

Partial Edentulism and its Association with Socio-Demographic Variables among Subjects Attending Dental Teaching Institutions, India

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Abstract:

Background: Despite advances in preventive dentistry, edentulism is a major public health issues worldwide. Edentulism is an enervating and unrepairable condition and is described as the "final marker of disease burden for oral health." The objectives of the present study are to determine the relationship between socio-demographic variables and partial edentulism, and to evaluate the prevalence of various classes of partial edentulism by using Kennedy's classification.

Materials and Methods: Cross-sectional, descriptive study was conducted in an institution, on randomly selected individuals. The study group included adult patients who attended the outpatient Department of Prosthodontics during February-April 2015 formed the study participants. Data were collected by using a pre-formed pro-forma and Chi-square test was used to explore the relationship between two variables.

Results: A population comprised of 384 individuals between the age group of 18 and 35 years. Of these, 204 (53.12%) were males and 180 (46.88%) were females. Two hundred and eighty eight individuals were partially edentulous showing a prevalence rate of 75%. 51.04% of the study subjects were lost their teeth because of periodontol disease. 73.4% belonged to the upper middle class and 75.4% were in lower middle class in partially edentulous subjects. 45.8% had a fair oral hygiene status. Kennedy's class III was the most common type of partial edentulism in upper jaw and lower.

Conclusion: The present study concluded that prevalence of partial edentulism among the study population was high. They need community-based oral health programs to increase the awareness and reduce the risk of tooth loss.

Key Words: Kennedy's classification, partial edentulism, teaching institution, tooth loss

Introduction

One of the most important oral health indicators is the ability to retain more number of teeth throughout life. Edentulism or complete tooth loss is prevalent worldwide among older people. Earlier studies have shown that edentulism affects the health and the overall quality of life of the elderly.¹ Earlier studies have shown an association between socio-demographic factors, lifestyles, and tooth loss¹⁻³ these surveys helps get an information necessary to assess treatment needs. Tooth loss is mainly attributed to dental caries and gum disease. However, factors that lead to tooth extraction are not always dental in origin. 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.⁴ Women with a low education level, low economic status, and those who did not brush their teeth showed a higher average of missing teeth.⁵ Age, gender, low family income, and rural domicile have been associated with edentulism.⁶ Tooth loss impairs the quality of life, and also it affects the well-being of the person. Missing teeth can interfere with chewing ability, diction, and esthetics. Low self-esteem related to tooth loss can hinder an individual's ability to socialize, hamper the performance of work and daily activities, and lead to absence from work.⁷ Information about the frequency of tooth loss and its risk factors in developing countries is sparse. Relatively very few studies have been conducted to know the risk indicators related with tooth loss among Indian adults.^{8,9} They reported that perceived need and attitudes toward dental care had an important influence on the use of care. The older people prompted to have a fatalistic attitude and were least likely to attend the dentist.

Missing teeth are a common manifestation in patients reporting to the outpatient department (OPD) of SJM Dental College and Hospital, Chitradurga, India; as of now there are no studies which investigated the prevalence of tooth loss and its associated risk factors among individuals from Chitradurga district, India. Hence, the present study was aimed to determine the relationship between socio-demographic variables and partial edentulism, and to evaluate the prevalence of various classes of partial edentulism by using Kennedy's classification.

Materials and Methods

This cross-sectional, descriptive study was conducted at SJM Dental College and Hospital Chitradurga, India. A pilot study was conducted to know the prevalence of partial edentulism by

including a total of 30 subjects the data used in the pilot study was not included in the final analysis.

Sample size determination: Sample size was calculated using the formula:

$$n = \frac{4pq}{d^2}$$

P = 60%, q = 1-p, d = Precision of 5% required sample size was 384.

Data collection

The study was planned in the month of January and patients who attended the OPD of prosthodontics during February-April 2015 formed the study participants. Necessary ethical clearance was obtained from Institutional Review Board and informed consent was obtained by all the participants.

Participant who are in the age group of 18-35 years were involved in the study. Information was collected by using a structured pro-forma, followed by an oral examination of an individual by a single examiner. The pro-forma consisted of socio-demographic variables such as age, gender, socio-economic status, demographic background, oral health practices, pastoral history, purpose for replacement of teeth, and preferred treatment option.

Clinical examinations were conducted in accordance with the procedures and diagnostic criteria recommended by the World Health Organization, 1997.¹⁰ Kuppuswamy scale¹¹ was used to assess socio-economic status of the individuals. The oral hygiene status was determined using the Simplified Oral Hygiene Index (OHI-S).

