

Oral Health Knowledge, Attitude and Practices among Adults toward Tooth Loss and Utilization of Dental Services in Moradabad District

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ABSTRACT

Background and objectives: For centuries, people have accepted tooth loss as an inevitable part of the human condition. Tooth loss impairs the quality of life, often substantially, and affects the well being of the person. The objectives of study were to evaluate behavioral characteristics of the adults like beliefs about tooth loss and utilization of available health services which might be associated with tooth loss.

Methodology: A cross-sectional survey was conducted on 1,200 adults of Moradabad district, aged 35 to 74 years, 565 from urban area and 635 from rural area who were selected by multistage systematic random sampling technique. Data was collected by an interview followed by examination for the number of missing teeth.

Results: Mean number of missing teeth in the study population was 4.2. Around half of the study population, i.e. 51.1% of the adults claimed that they had no dental treatment facilities nearby. Among the 602 adults (50.2%) who had utilized dental services earlier, greatest response for reason of dental visit was for extraction of teeth (48.7%).

Conclusion: The findings from this study are useful in identifying the sociodemographic and behavioral characteristics associated with tooth loss among the study population. The insights gained from this study illustrate the need for tailoring Oral Health Promotion Programs and Services for the community, as the modification of these nondisease independent factors can reduce the tooth loss and improve the oral health of the adults of Moradabad district.

Keywords: Behavioral factors, Tooth loss, Adults.

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INTRODUCTION

For centuries, people had accepted tooth loss as an inevitable part of ageing. Long before dentistry emerged as a true profession, ‘toothpullers’ are necessary part of most cultures, sometimes based in a village and sometimes plying an itinerant trade. As the profession of dentistry evolved during the 19th century, much of the work of dentists was still devoted to tooth extraction. Caries was rampant, restorative techniques were crude, painful and prevention unknown.

As a result, people expected to lose teeth and dentist expected to extract them.¹

During the latter half of the 20th century, the age composition of the world’s population has changed dramatically.¹ Most of the developed and a few developing countries have witnessed a decrease in birth rate due to family planning methods and an increase in life expectancy due to improvements in health care facilities, resulting in greater proportion of aged persons in the population. This is described as the ‘graying of the society’ or the ‘maturation of society’. This demographic imperative is expected to have a major impact on the dental profession and delivery of oral health services, as the needs of older adults differ from those of younger adults.²

Tooth loss impairs the quality of life, often substantially and affects the well being of the person.³ Hence, preservation of natural dentition should be the ultimate goal of the dental profession. Tooth loss is the result of complex interaction of factors, of which the clinical condition of the tooth like caries, periodontal disease or trauma may be only the triggering factors, rather than the one single reason for loss of teeth.⁴ Tooth loss is said to vary by age, gender, race, education, income and by geographic region. Cultural factors, accessibility and availability of care, cost of care, individual’s attitudes and beliefs about perceived need for dental care and importance of maintaining the dentition interplay in the decisions of whether or when to extract a tooth. Tooth loss is an outcome of treatment decision as well as disease.⁵

Relatively, a few studies have been done to know the risk indicators associated with tooth loss. Hence, here an attempt is made to evaluate the behavioral characteristics of the adults like beliefs about tooth loss, and utilization of available health services which might be associated with tooth loss.

METHODOLOGY

The study was conducted among the adults aged 35 to 74 years of Moradabad district. The Moradabad district was divided into Moradabad city (urban) and Moradabad rural (villages). Sample size of 1,200 older adults was estimated based on the pilot study. Samples were collected by

multistage systematic random sampling technique. For the urban areas, in the first stage, Moradabad city was divided geographically into four areas, i.e. North, West, East and South. Approximately, five wards came under each of these geographic areas. In the second stage, one ward was randomly selected from each geographic area. List of all, the blocks from the four selected wards was obtained from Census Enumeration Areas Data. In the third stage, three blocks were selected randomly from each ward. In the fourth stage, door to door survey was conducted and around 50 individuals, aged 35 to 74, years were interviewed and examined from each block. For the Moradabad rural, a total of 60 villages listed in Census Enumeration Areas Data of Moradabad district were selected. Out of these, 16 villages were randomly selected. From each village, around 40 patients aged 35 to 44 years were interviewed and examined.

