

DENTAL CARRIES IN SCHOOL CHILDREN OF JAIPUR (RAJ) INDIA

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ABSTRACT

Research Question: Dental Carries in School Children of Jaipur (Raj) India

Objectives: To find out the Dental Carries and its associating factors among students

Methodology: A cross-sectional observational study was carried out on 3200 children of 5-16 years of age of 20 elementary schools of urban and rural area of Jaipur in year 2011. Socio-demographic data were collected from parents of children and thorough dental check-up was arranged by a dentist for these children. Children with Carries were identified. Data in details were collected as per pre-designed proforma. Data collected were analyzed and inferred with chi-square test.

Result: 37.66% of children were diagnosed as having dental carries. Dental carries was significantly ($P < 0.001$) lesser in rural areas (27.94%) than in the urban areas (47.38%). Although variation in proportion of cases as per the age was also found to be highly significant ($P < 0.001$) but with sex it was not ($P = 0.132$).

Conclusion: More than one third students were having dental Carries. It was found associated with urban areas and age but sex was not associated with dental carries.

Key words: Dental carries, Socio-demographic, chi-square Test, P Value

INTRODUCTION

Dental caries has historically been considered the most important global oral health burden. The World Health Organization's 2003 report on oral health provides an overview of global caries epidemiology that confirms its international pandemic distribution. Globally, WHO reports caries prevalence in school-age children at 60-90 percent and is virtually universal among adults in the majority of countries. WHO has observed that developed countries have higher rates of caries experience, while developing countries have lower rates. WHO has attributed these differences to the relative availability of simple sugars in diets, to fluoride, and to dental treatment. U.S. findings by the Center for Disease Control and Prevention (CDC) released in August 2005 reveal high ongoing prevalence of dental caries in children, with 27 percent of preschoolers, 42 percent of school - age children, and 91 percent of dentate adults having caries experience.¹

In India prevalence of Dental caries in the age group 12-15 years is 45-55 % in

UP, Delhi and Rajasthan as compared to 40-80 percent in Northern States.² WHO reported a DMFT score of 3.94 for India in 2003.³ Dental caries shows striking geographic variation, socioeconomic patterns and severity of distribution all over the world. Research in industrialized countries has revealed that children of high social economic class families experience less caries than those of lower social classes. However, this relationship appears to be reversed in the developing countries.⁴ it is the commonest cause for loss of teeth among young school children.⁵

MATERIALS AND METHODS

Present Cross Sectional Observational study was carried out in year 2010 on 3200 School going children aged 5-16 years. As per Department of Education, Jaipur District has four urban blocks; namely Jaipur East, Jaipur West, Jhotwara and Sanganer. Out of these Jaipur west and Jhotwara were selected randomly for the study. Likewise the rural area of Jaipur District is constituted by 13 Panchayat Samities, out of that two Amber and Jamwaramgarh were selected randomly for

the study. List of rural and urban schools in the selected area was procured from the office of Deputy Director of Education Department, Jaipur District. One school from each selected area will be selected randomly. Sample size was calculated 1584 subjects at 95% confidence limit and 6% allowable error assuming prevalence of dental carries 42% in school children.¹ So for the study purpose 1600 school children was taken for each of strata i.e. 1600 from urban and 1600 from rural areas. i.e. 1600 from rural and 1600 from urban areas.

Every Institutional Head of identified school was informed about the purpose and methodology the study and those consenting were given the consent form and 1st part of the designed proforma consisting general information about the child and his family was given to parents of child through the respective class teachers. After, dully filled up by the parents of the study subjects, it was subsequently collected from the class teachers. Identified Schools were visited on the mutually pre-decided date and time so as to examine the maximum number of study subjects by a dentist. Children were examined in the school premises at a suitable place in presence of respective class teachers with the subjects seated in ordinary chairs in natural day light for illumination, avoiding direct sunlight.

Finally the screened students were examined thoroughly for dental and periodontal diseases, after reassuring them and making them comfortable and taking

all necessary aseptic precautions. Part second of the predesigned Proforma was filled after examining each child. The same procedure was in identified schools till the sample size of 1600 students of rural and 1600 students of urban area were achieved.

Dentition status and treatment need was assessed using Oral Health Assessment Form 2004.⁶ Only relevant information related with dental Carries along with general information was used. Data were collected on predesigned proforma. Data thus collected were compiled and analyzed with trial version of SPSS 20.

This study was aimed to find out prevalence of Dental carries in school children in urban as well as in rural areas of Jaipur.

To find out significance of difference in proportion chi-square test For Significance p value equal to or less than 0.05 was considered significant.

