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Original Research Paper

Tooth Loss in Young Adults and its Relation With Place of Residence, Gender and Sec- an Epidemiological Pilot-Study in Kamrup (Metro) District of Assam, India

Prosthodontics

KEYWORDS : Tooth loss, rural area, urban area, individual questionnaires, socioeconomic condition

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ABSTRACT

Background*: there is lack of literature to support the influence of socioeconomic status and other demographic variances like age, gender and place of residence with tooth loss in young adults.*

Material and methods: *300 young adults comprising 150 each from urban and rural areas were selected following stratified multi-stage cluster sampling design. Data were collected by asking individual questionnaires to the head of the house hold and the respondent followed by intra oral clinical examination of the respondent.*

Result: *Data were analysed using IMB SPSS version 20 with chi-squared test, Independent T tests and ANOVA at level of significance where $p < 0.05$.*

Conclusion: *Gender and places of residence do not have influence on tooth retention profile. However, socioeconomic condition has a positive correlation with tooth loss both in urban and rural young adults.*

Introduction:

One of the global goals for oral health set by the FDI/WHO for year 2000 was to maintain a natural dentition of not <20 teeth throughout life [1] . Studies on tooth loss have been conducted throughout the world and evidence indicates that tooth loss and edentulism are declining in the United States [2] and in some European countries [3]. However, Loss of teeth still reflects a major public health problem in many developing countries. Whilst dental caries and periodontal disease are the main reasons for tooth extractions, socio-economic, behavioural and attitudinal characteristics tend to influence the tooth retention profile of population [4-9]. Epidemiological studies have shown that subjects of low income and education are more likely to be edentulous than their counterparts of higher income and education [10]. However, no study reported the prevalence of tooth loss among young adults group. Moreover, there is lack of information to correlate the prevalence of tooth loss among young adults with the place of residence, gender and socio economic condition. Hence, there is a need of the present study.

Methodology:

The cross sectional study was conducted in Kamrup (Metro) District of Assam that includes greater Guwahati, the capital city of Assam, India. The metro district has total population (2011 census) of 12, 53, 938 comprising 2, 16, 2927 rural and 10, 37,011 urban dwellers covering 31 municipality wards and 22 Goan Panchayats (GPs) in 4 developmental blocks within 1,527.84 km^2 area. The study population includes 5, 11,797 young urban and rural young adults between 20-40 yrs age group.

Samples were collected from 300 young adult subjects comprising 150 each from urban and rural areas. Population data (2011 census) of the urban and rural areas of Kamrup (Metro) district was collected from the census office, Guwahati. A stratified multi-stage cluster sampling design with villages as the primary sampling unit was utilised. At first stage 10 municipality wards and 2 rural blocks were randomly selected and after going through the population data of those areas, 10 urban and 10 rural villages were selected in order to collect samples of mixed socioeconomic background from different caste and community. At the second stage, 15 house holds from each village were selected by systemic random sampling. To meet the sample size of 150, one young adult subject between 20 to 40 years of age group was enrolled from each house hold. A village leader followed the data collectors through the village and traditional village protocol was observed with high respect. Consent of the head of the house hold and also of the subject was obtained before starting the data collection procedure.

Data were collected from an extensive personnel interview with the head of the house hold and the respondent subject by asking individual questionnaires followed by intra oral clinical examination of the respondent visiting at their door step. Individual questionnaires and intra oral examination record sheets were prepared in Microsoft Excel based on the Oral Health Assessment Form WHO'97. Questionnaires were prepared in English but the respondents were interviewed narrating the questionnaires in local languages. Loss of one, more or all the permanent teeth due to mechanical and pathological reasons were included as the tooth loss whereas tooth loss in the following conditions was excluded:

- Tooth loss due to therapeutic extraction for orthodontic correction
- Prophylactic extraction of wisdom teeth
- Partial or complete anodontia
- Persons above or below the specific age group
- Partial edentulous situation which does not governed by the Applegate's rules for applying Kennedy's Classification

Socio demographic characters were assessed in terms of place of residence, age, sex, caste and religion. Level of education was coded from (1) illiterate to (7) graduation and post graduation in professional/ technical courses and PhD degree. Total numbers of family members, their occupation and cumulative monthly income of the house hold were recorded in the individual questioner format to assess the socioeconomic status using modified (Agarwal) BG Prasad SES scale' 2004. Reasons of tooth loss were coded as tooth decay -1, tooth mobility- 2, trauma- 3 and others (specify) - 4.