A specially designed proforma was prepared to obtain data regarding the subject's sociodemographic profile along with oral health knowledge and attitude, utilization of dental services and self-perceived oral health and need for treatment. Teeth were considered as missing, if they were missing on examination and even in the presence of fixed or removable prosthesis. All sound permanent teeth excluding third molars and supernumerary teeth were counted as teeth present in the oral cavity. Teeth indicated for extraction, like root stumps, grossly destructed teeth and mobile teeth, were considered missing, as they do not contribute to functionally and esthetically acceptable dentition. Since, only the behavioral risk indicators for tooth loss were investigated, the precise reason for tooth loss, i.e. caries, periodontal disease, trauma, congenital absence of teeth, therapeutic extraction and effects of medications and systemic diseases were not considered in the study. Informed consent was obtained from all the participants of the survey. Type III examination was carried out.

Any oral disease or pathological conditions observed during examination were informed to the subjects, and they were advised to seek treatment for the same. Individuals requiring emergency treatment were immediately referred to Kothiwal Dental College and Hospital, Moradabad. Data was analyzed using SPSS software, version 10.0 USA. Descriptive data of mean and standard deviation of the

number of missing teeth were determined for the various categories and compared for significant differences. One way ANOVA was used for multiple group comparisons and Student's 't'-test for pairwise comparison.

RESULTS

Table 1 shows that mean number of missing teeth among adults of urban and rural areas were 3.5 ± 6.8 and 4.7 ± 7.8 respectively. Significant association was found between the place of residence and tooth loss, with rural adults showing greater tooth loss compared to urban adults ($p < 0.01$). A total of 43% of study population (44.2% urban adults, 41.7% rural adults) had an intact dentition with no tooth loss. A total of 51.8% (57% in the urban area, 52.6% in the rural area) were partially edentulous with one or more teeth missing. Complete edentulousness was found in 4.8% of urban adults and 5.7% of rural adults. Overall 5.2% of the sampled population was completely edentulous. Mean number of missing teeth among the study population was 4.2 ± 7.4 .

Table 2 represents the oral health knowledge and attitude among the study population. Overall, 62.8% of adults thought that tooth loss was inevitable part of ageing, and interestingly they had higher mean number of missing teeth (4.8), compared to adults who did not feel so (2.3) or had no knowledge whether tooth loss increased with age (3.8). This difference was found to be highly significant statistically ($p < 0.001$). Greater proportion of rural adults (66.1%) believed that losing teeth is normal with increasing age, compared to 59% of urban adults.

Among the 685 people who had experienced tooth loss, 57.1% (60.6% in the urban area, 54.1% in the rural area) expressed their desire to get their missing teeth replaced by prosthesis, whereas 42.9% (39.4% in the urban area, 45.9% in the rural area) did not want replacement for their missing teeth. It was observed that 602 (50.2%) of the study population had utilized dental services in the past. Mean number of missing teeth among them was 5.4. Overall, 598 (49.8%) of the study population had not utilized dental services in the past and the mean number of missing teeth among them was 3.0. Hence, it was seen that people who had utilized dental services had greater tooth loss compared

Table 1: Tooth loss in relation to place of residence among the study population

	No tooth loss	Completely edentulous	Partially edentulous	Mean no. of missing teeth (SD)	p-value
Total (1,200)	515 (43%)	63 (5.2%)	622 (51.8%)	4.2 (7.4)	$t^* = 2.72 < 0.01$
Urban (565)	250 (44.2%)	27 (4.8%)	288 (51%)	3.5 (6.7)	
Rural (635)	265 (41.7%)	36 (5.7%)	334 (52.6%)	4.7 (7.8)	

*Unpaired t-test, $p < 0.01$

Table 2: Tooth loss in relation to oral health knowledge and attitude among the study population

	Overall			Urban			Rural		
	n (%)	X (SD)	p-value	n (%)	X (SD)	p-value	n (%)	X (SD)	p-value
A. Belief that losing teeth is normal with increasing age	(N = 1,200)			(N = 565)			(N = 635)		
Yes	753 (62.8%)	4.8 (7.9)	F** = 8.72 <0.001	333 (59%)	3.8 (1.0)	F** = 3.44 <0.05	420 (66.1%)	5.5 (8.4)	F** = 6.46 <0.01
No	178 (14.8%)	2.3 (4.9)		79 (14%)	1.7 (4.1)		99 (15.6%)	2.9 (5.4)	
Don't know	269 (22.4%)	3.8 (7.1)		153 (27%)	3.9 (7.2)		116 (18.3%)	3.7 (6.9)	
B. Desire for replacement of missing teeth	(N = 685)			(N = 315)			(N = 370)		
Yes	391 (57.1%)	8.0 (9.2)	t* = 2.55 <0.05	191 (60.6%)	7.5 (9.2)	t* = 3.23 <0.01	200 (54.1%)	8.5 (9.3)	t* = 0.92 0.30
No	294 (42.9%)	6.4 (7.3)		124 (39.4%)	4.6 (5.5)		170 (45.9%)	7.7 (8.1)	
C. Utilization of dental services	(N = 1,200)			(N = 565)			(N = 635)		
Yes	602 (50.2%)	5.4 (8.2)	t* = 5.73 <0.001	355 (62.8%)	4.6 (7.6)	t* = 4.87 <0.001	247 (38.9%)	6.5 (8.8)	t* = 4.63 <0.001
No	598 (49.8%)	3.0 (6.3)		210 (37.2%)	1.8 (4.7)		388 (61.1%)	3.6 (6.9)	

