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Clinical Predictors of Tooth Loss Due to Periodontal Disease- A Retrospective Analytical Study

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ABSTRACT

The relationship between the oral hygiene or health and tooth retention is complex. Periodontal disease is a main reason for tooth loss. Contribution of certain modifying factors like socioeconomic characteristics, cultural beliefs, dental care access may influence the tooth loss too. The aim of this study is to assess the clinical predictors of tooth loss due to periodontal reasons. The data of patients' records between june 2019 and march 2020 was reviewed and analysed. Among them a total of 337 patients were examined from the recorded details. Documented information included patient's age, gender, dental history, periodontal status and oral surgery status. All the 337 patients underwent extraction due to periodontal reasons. 63.2% of this population was predominantly males and 36.8% of them were females. Highest prevalence of tooth loss was found among the individuals aged 60 years and above (38.6%) followed by 51-60 years with 31.1%. Mobility among the periodontal issues were the major cause of tooth loss. In Conclusion, the present study shows that elderly males had increased risk for tooth loss due to periodontal disease. The periodontal reasons for tooth loss were mainly mobility followed by furcation involvement.

Keywords: *Periodontal disease, Predictors, Tooth loss*

INTRODUCTION

Tooth loss in adults and elderly individuals has been an oral health challenge for a long period of time. Tooth loss was shown negative impacts on the quality of life and interferes with work activities of the individuals[1]. Esthetics, diction and chewing ability are interfered by missing teeth. Tooth loss induces low self esteem that hinders an individual's ability to socialize, hampers the individual's daily activities, performance of work and leads to absence from work[2]. Thus, the identification of tooth loss risk indicators among people is an important public health measure.

Caries and periodontal disease play an important role in tooth loss among adults. Several studies declare that periodontal disease affects a large group of individuals that exhibits increased susceptibility to periodontal destructions[3–5]. In addition to clinical causes, other factors like lifestyle, socioeconomic status, demographic, age, gender, smoking, medical conditions, etc are associated with tooth loss[6]. Contribution of these factors to periodontal disease may vary geographically or racially.

The prevalence of missing teeth was defined as the percentage of individuals with one or more missing teeth, and the extent was defined as the number of missing teeth per person[7]. Identifying the factors associated with tooth loss due to periodontal disease may aid in strengthening the evidence of these factors as risk determinants of periodontal disease severity[8]. Investigations into susceptibility to periodontal disease have taken on a wider significance with the knowledge of possible links between the systemic health of the individual and their periodontal status[9]. Success is measured by the declining rates of edentulism and an increase in the number of retained teeth[10].

In 2010, about 2.3% of the global population representing 158 million people worldwide was edentate, the standardized global age prevalence had a decrease from 4.4% to 2.4% of severe tooth loss in the entire population was seen between 1990 and 2010. However, very limited data was available in India about tooth loss[11]. A study done on South Indian showed a mean tooth loss of 10.98 among adults aged over 60 years[12]. In Nellore, the tooth loss prevalence was 81.8% and most of it is contributed by missing components which is about 77.1%.[13]

Several studies have demonstrated the effectiveness of periodontal therapy in reducing the rate of tooth loss [14–16] and established the importance of patient compliance with adequate oral hygiene measures [17–20]. Previously our team had conducted numerous clinical trials , in-vitro studies, surveys, and reviews over the past many years [21–30]

Now we are focusing on epidemiological studies. The aim of the present study was to assess the clinical predictors of tooth loss due to Periodontal disease.

MATERIALS AND METHODS

A retrospective hospital based study was conducted by evaluating and analysing 337 patient case records visiting Saveetha Dental College and Hospitals from June 2019 to March 2020 who had undergone extraction due to periodontal disease. Data such as age, gender, tooth involved and reasons for extraction were documented. The data collected were cross verified with intraoral photographs. Ethical clearance was obtained from the institutional ethical committee. The data was reviewed and subjected to statistical analysis using IBM SPSS software version 20.0.

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RESULTS AND DISCUSSION

During the study period, a total of 337 patients had undergone extraction due to periodontal reasons. Among the examined 337 patients, 63.2% of this population was male and 36.8% of them were females (Table 1). Patients with tooth loss due to periodontal reasons especially due to grade III mobility was significantly higher with 47.18% than the patients losing their teeth for other reasons like grade II mobility, furcations involvements, etc (Figure 1).

Tooth loss among the individuals aged 60 years and above (38.6%) were most predominant followed by 51-60 years with 31.1% (Table 1). Among the periodontal issues, grade III mobility was the most common cause for extraction of teeth, especially among the age group of 51-60 (58.10%) followed by the age group of 31-40 (57.14%) with statistically significant p value <0.05 (Figure 2). According to gender wise distribution of predictors for tooth loss due to periodontal disease, males were most predominantly affected when compared to females. However it is statistically insignificant with p value >0.05 (Figure 3).

