

Study of oral health among adolescents in the field practice area of Urban health training centre, Nanded, India

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Abstract:

Background: Oral health is essential to quality of life as it ensures social and physical well-being and it acts as the mirror which reflects general health. Oral diseases are topping the list of some common diseases in the world. Poor oral hygiene is a known important predisposing factor of some oral diseases like cancrum oris, periodontitis, acute necrotizing ulcerative gingivitis etc. **Research question:** What is the oral health status among adolescents age group? **Aim & objectives:** To find out factors affecting oral health status among adolescents. **Study design:** Cross-sectional study in urban slum areas, house to house survey was carried out to study epidemiological profile of oral health among adolescents. Oral cavity examination of study population was done with the help of torch or natural light. **Setting:** Field practice area of urban health training centre, Shivaji Nagar, Nanded. **Participants:** - 718 Study subjects from urban health centre field practice area. **Results:** - Prevalence of dental caries was found 33% among adolescents and 27% adolescents were having more than one oral morbidity. The other dental conditions like plaque, tartar, oral ulcer, candidacies, bleeding gums, injuries, calculus and fibrosis were also seen among adolescents. Statistically significant difference was noted with dental caries and type of cleaning aids ($\chi^2 = 18.39$ d.f.=2 $p<0.001$), cleaning material aids and prevalence of dental caries ($\chi^2 = 30.69$ d.f.= 4 $p<0.01$), Frequency of tooth cleaning and dental caries ($\chi^2 = 6.07$ d.f. = 1 $p<0.05$), Rinsing of mouth after meals and prevalence of dental caries ($\chi^2 = 9.06$ d.f.= 2 $p<0.05$) **Conclusion:** - Oral health (diseases) strongly related with frequency of mouth washing, type of cleaning aids, rinsing of mouth. There is need for accessible and affordable oral health services. Awareness among adolescents about oral health should be encouraged.

Key-Words: - Oral health, adolescents, teeth decay, addiction and literacy status.

I. Introduction

Oral health means more than just healthy teeth. Oral health affects people physically and psychologically and influences how they grow, look, speak, chew, taste food and socialize, as well as their feelings of social wellbeing. It is essential to the quality of life as it ensures social and physical well-being.⁽¹⁾ Oral health is fundamental to overall health and quality of life.⁽²⁾ A healthy mouth enables people to eat, speak and socialize without pain, discomfort or embarrassment.⁽³⁾

General health and oral health are inseparable, oral cavity is the mirror which reflects general health. Oral diseases are topping the list of some common diseases in the world. The chronic, recurrent, irreversible cumulative and prevalent nature of oral diseases has contributed to wrong belief that oral problems are inevitable and not preventable.

In India, the prevalence of dental caries is 80% with 5 decayed teeth per child on an average at the age of 16 years. In some populations, the prevalence rate of periodontal diseases approach 90-100%. It is a fact that oral hygiene is seen as a natural part of total body cleanliness and that people desire fresh and healthy mouth with good smelling breath.⁽⁴⁻⁶⁾ Oral health includes having healthy teeth and gums, but it also means that people's lives are not affected by a range of other conditions including diseases of the oral mucosa, cancers of the mouth and throat, problems, or trauma to the jaw or middle of the face.⁽⁷⁻¹⁰⁾

Poor oral hygiene is a known important predisposing factor of some oral diseases like cancrum oris, periodontitis, acute necrotizing ulcerative gingivitis (ANUG) and gingivitis.⁽¹¹⁾ Oral hygiene and personal hygiene are the cheapest form of preventive health measure. Though cheap, it is surprisingly one of the most ignored in practice especially in the underprivileged rural and urban slum communities.⁽¹²⁾ Higher caries

prevalence is anticipated in adolescent age group who may also not understand and assume responsibility for or co-operate with preventive oral health practices.⁽¹³⁾

Globally, poor oral health among rural and slum population is due to high possibility of tooth loss, dental caries experience and the prevalence rates of periodontal disease, xerostomia and oral pre-cancer / cancer. The negative impact of poor oral conditions on the quality in rural and slum settings is an important public health issue. In developing countries the challenges to provision of primary oral health care are particularly high because of shortage of dental manpower.⁽¹⁴⁾ Considering these facts in mind the present study was carried out to determine the oral health status of adolescents from field practice area of urban health training centre, Nanded.