*Unpaired 't' test; **One-way ANOVA (F-test) p < 0.05; p < 0.01 Sig.; p < 0.001 HS; p > 0.05 NS

Table 3: Subject's responses regarding utilization of dental services

	Overall		Urban		Rural	
	N	%	N	%	N	%
Dental facilities available nearby	(N = 1,200)		(N = 565)		(N = 635)	
None	613	51.1	11	1.9	602	94.8
Govt. hospital	33	2.7	12	2.1	21	3.4
Private clinic	62	5.2	56	9.9	6	0.9
Dental college	372	31.0	366	64.8	6	0.9
>1 dental treatment facility available	120	10.0	120	21.3	-	-
Reason for utilization of services	(N = 602)		(N = 355)		(N = 247)	
Consultation	44	7.3	16	4.5	28	11.4
Filling	44	7.3	39	11.0	5	2.0
Extraction	293	48.7	149	42.0	144	58.3
Gum problem	12	2.0	9	2.5	3	1.2
Cleaning	61	10.1	37	10.4	24	9.7
Replacement of teeth	66	11.0	40	11.3	26	10.5
Combination of above reasons	82	13.6	65	18.3	17	6.9
Reasons for nonutilization of services	(N = 598)		(N = 210)		(N = 388)	
No dentist nearby	13	2.2	2	1.0	11	2.8
Fear of pain	33	5.5	15	7.1	18	4.6
Economic problem	72	12.0	17	8.1	55	14.2
Transportation problem	14	2.4	1	0.5	13	3.4
Other priorities	76	12.7	9	4.3	67	17.3
Feeling that they had no problem	386	64.5	162	77.0	224	57.7
Combination of above reasons	4	0.7	4	2.0	-	-
Self-perceived oral health	(N = 1,200)		(N = 565)		(N = 635)	
No problem	819	68.3	407	72.0	412	64.9
Tooth decay and pain	195	16.3	84	14.9	111	17.5
Gum disease	111	9.2	41	7.3	70	11.0
Others	75	6.2	33	5.8	42	6.6
Self-perceived need of treatment						
Treatment needed	351	29.3	156	27.6	195	30.7
Treatment not needed	849	70.7	409	72.4	440	69.3

to nonutilizers and this difference was highly significant statistically ($p < 0.001$). Among both the urban and rural adults, those who had utilized dental services had greater tooth loss (4.6 in the urban area, 6.5 in the rural area) compared to the nonutilizers (1.8 in the urban area, 3.6 in the rural area).

Table 3 represents the subject's responses regarding utilization of dental services. Overall, around half of the study population, i.e. 51.1% of the adults (1.9% in the urban area, 94.8% in the rural area) claimed that they had no dental treatment facilities nearby. Among the 602 adults (50.2%) who had utilized dental services earlier, greatest response for reason of dental visit was for extraction of teeth (48.7%). Eleven percent had visited the dentist for replacement of missing teeth. In the urban area, some people (11%) had also utilized the dental services for restoration of their decayed teeth, whereas in the rural area 11.4% had utilized dental services for consultation regarding their oral problems.

A total of 598 (49.8%) adults had not utilized dental services. The most common reason was because they felt they had no problem (64.5%). Overall, 12.7% of them reported that they had some priorities other than their oral health and 12% reported that economic constraints were the reason for nonutilization of dental services. A total of 7.1% of the nonutilizers in the urban area and 4.6% of the rural area reported that they had not utilized dental services out of fear of the pain that they may experience during the dental visit.