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Clinical examinations of all the selected subjects were done by one trained dentist with a few research assistants who helped in filling up the record sheets. Research assistants were trained and calibrated before conducting the main survey. Full mouth intra oral examinations were conducted under natural light following the cross infection control measures. A thorough examination was carried out using sterile mouth mirror and probe after proper rinsing and cleaning of the remaining teeth by use of gauze pad. Numbers of carious and, filled teeth were noted on the record sheet prepared as per the Oral Health Assessment Form, WHO'97. A root stamp was recorded as present and decayed tooth if there was a carious cavity, or else other reasons like erosion and trauma were scored as reported by the respondents. Tooth loss was assessed by the tooth number and total number of missing teeth was noted.

Data were analysed using Microsoft Excel and IMB SPSS version 20. Cross tabulation, contingency table and chi-squared test at level of significance 0.05 to assess distribution of tooth loss amongst various independent groups and test for their homogeneity. Fisher's exact tests at level of significance 0.05 were applied to overcome the limitation of Chi- squared test. Independent T tests and ANOVA test at significance level of 0.05 were done to compare mean and test for statistical significance. Bivariate correlations of tooth loss with other variables were analysed at levels of significance 0.05 and 0.01.

Results:

Table-1: shows percentage distribution of urban and rural young adults with and without tooth loss and p values of Chi-square test and Fishers exact test to determine the significant difference of tooth loss between the urban and rural populations at 5% level of significance. It is found that 32.7 % of the urban against 29.3% of rural subjects and in total 31.0% young adults in Kamrup Metro District have one or more tooth loss. However, there is no significance difference between urban and rural sub population in term of tooth loss ($p > 0.05$)

Table 2: reveals gender wise variance in terms of tooth loss and theirs percentage among the urban and rural young adults. It shows that 31.5% of male and 30.6% female subjects have one or more tooth loss. Chi squared test ($p = 0.740$) and Fishers exact test ($p = 0.803$) at 5% level of significance reveals no significant difference between male and female population in terms of tooth loss.

Table 3: reveals the description of socioeconomic classes in terms of tooth loss and p value of ANOVA test at 5% level of significance. The mean number of tooth loss is found to be highest among the young adults of below poverty line-5.0 and it is found to be lowest among the young adults of upper middle class- 1.50. ANOVA test indicates a significant difference ($p = 0.033$) amongst the Socio economic groups in terms of tooth loss.

Table-1: Cross tabulation of urban & rural young adults showing the distribution of loss of teeth vs no loss of teeth

		Have tooth loss	No tooth loss	Total
Urban	Count	49	101	150
	% within Urban	32.7%	67.3%	100.0%
	% of Total (300)	16.3%	33.7%	50.0%
Rural	Count	44	106	150
	% within Rural	29.3%	70.7%	100.0%
	% of Total (300)	14.7%	35.3%	50.0%
Total	Count	93	207	300
	% of Total (300)	31.0%	69.0%	100.0%

Chi squared test ($p = 0.533$) and Fisher's exact test ($p = 0.618$) at 5% level of significance reveals no significance difference

Table-2: Cross tabulation of male & female respondents showing the distribution of loss of teeth vs no loss of teeth

		Teeth missing	No tooth loss	Total
Male	Count	45	98	143
	% within males	31.5%	68.5%	100.0%
	% of Total (300)	15.0%	32.7%	47.7%
Female	Count	48	109	157
	% within females	30.6%	69.4%	100.0%
	% of Total (300)	16.0%	36.3%	52.3%
Total	Count	93	207	300
	% of Total (300)	31.0%	69.0%	100.0%

Chi squared test ($p = 0.740$) and fishers exact test ($p = 0.803$) at 5% level of significance. No significant difference.