RESULTS

The present study has been designed to find out associating factors of dental Carries amongst students in 5-16 years of age group studying in elementary schools of Jaipur district of the total 3200 students (1600 rural and 1600 urban) found in 20 identified schools in the study, dental Carries was found in 1205 (37.66%) surveyed students. (Fig 1)

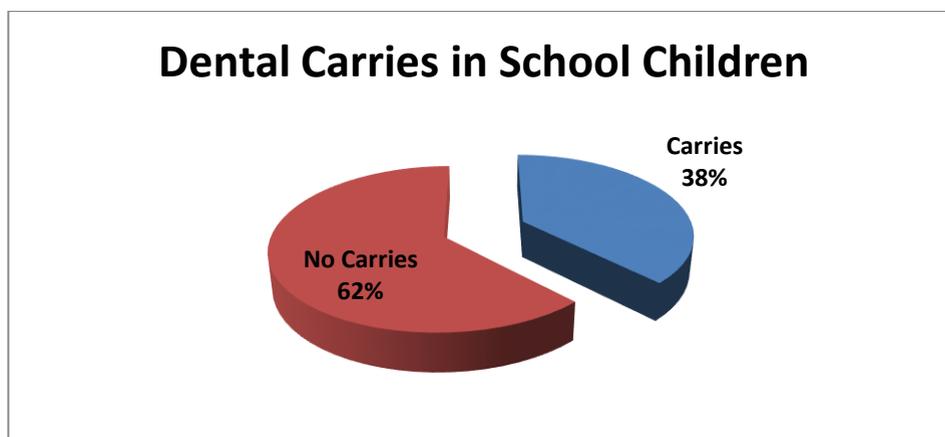


Figure 1

Present study revealed that rural children had significantly less ($p < 0.001$) dental Carries than the urban children i.e. 27.94% v/s 47.38%. (Table 1)

Further it is revealed that difference in distribution of dental Carries cases proportion according to age was also having

highly significant variation ($p < 0.001$) falling maximum proportion in the age groups of 8-10, followed by 5-7 years, 11-13 years and 14-16 years of age groups. (Table 1) Present study also found that females predominated in having dental Carries than male children but it was not significant ($p = 0.132$). (Table 1)

Table 1: Socio-demographic Profile of School Children with Dental Carries

S. No.	Area	Total (N=3200)	Carries	Chi-Square Test P Value LS
1	Rural	1600	447	124.609 at 1 DF P<.001 HS
2	Urban	1600	758	
S. No.	Age group (in years)			
1	5 to 7	536	197	147.312 at 3 DF P<.001 HS
2	8 to 10	1098	564	
3	11 to 13	1362	394	
4	14 to 16	204	50	
S. No.	Sex Wise			
1	Male	1632	593	2.274 at 1 DF P=0.132 NS
2	Female	1570	612	
S. No.	Father's Education			
1	Illiterate	678	277	17.777 at 6 DF P=0.007 S
2	Primary	551	237	
3	Middle	652	230	
4	Secondary	739	264	
5	Higher secondary	366	132	
6	Graduation	171	51	
7	Post Graduation	43	14	
	Mother's Education			
1	Illiterate	1954	728	6.516 at 6 DF P=0.368 NS
2	Primary	498	191	
3	Middle	376	143	
4	Secondary	265	103	
5	Higher secondary	81	26	
6	Graduation	36	12	
7	Post Graduation	17	2	

Further it was found in this study that although difference in distribution of dental Carries cases proportion according to father's education but as per mother's education was not having significant variation ($p = 0.007$ and $p = 0.368$ respectively). It was observed that as education increases proportion of dental Carries cases decreases. (Table 1)

When water source for drinking was asked, it was also found to associated with type of water source i.e. children consumed tap water supply were having significantly ($p < 0.001$) more dental Carries in comparison to children consumed handpump water supply and tube-well water supply. (Table 2)

Table No. 2: Associating Factors of Dental Carries in School Children

S.NO.	Water Source	Total (3200)	Carries	Chi-Square Test P Value LS
1	Tap	2325	926	18.270 at 3 DF P<.001 HS
2	Handpump	347	103	
3	Tubewell	480	160	
4	Well	48	16	

S.No.	Mouth Rinsing per Day		
1	Never	943	360
2	Sometime	1947	731
3	Always after meals	310	114
0.222 at 2 DF P=0.895 NS			
S.No.	Teeth Cleaning Material		
1	Fingers	248	95
2	Tooth brush and Tooth Paste	2113	780
3	Tooth brush and Tooth powder	316	129
4	Datun	240	68
5	Charcoal with finger	45	16
6	Don't Clean	238	117
24.275 at 5 DF P<.001 HS			
S.No	Frequency of teeth cleaning		
1	Zero	238	117
2	<1	138	63
3	Once	1884	701
4	Twice	828	292
5	> Twice	112	28
27.007 at 4 DF P<.001 HS			