Data were done using statistical software (SPSS version 17). Chi-square tests were performed and P values were calculated for each characteristic. P < 0.05 (95% level of confidence) was considered statistically significant.

Results

The study population comprised 384 individuals between the age group of 18 and 35 years. Of these, 204 (53.12%) were males and 180 (46.88%) were females (Table 1).

There were 288 partially edentulous patients indicating a prevalence rate of 75%, 54 completely edentulous patients (14.06%) and 42 completely dentulous patients (10.93%). The proportion of population with partial edentulous was more and a chi-square analysis for gender difference revealed statistically highly significant difference. Table 2 shows that there was no statistically significant association between type of residence and edentulousness among study subjects.

The majority of the study subjects were lost their teeth because of periodontol disease (51.04%). And 37.84% subjects were

lost their teeth because of decay as shown in Table 3. Table 4 shows that majority of the study subjects were belonging to the upper middle class in partially edentulous state, 15.8% of dentulous were in lower middle class, and 14.1% of edentulous were in upper middle class. Table 5 shows that most of the subjects (54.16%) are desired to replace their teeth because of functional and esthetic purpose. Table 6 shows that there was no statistically significant association between OHI-S and edentulism among study subjects.

Table 1: Distribution of study subjects according to gender and type of edentulousness.

Gender	Partially edentulous (%)	Dentulous (%)	Edentulous (%)	χ ² value and P value
Males (204)	138 (47.9)	45 (83.3)	21 (50)	23.090 0.000 (HS)
Females (180)	150 (52.1)	9 (16.7)	21 (50)	
Total	288 (75)	54 (14.06)	42 (10.93)	

P<0.05, HS: Highly significant

Table 2: Type of residence and edentulousness among study subjects.

Residence	Partially edentulous (%)	Dentulous (%)	Edentulous (%)	χ ² value and P value
Urban				0.058 0.972 (NS)
Males	81 (48.79)	27 (84.37)	12 (50)	
Females	85 (51.20)	5 (15.62)	12 (50)	
Total	166 (57.63)	32 (59.25)	24 (57.14)	
Rural				
Males	57 (46.72)	18 (81.81)	9 (50)	
Females	65 (53.27)	4 (18.19)	9 (50)	
Total	122 (42.36)	22 (40.74)	18 (42.85)	
Overall	288 (75)	54 (14.06)	42 (10.93)	

P<0.05, NS: Non-significant

Table 3: Reason for loss of teeth among partially edentulous patients.

Reason	Number of patients	Percentage
Decay	109	37.84
Periodontal disease	147	51.04
Trauma	22	7.63
Others	10	3.47

Table 4: Social class and edentulism among study subjects.

Edentulousness	Upper class (%)	Upper middle (%)	Lower middle (%)	Lower upper (%)	χ ² value and P value
Partially edentulous	9 (100.0)	141 (73.4)	129 (75.4)	9 (75.0)	8.544 0.201 (NS)
Dentulous	0 (0)	24 (12.5)	27 (15.8)	3 (25.0)	
Edentulous	0 (0)	27 (14.1)	15 (8.8)	0 (0)	

P<0.05, NS: Non-significant

Table 5: Reason for replacement among partially edentulous patients.

Reason	Number of patients	Percentage
Fuction	76	26.38
Function/esthetic	156	54.16
Esthetics	56	19.44

Distribution of different classes of partial edentulous patients according to Kennedy’s classification of upper and lower jaw shown in Figures 1 and 2.

Discussion

Loss of teeth reflects a major public health problem in many countries.¹² Edentulism has a significant impact on health and the overall quality of life.¹³ Studies on self-perception have shown that tooth loss is associated with aesthetical, functional, psychological, and social impacts on individuals.^{1,14-16}

In the present study, there were 288 partially edentulous patients indicating a prevalence rate of 75%, 54 completely edentulous patients (14.06%) and 42 completely dentulous patients (10.93%). Which is in contrast with the few studies^{17,18} where, complete edentulousness was more prevalent among rural adults and several other studies have shown no association between tooth loss and the place of residence,^{19,20} it is similar to the present study.

Table 6: OHI-S and edentulism among study subjects.

