

Socioeconomic Factors and Complete Edentulism in North Karnataka Population

E. Nagaraj · N. Mankani · P. Madalli ·
D. Astekar

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Abstract Complete edentulism is the terminal outcome of a multifactorial process involving biological factors and patient related factors. Tooth loss associated with periodontal disease and caries has an apparent impact on an individual's quality of life, and has been associated with lower levels of satisfaction with life and a lower morale. The rate of total edentulism is said to be increasing in developing countries and this had been attributed mainly to the high prevalence of periodontal diseases and caries. The distribution and prevalence of complete edentulism between developed and less developed countries may be associated with a complex interrelationship between cultural, individual, attitude, behavior, dental attendance, etiopathogenesis of edentulism, access to care and socioeconomic factors. The purpose of this study was to assess the relationship between socio-demographic factors and edentulism. In order to plan for future oral health care provisions for the society, collecting epidemiological data on oral health particularly related to prosthodontics and its related issues are very important.

Keywords Complete edentulism · Complete dentures · Socioeconomic status · Educational level · Occupation · Smoking habits

Introduction

Edentulism is defined as the loss of all permanent teeth [1] and is the terminal outcome of a multifactorial process involving biologic processes (caries, periodontal disease,

pulpal pathology, trauma, oral cancer) as well as non-biologic factors related to dental procedures (access to care, patient's preferences, treatment options etc.) [2]. Poor oral health has been shown to have a negative effect on peoples overall health and quality of life [2, 3].

Edentulism remains an important public health problem worldwide [2]. It is an often overlooked public health issue, especially for those over 65 years of age, and has been associated with changes in food taste, food preferences and nutritional deficiency [4].

Despite a steady decline in the rates of complete tooth loss over the past several decades, more than one-third (33.1 %) of those aged ≥ 65 years are edentulous. The percentage of edentulous people is expected to decrease in the coming decades as a result of improved oral health; where as the number of edentulous people will increase as a result of the strong increase in the aging population [5].

Epidemiological data on health and its related issues are very important in order to plan for future care [6]. Nevertheless, the prosthodontic field has not gained the same epidemiological interest as caries and periodontitis and the data obtained are often difficult to interpret. Prosthodontics has a very dominant role in restorative dentistry. The prime objective of dental care is maintaining a natural functional dentition for life.

Previous studies have shown that several non-disease factors such as attitude, behavior, dental attendance, characteristics of health care system and socio-demographic factors play important role in the etiopathogenesis of edentulism [7].

Some studies reported that the incidence of edentulism correlated with educational levels and income status with those in the lower levels exhibiting higher risks of becoming totally edentulous [8, 9]. Studies among Indians have linked some of these socio-demographic factors with the prevalence,

E. Nagaraj (✉) · N. Mankani · P. Madalli · D. Astekar
Department of Prosthodontics, P M Nadagouda Memorial Dental
College, Bagalkot 587101, Karnataka, India
e-mail: dr_nagaraj_e@yahoo.co.in

pattern and rate of dental diseases [10, 11]. There has been no report on the influence of these on edentulism. The aim of this study was to assess the relationship between socio-demographic variables with types of edentulism.

Materials and Methods

The study group comprised 1,000 patients who attended various dental institutions in the north Karnataka region for complete denture treatment between January 2009 and December 2011. Only patients who were completely edentulous in both the arches and were being rehabilitated for the first time were selected. A prepared questionnaire that contains nine questions was developed and for the entire subject the study purpose was explained, interviewed and questions were filled personally.

Questionnaire:

1. Age:
2. Sex :
3. Education : a. Professional degree, honours degree, pg degree -- 7
 b. Graduation -- 6
 c. Intermediate, post-high school diploma -- 5
 d. High school certificate -- 4
 e. Middle school certificate -- 3
 f. Primary school and literate -- 2
 g. Illiterate -- 1
4. Occupation : Profession : 10
 Semi profession : 6
 Clerk, shop owner, farm owner: 5
 Skilled worker : 4
 Semiskilled worker : 3
 Unskilled : 2
 Unemployed : 1
5. Monthly income : 2000 or more : 12
 1000 – 1999 : 10
 750 – 999 : 6
 500 – 749 : 4
 300 – 499 : 3
 101 – 299 : 2
 100 or below : 1
6. Smoking status : Smoker
 Never smoked
7. Dental preventive attitude : Positive
 Negative

8. Period of edentulousness : < 1 year
 1 – 5 years
 > 5 years
9. Reason for attendance :

Questionnaire

Data were analysed using frequency distribution tables and figures. Responses were evaluated according to the type of question.

Results

Of all the 1,000 patients who attended the prosthetic clinic during the study period, 707 (70.7 %) were males while 293 (29.3 %) were females (Table 1) with an age range of 40–70 years. Significantly more men requested complete dentures when compared to females. Only 15.7 % (males—11.6 %, females—4.1 %) of patients were in the 41–50 age groups, when compared to 44.3 % (males—30.9 %, females—13.4 %) of patients who were in the 61–70 age groups. Among all the patients only 1.6 % of patients were holding a professional degree whereas around 46.7 % (males—37.2 %, females—9.5 %) of patients were illiterate (Table 2; Fig. 1).

