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Original Research Article.

Study of Dental Caries among Rural Adolescent Population, Jaipur, Rajasthan

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ABSTRACT

Background: Dental caries are the most prevalent chronic disease all over the world in the pediatric and adolescent age group. Dental caries has a costly burden to health care services. Dental caries is caused by deposition of dental plaque on the tooth surface.

Methodology: A school based cross-sectional study was conducted among school children between 11 to 19 years of age at located at rural Jaipur district of Rajasthan. Sample size was taken 196 for present study. A semi structured questionnaire was used to collect socio-demographic information's, dietary habits, oral health problems and oral care practices.

Results: Overall prevalence of caries was 31.63%. Tooth ache was reported by 35.71% of participant. Plaque formation and white spots were present in 70.92% and 22.96% participants respectively.

Conclusion: Lower education of father, low income, consumption soft drinks and sweets were associated with dental caries. Adolescents who brushing their teeth and brushing teeth after meal had significantly lower dental carries.

Key words: Dental Caries, Adolescents, Plaque, Tooth.

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INTRODUCTION

Good oral health status is one of the important aspects of a children's development, overall health and well-being. Dental caries is the most prevalent chronic disease all over the world in the pediatric age group as well adolescents and have a costly burden to health care services.[1] As dental caries is a multifactorial disease, with many factors involving to their initiation and progression. Dental caries is caused by deposition of dental plaque on the tooth surface. After consumption of fermentable carbohydrates, a bacteria known as Streptococcus mutans undergo fermentation and produce large amount of acid and lowers the local pH to a level where the minerals of enamel and dentine dissolve.[2] The frequent intake of fermentable carbohydrates like sweets, dry mouth, and poor oral hygiene increase the chances for cavities in teeth.[3] The global prevalence of childhood caries varies widely, a higher prevalence has been reported in the Middle East developing countries, lowest prevalence reported in some western countries, such as Sweden, Italy and the USA.[4] The prevalence of dental caries is approximately 60-65% in India.[5] In India, Dental hygiene is poor with improper brushing of teeth, increased consumption of refined sugar and sweetened foods, no washing of mouth after intake of sweets, wide-spread addiction and hyperacidity.[6] Proper application of preventive methods can reduce incidence of dental caries. Although, dental caries is more prevalent in adolescents, there was no sufficient documented data on prevalence and associated risk factors in adolescents. Therefore, the present study was carried out to estimate the prevalence and associated factors of dental caries among adolescents.

MATERIALS AND METHODS

A school based cross-sectional study was conducted from Dec 2013 to Jun 2014 among primary school children at located at rural Jaipur district of Rajasthan. Two school were selected for study. After taken permission from school authorities' data were collected from school adolescent. Study participants were Children from primary schools between 11 to 19 years of age were included in the study. Sample size was calculated using formula $4pq/l^2$ with an assumption of 95% confidence level, 15% degree of precision and proportion of dental caries, assuming 50% among adolescents. Sample size obtained was 178, considering 10% non-response rate final sample size was taken 196. Among two schools, two classes were selected from each school using random sampling technique. A semi structured questionnaire was used to collect socio-demographic information's, dietary habits, oral health problems and oral care practices. Dental examination was carried out by one trained dental doctor using World Health Organization (WHO) standard for dental caries diagnosis guideline.[7] Oral examination was carried out during daytime in

natural light with disposable wooden spatulas. Dental caries was considered present when a lesion in a pit or fissure or on smooth tooth surface had a detectable softened floor, undermined enamel or softened wall. If there was any doubt in consideration of dental caries, it was recorded as dental carries was absent. The presence of dental plaque was assessed by direct visual inspection and palpation of the buccal and lingual surfaces of all teeth with clean glove and spatula. Plaque was recorded as present when visible deposits were detected and then removed following palpation of the teeth by clean gloved hand. The presence of both hypo calcification and incipient caries type of white spot lesions were examined by conventional diagnostic technique. First, the wet teeth were inspected for the presence of hypo calcification type of white spot lesion then the teeth were allowed to wipe cleaned and dried with gauze and compressed air to inspect incipient caries type of white spot lesion. White spot lesion was recorded as present when a white chalky appearance spot was revealed either in dehydrated or desiccated or both type of the upper and lower anterior of enamel. Tooth was considered missing because of caries if a person gave a history of pain and/or presence of cavity prior to extraction.[8]

Incompletely filled questionnaires were rejected during data analysis. Following to data collection health education regarding dental hygiene was imparted to all school students. Data were entered in Microsoft excel and analysed in percentage and mean. Chi square test was applied for association. p value <0.05 was considered significant.

RESULTS

A total of 196 adolescent students of age group 11 to 19 years were examined in this study. Out of the study participants 101 (51.53%) were boy and 95 (48.47) were girls. Among the total participant 99(50.51%) belongs to age group 11-14 and 97(49.49%) belongs to age group 15-19 years.

Overall prevalence of caries was 31.63%. Tooth ache was reported by 35.71% of participant. Plaque formation and white spots were present in 70.92% and 22.96% participants respectively. (table- 1) The proportion of dental caries was higher in age group 11-14 years (40.40%) than 15-19 years age group (22.68%). This difference was statistically significant (p=0.007). Boys were had higher proportion of dental caries (32.67%) than girls (30.53%). However, the difference was not statistically significant (p = 0.747). The proportion of dental caries was higher among adolescent whose father were illiterate (44.44%) than other primary, secondary, graduation and above education level. This difference was statistically significant (p=0.042). Adolescent belonging to the low-income group had the highest proportion of dental caries. Dental carries decreased with increase income. Association of dental carries with income was found to be statistically significant (p=0.040).