Table 3: Description of the socio economic classes in terms of tooth loss			ANOVA test at 5% level of significance, P value
	Frequency	Mean no. of missing teeth	
Upper high	2	2.5000	P= 0.033*
High	11	2.0000	
Upper middle	22	1.5000	
Lower middle	31	2.2903	
Poor	23	2.3913	
Below poverty	4	5.0000	
Total	93	2.2151	

Discussion:

Studies [11-15] have been conducted in different part of the world to determine the prevalence of tooth loss and its association with different demographic variance like age, gender and socioeconomic status. In these studies, subjects included were ranges from 6 to 75 years of age; but the present study was conducted on young adults between 20-40 years which is considered as the most energetic and productive period of life. In contrast to the extensive tooth loss in Sri Lanka [14] USA [16] and Brazil [17], the mean tooth loss in young adults in the present study is 2.22 ± 1.93. It is comparable to the mean tooth loss of 5.9 estimated for Tanzanians 61–69 year olds [4] against the high mean tooth loss of 13.2 and 18.2 reported for US and Brazilian adult population [16, 17]. The increase in mean tooth loss may be related to age changes of the study population [12, 15, 17] which was not significantly seen in the present study. The mean tooth loss in rural and urban population in the present study is 2.18 ± 2.36 and 2.25 ± 1.47, statistically not showing any significant difference between rural and urban population contrary to the study done by Susin C [17], Jaleel BF [18] and Panasiuk L [19] They have found significantly higher tooth loss in the rural population. This difference could be due to small sample size used in the present pilot study. Consistent with the result of previous studies [15, 17]. Bivariate analysis in the present study did not found any positive relation of tooth loss with gender of both rural and urban sub-population. Conversely, few other studies [19, 20, 21] found higher prevalence of tooth loss in females than males.

The socio economic condition(SEC) of the study population in the present study was calculated with BG Prasad modified scale [22] using monthly income and number of family members of the house hold as the prime determinants that are influenced by attributes like education and profession. The result of the present study reveals a positive relation of SEC with tooth loss for both rural and urban population. Higher class samples showed less prevalence of tooth loss than the poor class; with highest mean of 5 missing teeth among the samples of below poverty line. The present study found a significant relation of missing teeth with education in rural population whereas in urban population; it was significantly related to profession. This result is supportive to the opinion of Urzua et al [23] that education level, personal and family income are the main risk factors of tooth loss.

Conclusion:

Within its limitation; the present study found that:

In total 31.0% young adults in Kamrup Metro District have one or more tooth loss. However, tooth loss is statistically not variable among the urban and rural sub population.

The prevalence of tooth loss doesn't have any significant correlation with the gender of the study population.

Socioeconomic condition has a positive correlation with tooth loss both in urban and rural population. In rural population, it is related to education; whereas in urban population it is related to professional attribute.

References:

