



Prevalence and Determinants of Dental Caries in Raipur City, Chhattisgarh

KEYWORDS

Chhattisgarh, Dental caries, Raipur City, Teeth Cleaning Practices.

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ABSTRACT

Background-Oral health is a state of complete freedom from the diseases of teeth, supporting structures and soft tissues. Oro-dental diseases are plunging the list of some of the commonest diseases in the world., dental caries being second only to common cold and commonly due to diet. Dental caries is the most common problem in oral health because of Universality, secondly, they don't undergo remission or termination if left untreated, and lastly, due to common early manifestation in some of the systemic disease. So the current study was aimed to assess the prevalence and determinants of dental caries in Raipur city, Chhattisgarh. world.

Material and Method- A cross sectional community based study was conducted in the urban (slum and non-slum) areas of Raipur City, Chhattisgarh. Multi stage simple random sampling technique was exercised for data collection. Sample size was 2819 as calculated. Data was analyzed using online statistical calculator and chi square test was used to determine the significance of association between the variables. Results- The prevalence of dental caries was 76.33 %. Poor oral hygiene and teeth cleaning practices were found to be significantly associated with dental caries. The study also highlighted the association with age, sex, community, family, SES, oral hygiene, cleaning material, teeth cleaning practices and periodic dental check up.

Conclusion - Dental caries is an issue of concern in present scenario because of various risk factors attributable to this problem as highlighted in the study. So there is a need for an integrated approach which includes. Health education regarding proper dental care practices should be provided through mass media education program and dentist/dental hygienist to increase the awareness among community

Introduction-

Oral health is integral part of general health and well-being. Good oral health and freedom from oral pain and infection substantially contribute to quality of life and self-esteem, while poor oral health is an obstacle to good nutrition, can severely affect people's ability to carry out the normal activities of daily life, and is a risk factor for major systemic diseases. [1]

Oral health is a state of complete freedom from the diseases of teeth, supporting structures and soft tissues. The health and disease affecting the oral cavity cannot be divorced from the general health. Oral cavity is the mirror reflecting general health of a person. [2]

Health, well being and self confidence are all attributable to healthy and well cared oral cavity hygiene which facilitates better communication and cordial human relationship. [3]

Oro-dental diseases are plunging the list of some of the commonest diseases in the world. Dental caries being second only to common cold and occurs commonly due to unhealthy diet practices.

Dental caries are the most common problem in oral health because of Universality, secondly, they don't undergo remission or termination if left untreated, and lastly, due to common early manifestation in some of the systemic disease. [4]

The escalation in the disease prevalence particularly in recent

times is certainly very alarming, as well with the limited dental man power leading to large amount of problem left untreated.

with limited dental manpower results in pain, infection and large amounts of untreated disease. [5]

Main dental health problems, i.e., dental with the early childhood and often have lifelong sequel. It is rightly said that "Prevention is better than cure" and Primary Preventive Dentistry should begin early in life before the insidious onset of these problems.

The emergence of this new philosophy of dentistry, based on 'Prevention rather than Repair and Replacement's have been one of the most significant in the history of dentistry.

The methodology of the study (As derived and adjusted form- Recommended Methodology for planning of Oral Health Survey-WHO) has been utilized to examine the effects of disease trends and changes in the oral health status of different age cohorts of the population. [6]

With above background the present study was conducted to assess the prevalence and determinants of dental caries in Raipur city, Chhattisgarh.

Material and method-

A cross sectional community based study was conducted in the urban (slum and non-slum) areas of Raipur City (C.G.) from December 2002 to December 2003. Multi stage simple random sampling technique was utilized for data collection. The list of all census blocks of Raipur city

was obtained from the municipal Corporation, Raipur. Sample size was calculated by employing statistical formula $4pq/L^2$ [The estimated prevalence of dental caries was taken to be 68% with an allowable error of 1.75% (0.0175).] [7] Sample size was 600 families All 846 census blocks of the study area were listed and 30 Census blocks selected by Random sampling technique. Raipur has a population of 5, 39,831 with 1, 05,178 families. Out of these 30 blocks, 21 were non-slum, whereas 9 were slums. These 30 blocks have 3,669 families with a population of 20,365. Among these 3,669 families, 600 (2819 subjects) families were selected by random sampling technique. In each block, 20 families were selected by the same technique. Door to door survey was conducted. Depending on availability, survey was conducted in early morning hours, from 7:30 to 9:30 AM. The subjects were interviewed after getting informed consent. All subjects were examined to assess dental cavity and oral hygiene in full day light using a probe and mirror. The houses which were found closed, replaced by nearby house.