When self-perception of oral health status among the study population was assessed, it was observed that 68.3% (819) had no problem, 16.3% (195) had tooth decay and pain, 9.22% (111) had gum problem and 6.2% (75) had other problem like sensitivity of teeth and need for replacement of missing teeth. It was also observed from the self-perceived need for treatment that 29.3% (351) felt they needed treatment, but 70.7% (849) did not feel a need for dental treatment. Opinion regarding self-perceived oral health status and need for treatment was similar among both the urban and rural adults.

DISCUSSION

Loss of teeth reflects a major public health problem in many countries. The study was conducted to assess the tooth loss of teeth in relation to oral health knowledge and attitude along with the utilization of dental services among older population of Moradabad district.

It was observed in this study that tooth loss was a common occurrence, with 57% of the adults showing evidence of tooth loss, among whom 51.8% had lost some of their teeth and 5.2% had lost all their teeth. Mean number

of missing teeth in the present study was 4.2, which is higher compared to 2.64, found among Haitian immigrants of New York City.⁶ Mean number of missing teeth among urban and rural adults were 3.6 and 4.7 respectively. Complete edentulousness was seen in 4.8% of urban adults and 5.7% of rural adults. It was seen that higher tooth loss and complete edentulousness was more prevalent in the rural adults. Several other studies have shown no association between tooth loss and the place of residence.^{7,8} The present study showed that tooth loss was higher among the rural adults compared to urban adults. This result is in conformity with few other studies.^{9,10}

The difference in tooth loss between the rural and urban adults in this study 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.¹⁰ Also, the attitude of the rural people is generally such that they elect to have their symptomatic teeth extracted rather than conserving them.⁹

The misconception that tooth loss was an inevitable part of ageing process was widely accepted in this study population. Researches conducted in Hong Kong, United Kingdom, China and India have also indicated that most of the adults believe that loss of teeth is related to ageing and losing all the teeth in old age is an accepted norm.^{11,12} This misconception about the cause of tooth loss would certainly reduce the effectiveness of any planned interventional programs aimed at improving the oral health of the community.¹¹ A possible explanation for the widespread misconception might be that the people's health beliefs are influenced by a range of factors, like primary and secondary socialization, which usually guides the human behaviors and values. Most importantly, education plays a significant role in influencing knowledge and hence implying their health beliefs also.¹²

Among the people who had experienced tooth loss 57.1% expressed their desire to get their missing teeth replaced, while 42.9% did not want replacement for their missing teeth. More people in the urban area expressed their desire for replacement of missing teeth than the people of the rural area. Education, socioeconomic status and availability of dental services might be some of the factors responsible for the positive attitude among the urban adults. The negative attitude among rural adults might be due to the influence of their lack of education, income and availability of dental treatment facilities.

Some people did not want replacement of missing teeth. This might be out of the feeling that dentures are made of natural teeth extracted from another person's mouth. Some people felt that tooth replacement was uneconomical and that they would rather invest that money for the education and better future of their children. Still others, being aware of their limited life expectancy, appeared to accept the limitation of a disabled mouth rather than embark upon a potentially unsettling course of treatment for tooth replacement.¹³

Around half of the study population (50.2%) claimed that they had utilized dental services in the past and the most frequently reported reason for the dental visit was tooth extraction. Consequently, mean number of missing teeth among dental services users was higher than nonusers. This finding is in agreement with results obtained in some studies,¹⁴ but at variance with other studies which showed that nonusers of dental services had greater number of missing teeth.^{7,15}

The result of present study might be due to the high prevalence of dental diseases among the study population which would have a negative effect on the number of teeth remaining in the oral cavity. It also reflects the model of dental care with its emphasis predominantly on treatment rather than prevention of the diseases. Higher tooth loss among dental service utilizers seems only to confirm that most dental therapies aim to alleviate the consequences of dental diseases, rather than prevent the onset or course of the disease itself.

A total of 49.8% of the study population said that they had not utilized dental services in the past and the most frequent reason for this was because they felt that they had no problem. Several studies conducted in the past regarding utilization of dental services disclose the same reason quoted most frequently among nonutilizers.¹⁶⁻¹⁸

Overall, 68.3% of the study population reported that they did not feel they had any problem in their oral cavity and only 29.3% expressed self-perceived need for treatment. The self-perceived oral health status and self-perceived need for treatment are important factors that influence utilization of dental services. The low level of utilization of dental services found in this study is supported by the evidence which suggest that people tend to overestimate their dental health and underestimate their need for care and those who underestimate their own dental care needs utilize the services less frequently.¹² In addition to this, dental care is often viewed as elective, since poor dental health is generally not life-threatening.¹⁴

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