II. Objectives

To study the oral health status and various factors affecting on oral health status among adolescents.

III. Material & Methods

Present community based cross sectional study was carried out at field practice area of urban health training centre, Shivaji nagar, Nanded. There are eight slum areas attached to urban health training centre.

3.1) Sample size: -25% of slums covered by urban health training centre were selected by simple random technique, which comes out to two slum area named *Navi Aabadi and Jaibhim Nagar*.

3.2) Place of study: - field practice area of urban health centre.

3.3) Study period: - August 2011 to February 2012

3.4) Study population: - Total adolescents population was 782 in two selected slum areas, of which 64 adolescents excluded due to reasons like non availability during survey, acute illness, nonparticipation, locked houses, migration etc. Hence 718 adolescents formed the study subjects.

3.5) Data collection: - House to house survey was conducted by a team consisting of authors, with the help of dentist and female social workers. A pre tested, pre designed questionnaire was used to collect the information. Consent was obtained after explaining the purpose the study and taking in confidence from participants and their parents. Adolescent age group ranging from 10 to 19 yrs. of age⁽¹⁵⁾ included in the study. Only clinical oral examination of all the subjects was done with the help of torch and bright sun light.

3.6) Instruments used for examination: -Plain mouth mirror, periodontal probes, two containers (one for used instruments and one for sterilized instruments), concentrated sterilizing solution, soap and water. With proper use of mouth mirror and periodontal probe all areas of oral cavity could be fully examined without the need for digital manipulation of the oral tissues hence reducing the risk of cross infection.

3.7) Terminologies used: -

3.7.1) *Mishri*: Burnt form of powdered tobacco.

3.7.2) *Manjan*: crushed coal powder.

3.7.3) *Datun*: Small stem of *miswaq* plant /*neem* tree

3.7.4) *Dentition status*: For assessment of dental caries - a microbial disease of the calcified tissues of teeth, characterized by demineralization of the inorganic portion and destruction of the organic substance of the tooth.

3.8) Statistical tests: - percentages, chi-square test

IV. Results

Present community based cross sectional study was carried out to study the oral health status and factors affecting oral health among adolescents in slums of field practice area of Nanded city which included 437 boys and 281 girls. For the purpose of statistical analysis the adolescents were grouped into two groups of less than fifteen years and above fifteen years of age.

Table No. 1. Socio demographic characteristics of the study subjects.

1	Age and sex wise distribution of study subjects		
	Sex	< 15 years	>15 years
	Boys { n = 437 (60.86%) }	178 (24.79%)	259 (36.07%)
	Girls { n = 281 (39.14%) }	108 (15.04%)	173 (24.09%)
	Total { n = 718 (100%) }	286 (39.83%)	432 (60.16%)
2	Religion wise distribution of study subjects		
	Religion	No.	%
	Hindu	138	19.22
	Muslim	261	36.35
	Buddhist	274	38.16
	Others	45	06.27
	Total	718	100
3	Distribution of study subjects according to Socioeconomic class		
	Class	No.	%

	Class I	11	1.53
	Class II	58	8.08
	Class III	124	17.27
	Class IV	227	31.62
	Class V	298	41.50
	Total	718	100
4	Distribution of study subjects according to type of family		
	Family type	No.	%
	Nuclear	131	18.25
	Joint	332	46.23
	Three Generation	255	35.52
	Total	718	100
5	Distribution of study subjects according to literacy status		
	Education	Number.	%
	Illiterate	158	22.01
	Primary	329	45.82
	Sec.& above	231	32.17
	Total	718	100

Table no. 1 shows study of some socio-demographic characteristics of the study subjects including sex and age wise distribution in which 178 (24.79%) were male of less than 15 years age group while 259 (36.07%) were above 15 years of age group. 108 (15.04%) and 173 (24.09%) were female of less than 15 years and above 15 years of age group respectively. Highest number of adolescents were from Buddhist and Muslim i.e. 38.16% and 36.35% respectively while 6.27% were from other religion like Jain, Christian etc. Majority of the adolescent's family belong to class V (41.50%) and Class IV (31.62%) of the socioeconomic class by B.G. Prasad's modified classification⁽¹⁵⁾. Highest number of the adolescents was from joint family (46.23%) and three generation family (35.52%). A total 158 (22.01%) adolescent were illiterate while 329 (45.82%) and 231 (32.17%) were primary and secondary school pass.