OHI	Partially edentulous (%)	Dentulous (%)	Edentulous (%)	χ^2 value and P value
Good	32 (11.1)	10 (18.5)	5 (11.9)	8.964 0.062 (NS)
Fair	132 (45.8)	31 (57.4)	16 (38.1)	
Poor	124 (43.1)	13 (24.1)	21 (50.0)	

P<0.05, NS: Non-significant, OHI-S: Simplified oral hygiene index

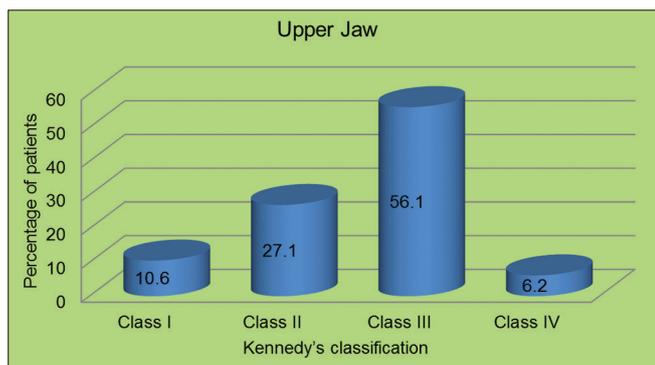


Figure 1: Distribution of different classes of partial edentulous patients according to Kennedy’s classification (upper jaw).

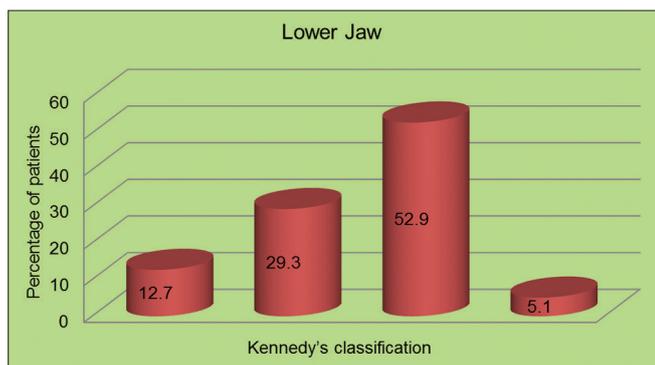


Figure 2: Distribution of different classes of partial edentulous patients according to Kennedy’s classification (lower jaw).

The difference in tooth loss between rural and urban adults might be explained by the fact that meeting dental care needs is more challenging to the people living in the rural areas compared to their urban counterparts. Availability, accessibility, acceptability, and affordability of dental services might be the potential barriers for the rural people to seek timely advice and treatment. In India there is gross disparity in oral health care provision between urban and rural areas.¹²

Numerous studies have been carried out globally to investigate the effects of socio-demographic factors and lifestyle on the prevalence of tooth loss. However, exploding population and inadequate resources, in a developing country like India, have limited the feasibility of such studies. This study reported a prevalence rate of 75% of partial edentulism in a randomly selected population. This was comparable to the prevalence rate of 74.6% reported in an epidemiological study conducted by Prabhu *et al.* in a rural population of the Udupi district, Karnataka.²¹

The present study shows the highly significant association between gender and edentulism. These results are similar to the studies.^{6,22} It was observed that a majority of the study population comprised partially edentulous female patients (52.1%). Higher social class people showed less prevalence of tooth loss which was similarly reported in other studies also.^{17,23} People of lower social classes tend to place very little value for health in general and oral health in particular. They give little or no importance for preservation of their teeth for the entire lifetime and prefer extraction over restoration. In regards to oral hygiene status, a majority of the individuals (45.8%) belonged to the fair group. This could be a direct reflection of low interest in oral health care causing subsequent total tooth loss. Dental caries and periodontal disease are the two main risk factors for partial tooth loss.²⁴ Studies on self-perception of prosthodontic needs demonstrated that oral function and aesthetics are important elements in improving the quality of life.²⁵ It was observed that most of the patients had missing teeth in the posterior regions, indicating lack of function as the main reason for replacement of teeth. However, when patients had missing teeth in the anterior region along with missing teeth in the posterior region, their primary reason for replacement was esthetics.²⁶ In this study, Kennedy’s class III was the most common type of partial edentulism. Most of the patients presented with one to two missing teeth.

Limitations

The study was conducted in an institution-based set-up and the study period only for 3 months this might bias the study results, as the selected sample is not representative. Hence, further studies are required to explore about the partial edentulism in a larger sample.

Conclusion

The present study concluded that prevalence of partial edentulism among study population was high. They require

community-based oral health programs to increase the awareness and reduce the risk for tooth loss. There is a definitive need for a step-by-step approach in eradicating the cause all over the country with special focus on people who suffer from socio-economic and geographical disadvantage.

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