Data was compiled in MS Excel and checked for its completeness and correctness. Then it was analyzed using on-line statistical calculator and chi square test were applied with value of < 0.05 was considered statistically significant for interpretation of finding.

Results-

Table -1. Background characteristics of study population

Back ground characteristics	Total
Age in years	
0-2	93(3.30%)
2-6	194(6.88%)
6-13	526(18.65%)
13-30	955(33.87%)
30-60	914(32.42%)
>60	137(4.88%)
Sex	
Male	1442 (51%)
Female	1377 (49%)
Community	
Non slum	1829(64.9%)
Slum	990(35.1%)
Type of family	
Joint	176(29.3%)
Nuclear	600(100%)
Socio economic Class	
High	1061(37.63 %)
Middle	698(24.76 %)
Low	1060 (37.60%)
Educational Status	
Post Graduate/Graduate	696(24.7%)
Higher Secondary	309(10.8%)
High/Middle School	812(28.8%)
Primary School	592(20.9%)
Illiterate	418(14.8%)
Oral Hygiene Practices	
Good	733(26.90%)

Poor	1993(73.10%)
Cleaning Material	
Tooth Paste + Brush (without dentist advise)	1771 (64.96%)
Charcoal	38 (1.39%)
Dantun	288 (10.56%)
Tooth powder with finger	559 (20.47%)
Tooth paste +Brush (After dentist advise)	70 (2.62%)
Teeth cleaning practices	
Inadequate (Irregular)	76(2.79%)
Adequate [Regular(Once or Twice)]	2465(90.42%)
Excellent (After each major meal)	185(6.79%)
Periodical dental visit (At least once in six months) [8]	
Yes	(5.69%)
NO	(94.31%)
Opinion	
Costly	2113(51.61%)
Govt. Services not available	1927(47.07%)
Ignorance and low priority to dental problems	54(1.33%)

Table-2. Background characteristics in relation to Dental carries

Background characteristics	Carious Persons No. (%)	Non Carious Persons No. (%)	χ^2 test, d.f., p value
Age in years			
0-2	2(0.02%)	91 (99.98%)	$\chi^2= 345.81$, d.f.=5, p<0.001
2-6	128(65.97%)	66 (34.03%)	
6-13	438(83.26%)	88 (16.74%)	
13-30	709(74.24%)	246 (25.76%)	
30-60	773(84.57%)	141 (15.43%)	
>60	102(74.45%)	35 (25.55%)	
Sex			
Male	1171(81.20%)	271(18.80%)	$\chi^2= 38.723$, d.f.=1, p<0.001
Female	981 (71.24%)	396 (28.76%)	
Community			
Non slum	1390(75.99%)	439(24.01%)	$\chi^2=4.149$, d.f.=1, p<0.05
Slum	762 (76.96%)	288(23.04%)	
Type of family			
Joint Family	813(89.24%)	98(10.76%)	$\chi^2=121.18$, d.f.=1, p<0.001
Nuclear Family	1339(70.17%)	1908(67.69%)	
Socioeconomic Class			
High	895(84.35%)	166(15.65%)	$\chi^2=82.87$, d.f.=2, p<0.001
Middle	475(68.05%)	223(31.95%)	
Low	782(73.73%)	278(26.27%)	
Literacy			

Postgraduate / Graduate	206(29.59%)	490(70.41%)	$\chi^2=1192.5$, d.f.=3, p<0.001
Higher/High/ Middle School	1049(94.24%)	64(5.76%)	
Primary School	580(97.97%)	12(2.03%)	
Illiterate	317(75.83%)	101(24.17%)	
Oral Hygiene			
Good	322(43.93%)	411(56.07%)	$\chi^2=734.49$, d.f.=1, p<0.001
Poor	1828(91.72%)	165(8.28%)	
Cleaning Material			
Tooth Paste + Brush (without dentist advise)	1465 (82.72%)	306 (17.28%)	$\chi^2=257.33$, d.f.=4, p<0.001
Charcoal	22 (57.90%)	16 (42.10%)	
Dantun	170 (59.02%)	118 (40.98%)	
Tooth powder with finger	481 (86.05%)	178 (13.95%)	
Tooth paste +Brush (After dentist advise)	14 (20.00%)	56 (80.00%)	
Teeth cleaning practices			
Inadequate (Irregular)	73 (96.05%)	3 (3.95%)	$\chi^2=658.73$, d.f.=2, p<0.01
Adequate (Regular(Once or Twice))	2068 (83.89%)	397 (16.11%)	
Excellent (After each major meal)	9 (4.86%)	176 (95.14%)	
Periodical Dental visit			
Yes	99 (67.81%)	47 (32.19%)	$\chi^2=25.65$, d.f.=1, p<0.001
No	2029 (83.06%)	387 (16.94%)	