Table 2. Oral health status of the study subjects:

Oral morbidity	Male (%)	Female (%)	Total (%)
Nil	287 (39.97)	194 (20.02)	481 (66.99)
Dental caries	129 (17.96)	108 (15.04)	237 (33)
plaque	42 (5.84)	54 (7.52)	96 (13.37)
Tartar	30 (4.17)	18 (2.50)	48 (6.68)
Oral candidacies	04 (0.55)	01 (0.13)	05 (0.68)
Ulcer	27 (3.76)	14 (1.94)	41 (5.71)
Fibrosis	02 (0.27)	00	02 (0.27)
Injuries	37 (5.15)	22 (3.06)	59 (8.21)
Bleeding gums	32 (4.45)	41 (5.71)	73(10.16)
Calculus	19 (2.64)	14 (1.94)	33 (4.59)
Dental fluorosis	06 (0.83)	03 (0.41)	09 (1.25)
Other	04 (0.55)	02 (0.27)	06 (0.82)

Table number 2 shows the oral health status of the study subjects. Out of 718 adolescents, around 67% (481) adolescents were having normal oral hygiene, while 33% (237) were having dental caries and 27% adolescents were having more than one oral morbidity. The other dental conditions like plaque, tartar, oral ulcer, candidacies, bleeding gums, injuries, calculus, fibrosis, fluorosis, etc were also noted. Maximum oral health and dental problems were seen among male as compare to the female adolescents.

Table 3: Association of various indicators with dental caries among study subjects

Indicators	Dental caries		Total	P value
	Present	Absent		
Type of cleaning aids				
Finger	137 (40.89%)	198 (59.11%)	335 (46.66%)	$\chi^2 = 18.39$ d.f.= 2 p<0.001
Tooth-brush	71 (24.91%)	214 (75.09%)	285 (39.69%)	
Datum	29 (29.59%)	69 (70.41%)	98 (13.65%)	
Total	237(33%)	481(67%)	718 (100%)	
Cleaning material aids				
Tooth paste	60 (28.17%)	153 (71.83%)	213(29.66%)	$\chi^2 = 30.69$
Tooth powder	71 (26.39%)	198(73.60%)	269(37.46%)	
Mishri	39 (44.31%)	49 (55.69%)	88(12.26%)	

<i>Manjan</i>	53 (41.08%)	76 (59.92%)	129(17.96%)	d.f.= 4 p<0.01
Nil	14 (73.69%)	05 (26.31%)	19(2.65%)	
Total	237 (33%)	481 (67%)	718(100%)	
Frequency of tooth cleaning				
Once	221(34.74%)	415 (65.26%)	636 (88.58%)	$\chi^2 = 6.07$ d.f. = 1 p<0.05
Twice or more	16 (19.51%)	66 (80.49%)	82 (11.42%)	
Total	237 (33%)	481 (67%)	718 (100%)	
Rinsing of mouth after meals				
Once	35 (28%)	90 (72%)	125 (17.41%)	$\chi^2 = 9.06$ d.f.= 2 p<0.05
Twice or more	13 (19.40%)	54 (80.60%)	67 (9.33%)	
Nil	189 (35.93%)	337 (64.07%)	526 (73.26%)	
Total	237 (33%)	481(67%)	718 (100%)	

Table no. 3 shows association of various indicators with dental caries among adolescents. Around 47% (335) study subjects used finger as cleaning aid, of which 41% (137) had dental caries compared to 24.91% of those used tooth brush and 29.59% who used *Datun* as cleaning aid. This difference was found statistically significant ($\chi^2 = 18.39$ d.f. =2 p<0.05). The cleaning materials used for cleaning of teeth were tooth paste, tooth powder, *manjan*, *mishri* etc. Total 12.26% adolescents were using *Mishri*, 17.96% were using *Manjan* while 37.46% and 29.66% were using tooth powders and tooth paste respectively. Maximum number of dental caries was found among adolescents not using any cleaning material (73.69%) and *manjan* and *mishri* users. The statistically significant difference was found with use of different cleaning material and dental caries ($\chi^2 = 30.69$ d.f. = 4 p<0.001). Majority of the study subjects (88.58%) were cleaning their teeth once in the day while 11.42% were twice or more per day. Those who were having more frequency of cleaning teeth had less prevalence of caries. The difference was statistically significant ($\chi^2 = 6.07$ d.f. = 1 p<0.05). Only 192 study subjects who practiced rinsing of their mouth after consumption of food. 35.93% study subjects had dental caries who did not rinse their mouth after food consumption. When chi square test was applied for presence of dental caries and frequency of rinsing the mouth after meals, it was found statistically significant ($\chi^2 = 9.06$ d.f. = 2 p<0.05).