Only 1.7 % (males—1.1 %, females—0.6 %) of patients was professional by occupation in comparison to 36.7 %

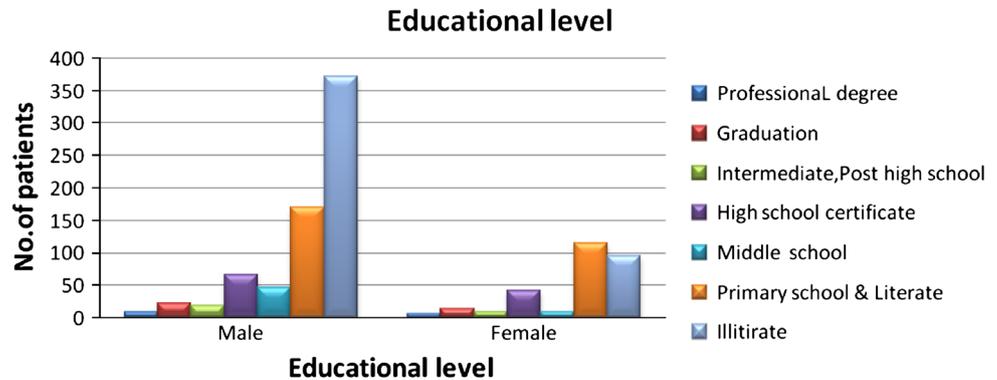
Table 1 Patients demographics according to age group and sex

Age group (years)	Number of patients required complete dentures		Total
	Male	Female	
41–50	116	41	157
51–60	227	66	293
61–70	309	134	443
≥70	55	52	107
Total	707	293	1,000

Table 2 Distribution of subjects needing complete dentures in relation to educational level

Educational level	Total number of subjects		Total
	Male	Female	
Professional degree	09	07	16
Graduation	23	14	37
Intermediate, post high school	19	10	29
High school certificate	66	42	108
Middle school certificate	47	10	57
Primary school and literate	171	115	286
Illiterate	372	95	467

Fig. 1 Distribution of subjects needing complete dentures in relation to educational level



(males—26.5 %, females—10.2 %) of patients who were unskilled and 24.4 % were unemployed (Table 3).

Among 1,000 patients the majority of them who required complete denture were with low monthly income of 100 or less. They comprised of approximately 46.1 % of patients. The smallest number of patients 3.2 % (1.9 % males, 1.3 % females) according to the monthly income were those earning rupees 750–999 (Table 4; Fig. 2). It was also observed that approximately 42.9 % of patients were smokers and around 57.1 % of patients never smoked.

Table 5 shows the distribution of men and women according to the duration of their edentulous state. Men

were edentulous for significantly longer periods (over 5 years) compared to woman or men with other periods of edentulousness (<1 year or 1–5 years).

In terms of socioeconomic status 6 % of patients belong to class I, 8 % to class II, 19 % to class III, 28 % to class IV and 39 % to class V [12]. There was a significant higher demand of complete dentures for class IV and class V when compared to the other classes of socioeconomic status. The reason for this significant difference may be due to the fact that they may not be able to afford the exorbitant cost of restorative procedures hence they wait until they have lost their set of teeth to have a complete removable denture which is cheaper. It was observed that as the age increased, lower the educational group and lower socioeconomic status, the higher the demand for dentures. This picture was independent of rural or urban dwelling.

Table 3 Distribution of subjects needing complete dentures in relation to occupation

Occupation	Total number of subjects		Total
	Male	Female	
Profession	11	06	17
Semiprofession	23	10	33
Clerk, shop owner, farm owner	112	43	155
Skilled worker	87	75	162
Semiskilled worker	16	06	22
Unskilled	265	102	367
Unemployed	193	51	244

Table 4 Distribution of subjects needing complete dentures in relation to monthly income

Monthly income	Total number of subjects		Total
	Male	Female	
2,000 or more	76	51	127
1,000–1999	39	12	51
750–999	19	13	32
500–749	31	15	46
300–499	58	33	91
101–299	117	75	192
100 or below	367	94	461

Discussion

Tooth loss is the dental equivalent of mortality. It is the end product of oral disease and it also reflects the attitude of patient's availability and accessibility of dental care and socioeconomic status. One of the major handicaps in the elderly of our population is loss of tooth, affecting the mastication, dietary intake and nutritional status.

Tooth loss could occur as a result of caries, periodontal disease, trauma, tooth impaction, orthodontic reasons, hypoplasia, overeruption, supernumerary teeth, attrition, neoplastic and cystic lesions [13, 14]. Many studies have consistently shown the role of specific diseases like dental diseases and periodontal disease as a major cause of tooth loss [10, 11, 14]. The same scenario was also seen in Indian studies.