Age and tooth loss are directly related in this study, but this is lower than the relation found in the National Oral Health Survey of India[31]. Highest prevalence of tooth loss was among the age group of 45-65 years. Begum et al.[32], showed an increase in tooth loss above 50 years of age (96%) in Nellore district. A study done in Piracicaba School of Dentistry University of Campina, by Maritia Jesus Batista et al.[33], revealed the highest prevalence of tooth loss among 65-74 years (93%) of age. The cumulative effect of dental lack of oral health care measures towards dental diseases are the reason for greater tooth loss among the older age groups. It may also reflect from the unavailability of case, past economic and social conditions, etc. it also has been reported that age alone is not responsible for the deterioration of oral health[34,35].

In the present study, males lost more teeth compared to females. In accordance, Begum et al., showed a male predominance of 64.29% [32]. Whereas in contradiction, female predominance was seen in certain studies [36,37]. The female population are conscious about their looks, fear, psychosis that losing tooth is a sign for aging, the negative impact of bleeding gums and halitosis might affect their socialization and personality, hence this encourages females to maintain good oral hygiene, which might have resulted in lesser tooth loss among them than males[38,39]. This study also indicated that 47.18% of the tooth loss was due to grade III mobility. Similar to a study done by Al-Shammari et al.[40]

The periodontal mortality was found to be associated with the mobility and loss of periodontal attachment with advanced periodontitis contributing to major tooth loss in this population. The limitation of the study conducted is the unavailability of location specific datas. Hence, the results of this study must be interpreted with the limitations of this study and further investigation must be done.

TABLE 1: describes the distribution of study population based on Age and Gender. It is found that the majority of the participants have lost their teeth after 40 years of age. Only 5.1% of the participants below the age of 40 yrs have lost their teeth due to periodontal disease.

Age in Years	Gender		Total
	Male	Female	
20-30	5(1.5%)	5(1.5%)	10 (3%)
31-40	3(0.9%)	4(1.2%)	7 (2.1%)
41-50	41(12.2%)	44(13.0%)	85(25.2%)
51-60	62(18.4%)	43(12.7%)	105 (31.1%)
60 and above	102(30.3%)	28(8.3%)	130 (38.6%)
Total	213 (63.2%)	124(36.8%)	337 (100%)

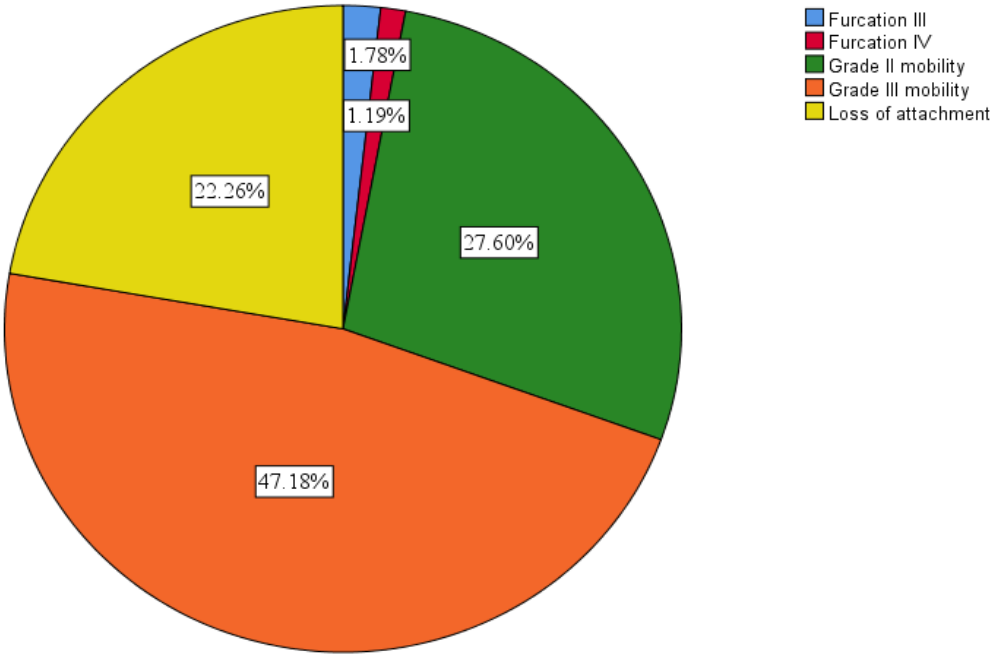

FIGURE 1: represents the frequency distribution of the reason for tooth loss among the study population. It was found that Grade III tooth mobility (47.18%) was the major cause for tooth loss followed by grade II mobility (27.6%) and loss of attachment (22.26%).