1. Federation Dentaire Internationale/World Health Organisation. Global goals for oral health in the year 2000. Int Dent J 1982; 23: 74–77
2. Marcus SEFind all citations by this author (default)Orfilter your current search, Drury TF,Find all citations by this author (default)Orfilter your current search Brown LJ,Find all citations by this author (default).Orfilter your current search Zion GR. Division of Epidemiology and Oral Disease Prevention, National Institute of Dental Research, National Institutes of Health, Bethesda, Maryland 20892-6401, USA.Find all citations in this journal (default).Orfilter your current search Journal of Dental Research 1996, 75 Spec No: 684-95
3. Muller F, Naharro M, Carlsson GE. What are the prevalence and incidence of tooth loss in the adult and elderly population in Europe? Clin Oral Implants Res 2007 18 Suppl. 3:2–14
4. **Irene A Kida, Anne N Astrom**, **Gunhild V Strand**, Joyce **R Masalu**. Clinical and socio-behavioral correlates of tooth loss: a study of older adults in Tanzania. *BMC Oral Health* 2006, **6**:5 doi:10.1186/1472-6831-6-5
5. Burt BA, Ismail AI, Morrison EC, Beltran ED: **Risk factors for tooth loss over a 28-year period.** *J Dent Res* 1990, **69**(5):1126-1130
6. Gilbert GH, Duncan RP, Shelton BJ. **Social determinants of tooth loss.** *Health Serv Res* 2003, **38**(6 Pt 2):1843-1862
7. Neely AL, Holford TR, Loe H, Anerud A, Boysen H.**The natural history of periodontal disease in humans: risk factors for tooth loss in caries-free subjects receiving no oral health care.** *J Clin Periodontol* 2005, **32**(9):984-993
8. Treasure E, Kelly M, Nuttall N, Nunn J, Bradnock G, White D. **Factors associated with oral health: a multivariate analysis of results from the 1998 Adult Dental Health survey.** *Br Dent J* 2001, **190**(2):60-68
9. Locker D, Ford J, Leake JL. **Incidence of and risk factors for tooth loss in a population of older Canadians.** *J Dent Res* 1996, **75**(2):783-789
10. Baelum V, Fejerkov O, Manji F. Periodontal disease in adult Kenyans. J. Clin Periodontol 1988,15;445-52
11. Thomas S, Raja RV, Kutty R, Strayer MS. Pattern of caries experience among an elderly population in south India. Int Dent J 1994; 44:617-22
12. al Shammery A, el Backy M, Guile E E. Permanent tooth loss among adults and children in Saudi Arabia.Community Dent Health 1998 Dec; 15(4):277-80
13. George B, John J, Saravanan S, Arumugham M. Prevalence of permanent tooth loss among children and adults in a suburban area of Chennai. Indian J Dent Res 2011; 22:364
14. Perera R and Ekanayake L. Tooth loss in Sri Lankan adults. International Dental Journal 2011; 61: 7–11.
15. Charlene WJA, Jairam Reddy. The association between gender and tooth loss in a small rural population of South Africa. Science Journal of Clinical Medicine 2013; 2(1) :8-13
16. Brown LJ. Trends in tooth loss among U.S. employed adults from 1971 to 1985. J Am Assoc 1994, 125(5):533-540
17. Susin C, Haas AN, Opermann RV, Albandar JM. Tooth loss in a young population from south Brazil. J Public Health Dent 2006 Spring; 66(2):110-5.
18. Jaleel BF, Nagarajappa R, Mohapatra AK, Ramesh G. Risk Indicators Associated With Tooth Loss among Indian Adults. OHDM 2014 June, Vol. 13; 2: 170-78
19. Panasiuk L, Kosiniak –Kamysz W, Horoch A, Paprzycki P, karwat D. Tooth loss among adult rural and urban inhabitants of the Lublin region. Ann Agric Environ Med May, 2013, 20; 3: 637-641
20. Barbato PR, Nagano HCM, Zanchet FN, Boing AF, Peres MA. Tooth loss and associated socioeconomic, demographic and dental-care factors in Brazillian adults: an analysis of the Brazillian Oral health Survey, 2002-2003. Cadernos de Saude Publica 2007, 23;8: 1803-1814
21. Kalyanpur R and Prasad KV. Tooth mortality and prosthetic treatment need among the urban rural adult population of Dharwad district, India. Oral Health and preventive Dentistry 2011,9: 323-328
22. Agarwal AK. Social Classification: the need to update in the present scenario. Indian Journal of Community Medicine 2008, 33: 1: 50-51
23. Urzua I, Mendoza C, Arteaga O, Rodreguez G, Cabello R, Faleiros S et al. Dental caries prevalence and tooth loss in Chilean adult population: First national dental examination survey. International Journal of Dentistry, Vol. 2012, Article ID 810170, 6 pages, DOI: 10.11552012/ 81017