In the present study although mouth rinsing was not associated with dental Carries ($p=0.222$) but dental Carries was observed significantly associated ($p<0.001$) with type of material used for teeth cleaning with maximum cases in children who did not clean their teeth even once and minimum in children who clean their teeth with tooth paste. More so it was also observed with this study that frequency of teeth cleaning was also associated with dental carries ($p<0.001$) in a manner i.e. as the frequency of teeth cleaning increases dental carries decreases. So, maximum carries found in children who did not clean their teeth even once and minimum in children who clean their teeth more than twice a day (49.16% v/s 25%).(Table 2)

DISCUSSION

The present study showed that dental caries was present in 37.66%. Studies reported by Jain (1979)⁷ at RHTC Naila Jaipur. Broca J.S.et al (1983)⁸, at Ajmer, K Pandit et al (1986)⁹at Delhi observed 15.90%, 30 %, 33.19% cases of dental caries respectively; the proportion of the cases were higher in the present study population. But in contrast to the present study Dash et al (2002)¹⁰ at Cuttak. Josh (2003)¹¹ at Kerala, Saravanan S et al (2003)¹² in Pondichery, Dhar V et al

(2007)¹³ at Udaipur, Joyson Moses (2011)¹⁴have reported higher percentages of 64.3%, 54.3%, 44.4%, 46.75% and 63.83% respectively. This variation may be due to the diverse dietary factors in different areas, structural defects of teeth, anatomical relationship of teeth, form and shape of teeth and hereditary factors.

In the present study it was observed that 47.38% percent of children in the urban area, and 27.94 percent in the rural area, had caries i.e. more prevalence in the urban areas than in the rural area. Well supported observations were of Mandal KP (2001)³²and Benoit Varenne (2004).¹⁵It is probably attributed to consumption of more cariogenic diet and easier access to refined sugar and sugar products among the urban school children.

Difference in proportion dental caries cases according to age of children was found to be highly significant ($P<0.001$) and observed that initially it decreases with age after the age of 8 years it decreases as age advances. These finding corresponds with the studies conducted by Dash J.K (2002)¹⁰, Saravanan S et al (2003)¹², Abdullah and Qazi (2005)¹⁶Dhar V et al (2007)¹³ who reported that caries experience and occurrence of untreated lesions in permanent teeth with age and oral hygiene status worsens as age

advanced which might be due to more prolonged exposure of teeth to the oral environment¹⁷.

Sex wise distribution of students according to caries status was not found significant ($P=0.132$) with slight female predominance. Similar observations were reported in the study undertaken by Sogi G. et al (2001)⁴ and B.Rai et al (2007)¹⁷ where females had more caries than males. Broca J.S.(1983)⁷ and Dhar et al (2007)¹³ also reported no statistically significant difference in the caries prevalence between both the sexes.

Although significant association was observed in the distribution of cases according to father's education ($p=0.007$) but there was no significant association with mother's education ($p=0.368$). Education has an impact on oral health and their relationship is reciprocal.

Significant difference was found in the distribution of the cases according to the drinking water source of the family ($p<0.001$) with lesser cases in ground water consumers than tap water.

Present study showed significant difference in the distribution of the cases according to the type of material used for cleaning of teeth ($p<0.001$) with minimum cases in children using tooth paste and maximum cases in children either do not clean their mouth. Almost similar was observed by Girish Parmar (2006-07)¹⁸ who reported lesser cases in children using

toothpaste than those who used tooth powder and neemdatun in Gujarat. Fluoride, the most common active ingredient in toothpaste prevents carries.

Maximum carries cases in children who do not clean their mouth at all (49.16%) and minimum cases in children who clean their teeth more than twice per day (25%), this difference of carries cases according to frequency of cleaning was found highly significant ($p<0.001$).

These findings are in accordance with the findings of K. Pandit et al (1986)⁹ who also reported that prevalence of caries was found to increase significantly in those who do not clean their teeth regularly.

CONCLUSION

Dental Carries was associated with rural areas, age and education of father. Sex and mother's education were not associated with dental Carries. Dental Carries was also found to be associated with source of drinking water supply and type of material used for teeth cleaning. Children using ground water without treatment were having less chances of dental Carries. Likewise children using tooth paste or tooth powder were having less chances of having Carries.

Although mouth rinsing was not found to be associated with dental Carries in children but frequency of teeth cleaning was also associated with dental carries. Those who do not clean their teeth were having more chances of carries.

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