Result-

In the present study, majority (33.87%) of the respondents belonged to the age group between 13-30 years and 30-60 years (32.42%) which together constituted 2/3rd of the surveyed population. Male respondents were more than females in every age group in the study except in the geriatric age group. About 2/3rd respondents were residing in non slum areas and 70.7% were belonged to nuclear families. Of the total, 37.63 % and 37.60 % respondents were belonged to high and lower socioeconomic status (SES) respectively. Majority (85.20%) of the respondents were literate. However, 28.80% were educated up to high or middle school. Oral hygiene was found poor among 3/4th of the respondents. Toothpaste and toothbrush were used by 2/3rd of respondent followed by tooth powder and brushing with the finger (20.47%).Majority (90.42%) of the respondents were found to have adequate cleaning habits. Majority (94.31%) of the respondents were unaware about periodical dental check up visits. Main reason for this was found to be high visiting cost followed by non-availability of government services.As shown in table-II, total number of carious persons was found 76.33% of the respondents. In the current study, all the study variables were found significantly associated with dental caries. Almost all the age groups were found significantly associated with dental caries except 0-2 yr age group (p<0.001). Male population had significant association with dental caries (p<0.001). Respondents belong to joint families were found to have significant association of dental caries (p<0.001).Prevalence of dental caries was found to be lower in Postgraduate /

Graduate than other. On the other hand, the prevalence was found to be higher amongst higher/high/middle/primary school educated than illiterate population (p< 0.001). Poor oral hygiene had significantly associated with dental caries (p<0.001). Doctor's advice has a significant advantage over respondents using toothpaste and brush as against without dentist's advice.Teeth cleaning practices were found significantly associated with dental caries, it was found to be higher among irregular cleaning practicing than others.

Discussion-

In the present study the results of dental caries distribution were found to be comparable with the other studies done by Schamschula et al [9], Govila et al [10], and Singh D. et al [11] also showed increased prevalence of dental caries in males as compared to their female counterparts. In studies of Taneja J.R. [12] & Talim et al [13], caries prevalence was higher in children from the joint families and large families, which was similar to the present study.

Miglani et al [14] reported a positive relationship between the socioeconomic status and prevalence of dental caries, and Gangwar et al [15] reported that prevalence of caries was maximum in social class II, followed by class IV and III, after surveying 912 students, which was comparable with present study.

The finding of the present study was further proved by the statistically significant relationship between oral health and dental caries as reported by Tiwari A. et al [16]. few studies were also supported the above findings [17,18,19].

This study highlighted the significant association between dental cleaning and teeth cleaning practices in present study (p<0.01). The reason behind this finding may be attributable to lack of awareness regarding adequate oral cleaning practices. The result of this study can again be supported with the same previous study done by Addo-Yobe C. et al [20]. A surprising finding in present study was that 1.39% respondents used charcoal for brushing their teeth highlighting the ignorance towards proper teeth cleaning.

The study showed significant correlation between dental caries and cleaning habits (p<0.001) which is comparable with the study done by Swarajlaxmi B. et al [21] and Pandey G.B. et al [22]. A wide range of risk factors were found to be significantly associated with early childhood caries as reflected on systematic review of literature done by Harris R. et al [23], the present study also reflected significant association of dental caries with age, sex, community, family, SES, oral hygiene, cleaning material, teeth cleaning practices and periodic dental check up as well.

Conclusion-

The prevalence of dental caries was found 76.33 % in current study which is very high. There is urgent need to ensure the same. Dental caries had significantly associated with age, sex, community, family, SES, oral hygiene, cleaning material, teeth cleaning practices and periodic dental check up. There is a need of integrated approach which includes health promotion activities, advocacy etc. Health education regarding proper dental care practices should be provided through mass media education program and dentist/dental hygienist to increase the awareness among community. Free government comprehensive dental health services should be carried out on regular basis. As there is paucity of data in this particular field so, it is required that

the study should be further expanded across the Chhattisgarh state to extract the more relevant data.

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