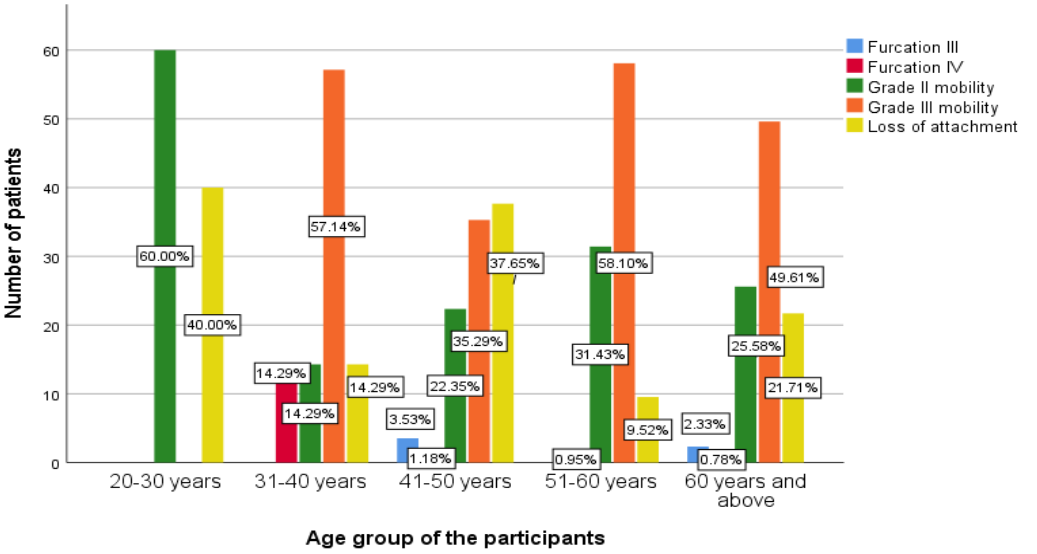

FIGURE 2: depicts correlation of tooth loss due to periodontal disease based on age. X axis represents the age group of the participants and Y axis represents the number of participants in percentage. The association between the age group of the participants and the reasons for tooth loss among the study population is found to be statistically significant, thus showing that Grade III mobility was a major cause for tooth loss among the age group of 51-60 (58.10%) followed by the age group of 31-40 with 57.14%. Pearson chi square value= 48.589,df= 16, p value= 0.000 (<0.05).

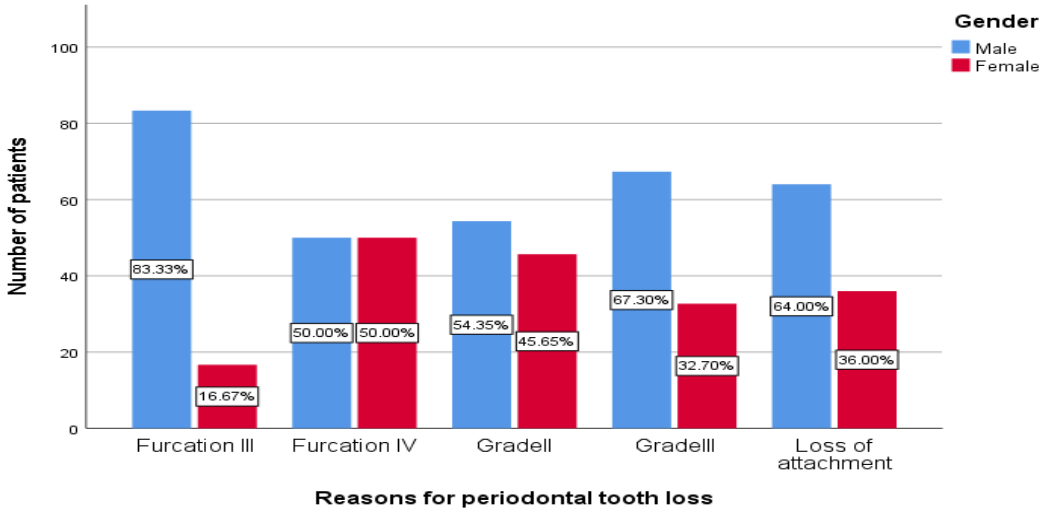

FIGURE 3: depicts correlation of tooth loss due to periodontal disease based on gender. X axis represents the reasons for periodontal tooth loss and Y axis represents the number of participants in percentage. The association between the gender of the participants and the reasons for the periodontal tooth loss among the study population was found to be statistically insignificant. Males (blue) were most predominantly affected with tooth loss caused due to periodontal reasons when compared to females (red). Pearson chi square value= 5.309, df= 4, p value= 0.257 (>0.05).

CONCLUSION

In Conclusion, the present study showed that elderly males had increased frequency of tooth loss due to periodontal disease. The periodontal reasons for tooth loss were mainly mobility followed by furcation involvement. Also, it would need further investigations to address variables such as cultural differences, health habits, diet and socio-economic status.

AUTHORS' CONTRIBUTIONS

All authors contributed to the design and implementation of the research, analysis of the results and to the writing of the manuscript.

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Nil

CONFLICT OF INTEREST

The authors declare that they have no conflicts of interest.

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