Table 4. Association between tobacco use and Dental caries.

Dental caries	Tobacco consumption		Total
	Yes	No	
Present	51	186	237
Absent	62	419	481
Total	113	605	718

$$\chi^2 = 8.92 \text{ df} = 1 \text{ p} < 0.1$$

Table number 4 shows association between tobacco use and dental caries. Out of 718 adolescents, 113 were using either smoke or smokeless form of tobacco. The addiction of tobacco was labeled when the users having habit since last six months. The statistically significant difference was found ($\chi^2 = 8.92$ df= 1 p<0.1) among adolescents having habit of tobacco use with dental caries.

V. Discussion

Oral diseases have a significant impact on the health and well being of the nation through pain, morbidity and mortality and through lost capacity to undertake school, social and economic activities. The oral diseases, dental caries, are the most common diseases of all the ages. In the present community based study, prevalence of dental caries among adolescent was 33% which is very high. Bhowate R.R. et al⁽⁵⁾ reported prevalence rate of dental caries as 53.5% for 11-15 years age group and Goyal R.C. et al⁽⁶⁾ showed prevalence of dental caries as 53.18% which is higher than present study. This high prevalence of poor oral health against the background of low socioeconomic conditions in these adolescents, as more than 41% of study population was below poverty line. In the present study most of the adolescents (22%) interviewed had no formal education and around 46% with primary education. Richard and Barmes⁽¹⁶⁾ had shown that socioeconomic and educational levels of populations are directly related to the oral cleanliness and inversely related to the prevalence and severity of gingivitis and periodontitis. Many other studies have attributed the high prevalence of oral disease and the low level of oral health awareness to ignorance, poverty and lack of education.^(17, 18)

In the present study more than 46% of the subjects used finger as cleaning aid of which 40% had dental caries compared to only 24% of those who used tooth brush. Bhowate R.R et al⁽⁵⁾ reported from his study that 26.31% of subjects used toothbrush, which is similar to present study. Chakraborty M et al⁽¹⁹⁾ showed maximum prevalence of dental caries (72.38%) among those who used fingers for cleaning their teeth followed by datun users (67.5%). Goyal R.C. et al⁽⁶⁾ reported that dental caries was less (46.63%) with brushing of teeth than other methods of cleaning (53.37%). Somewhat similar results were also seen in other studies from Zambia.⁽²⁰⁾ Out of

192 subjects who practiced rinsing of their mouth after consumption of food 48 subjects had dental caries in contrast to 189 out of 526 subjects who did not practice rinsing after consumption of food. Chakraborty M et al⁽¹⁹⁾ also reported the similar results. Out of 718 adolescents, 113 were using either smoke or smokeless form of tobacco. The addiction of tobacco was labeled when the users having habit since last six months. Oral use of smokeless tobacco shows positive contributing factor for a higher incidence of dental caries predominantly tobacco chewing. One of the main reasons for the association between smokeless tobacco and dental caries is the presence of high amount of various sugars and sweeteners added during the commercial manufacturing of smokeless tobacco products⁽²¹⁾ Individuals who chew tobacco appear to have more dental caries than non-users. Review of studies conducted from 1988–90 on oral consequences chewing tobacco use showed a significantly higher prevalence of root caries than did comparable sites in non-smokers⁽²²⁾

VI. Conclusions

Oral health (diseases) strongly related with frequency of mouth washing, type of cleaning aids, rinsing of mouth. There is need for accessible and affordable oral health services. Awareness among adolescents about oral health should be encouraged. It is an emphasis that is directed to all health management disciplines of which oral health is an essential part. It imposes a challenge of developing culturally acceptable and sensitive programme that has the potential to provide knowledge and develop a health attitude in the population concerning oral health or by way of integrating scientific knowledge into traditional oral health beliefs.

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