIBUTIONS:

Ajrish George S has contributed to data collection, study design, data analysis, results, tables, and manuscript preparation.

Dr Kiran Kumar Pandurangan has contributed to the manuscript preparation, proofreading of the manuscript, and reviewing the manuscript.

Dr Nashra Kareem has contributed to reviewing the manuscript.

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