From the present study, it was observed that more males (70.7 %) were seeking treatment for edentulism than the females (29.3 %). Many other studies have also shown significant gender difference in the edentulism with more males becoming edentulous than females [15, 16]. This has been attributed to the fact that males have parafunctional

Fig. 2 Distribution of subjects needing complete dentures in relation to monthly income

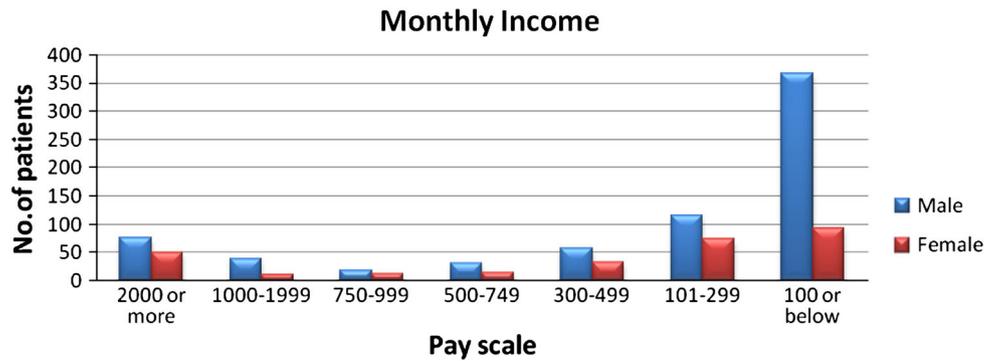


Table 5 Distribution of men and women according to period of edentulism

Period of edentulism	Male	Female	Total
<1 year	48	67	115
1–5 years	306	103	409
>5 years	353	123	476

oral habits like tobacco, betel nut, pan chewing and smoking than females and don't pay much attention to oral care.

Majority of our study population belong to lower education status. The need for complete dentures decreased with increasing levels of education, this is because those with higher level of education are more informed about their health needs and may seek dental treatments earlier and more often than those of lower educational status who may only seek dental treatment when there is apparent morbidity. Moreover those of a higher education status are more likely to be able to afford regular dental care than those of a lower education status [17].

The association between edentulism and educational status may be as a result of improved dental awareness, increased utilization of oral health facilities, proper oral hygiene habits acquired during learning process and peer group influence which was not found with illiterates and people with low economic status.

The present study showed that people with low socioeconomic status demanded for more dentures than the high socioeconomic group. Studies have long established a gradient relationship between socioeconomic status and health [18]. In so many intricate ways socioeconomic status tends to affect health behaviors, environment and social influences an individual is exposed to.

Hunter and Arbona [19] found that environmental influences such as land hunger, family poverty, and inadequate diet are of paramount importance in the cause of tooth loss. Workers and farmers were reported more often edentulous, than senior salaried employees. Even studies by Gordan W Thompson states that subjects with least

education and lowest income are most likely to be edentulous [20, 21].

This study observed that edentulism is due to a combination of various factors. Poor education a risk factor for poverty has been identified as a major factor in edentulism. So also is the socioeconomic status of the patient. These two non-disease factors affect the mortality of teeth arising from disease factors. From the present scenario of the study it can be attributed that there is a great need to focus on improving the educational and socioeconomic status of its citizens, which will automatically control the disease factors causing edentulism. Dental education should be targeted at the illiterates and low-income groups to reduce the rate of total edentulism.

As in other countries we found that edentulism is closely associated with socioeconomic variables. Epidemiological studies show that persons of low social class or low income and individuals with few years of schooling are more likely to be edentulous than are persons of higher social class, income and educational attainment.

Our study has certain limitations that emphasize a cautious interpretation of results. This study population was an all inclusive institutional based samples; the results may not be representative of whole north Karnataka population at large. Hence its use can only be limited to the study population. Randomized population based survey may be able to present a better picture among north Karnataka population. A nationwide evaluation of health services should carry out further epidemiological surveys on a larger scale with door to door data acquisition related to wealth, religion and caste on individual basis. This helps us to estimate the prevalence and associated factors of edentulism among noninstitutionalized population.

Conclusion

Edentulism continues to represent an enormous global health care burden that is often neglected in both developed and developing countries. It can be stated that the need for

prosthodontic care is expected to increase in average life span of adult Indians.

The findings in this study revealed a significant relationship between sociodemographic variables and edentulism with age, educational level and socioeconomic status playing vital roles in edentulism and denture demand. Conducting surveys, dental education and motivation are important tools in the elderly to identify the availability of prosthetic services and to eradicate the misconception that “tooth loss” is an unavoidable and inevitable part of the aging process. Hence more emphasis should be given on improving educational and the socioeconomic status of the north Karnataka population. This study provides further evidence supporting the notion that poor oral health as evidenced by complete edentulism is an important public health issue across the life span.

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