Table 1: Distribution of adolescent according to their oral health problems (n=196)

Variables		Frequency	Percentage %
Dental caries/ Tooth decay	**Present**	62	31.63
	Absent	134	68.37
Toothache	**Present**	70	35.71
	Absent	126	64.29
White spots	**Present**	45	22.96
	Absent	151	77.04
Plaque formation	**Present**	139	70.92
	Absent	57	29.08

Table 2: Association of dental carries with socio-demographic characteristics among school adolescents (n = 196)

Socio-demographic variables		Total	Dental carries		Chi square (x^2) and p value (p)
		n=196 (%)	Present n(%)	Absent n(%)	
			62 (31.63)	134 (68.37)	
Age (years)	**11-14**	99(50.51)	40(40.40)	59(59.60)	x^2=7.117
	15-19	97(49.49)	22(22.68)	75(77.32)	p=0.007
Gender	**Male**	101(51.53)	33(32.67)	68(67.33)	x^2=0.104
	Female	95(48.47)	29(30.53)	66(69.47)	p=0.747
Education level of father	**Illiterate**	54(27.55)	24(44.44)	30(55.56)	x^2=8.17
	Primary	48(24.49)	17(35.42)	31(64.58)	p=0.042
	Secondary	54(27.55)	12(22.22)	42(77.78)	
	Graduation and above	40(20.41)	9(22.50)	31(77.50)	
Income of family (monthly)	**<5,000**	86(43.88)	31(36.05)	55(63.95)	x^2=6.431
	5000-10000	70(35.71)	25(35.71)	45(64.29)	p=0.040
	>10000	40(20.41)	6(15.00)	34(85.00)	

Table 3: Association of dental carries with dietary habits and oral care practices (n=196)

Variables			Total n=196(%)	Dental carries		Chi square (x^2) and p value (p)
				Present n(%) 62 (31.63)	Absent n(%) 134 (68.37)	
Dietary habits	Consumption of sugared milk / tea / coffee	Yes	138(70.41)	45(32.61)	93(67.39)	x^2=0.205
		No	58(29.59)	17(29.31)	41(70.69)	p=0.650
	Consumption of soft drinks	Yes	46(23.47)	21(45.65)	25(54.35)	x^2=5.463
		No	150(76.53)	41(27.33)	109(72.67)	p=0.01
	Consumption of sweets	Yes	84(42.86)	33(39.29)	51(60.71)	x^2=3.981
		No	112(57.14)	29(25.89)	83(74.11)	p=0.046
Oral care practices	Cleaning of teeth	Yes	132(67.35)	20(15.15)	112(84.85)	x^2=50.774
		No	64(32.65)	42(65.63)	22(34.37)	p=0.000
	Time of teeth cleaning(n=132)	Before meal	48(36.36)	6(12.50)	42(87.50)	x^2=6.028
		After meal	52(39.39)	2(3.85)	50(96.15)	p=0.049
		No fix pattern	42(31.81)	12(28.57)	30(71.43)	

DISCUSSION

This study was aimed to assess the prevalence and factors associated with dental caries in adolescents' rural area Rajasthan. A total of 196 adolescents of age group 11 to 19 years were examined during the study and dental carries was found to be 31.63%. This prevalence was lower than other study conducted in south region of India. Dash J.K. et al[9] found 64.3% prevalence of dental carries in age group of 5,8, 11, and 15 years children of Cuttack, Orissa.

Present study was comparable with other studies conducted in Ethiopia (36.3%)[10], Nigeria (35.5%).[11] In this study proportion of dental caries was statistically higher (p=0.007) in age group 11-14 years than 15-19 years age group. Low proportion of dental carries in higher age group might be due to knowledge level and understanding importance of self-care than small age group. No statistically significant (p = 0.747) gender difference was found in present study. The proportion of dental caries was statistically significantly (p=0.042) higher among adolescent whose father were illiterate than other primary, secondary, graduation and above education level.

Education of parents is well known factor that decrease risk of many diseases among their children. Dental carries decreased with increase income. Association of dental carries with income was found to be statistically significant (p=0.040). Income is important in maintaining hygiene with purchasing required brushing aid for maintaining hygiene. Adolescent those Consumed sugared milk / tea / coffee had higher proportion of dental carries than those who do not consuming sugared milk / tea / coffee. This difference in proportion of dental carries was statistically not significant (p=0.650). Consumption of soft drinks (p=0.01) and sweets (p=0.046) significantly associated with dental carries in present study. Adolescent clean their teeth had significantly lower proportion of dental carries than adolescent who do not clean their teeth (p=0.000). Adolescent those clean their teeth after meal had significantly lowest proportion of dental caries than those who clean their teeth before meal and those who clean their teeth with no fixed pattern (p=0.049).

A study by Venugopal T[12] also found similar results that decrease literacy rate, improper brushing, frequent consumption of sweets increases risk of dental carries.

CONCLUSIONS

In present study dental carries was found to be 31.63%. Lower education of father, low income, consumption soft drinks and sweets were associated with dental caries. Adolescents those brushing their teeth and brushing teeth after meal had significantly lower dental carries. The findings of this study need to be supported by large population-based studies.

REFERENCES

1. Petersen PE, Bourgeois D, Ogawa H, Estupinan-Day S, Ndiaye C. The global burden of oral diseases and risks to oral health. Bull World Health Organ. 2005;83:661–9.

2. Maher R, Rahimtoola S, Khan A, Bratthall D: Prevalence of mutans streptococci and dental caries in Pakistani children. J Pak Med Assoc 1992, 42:213–215.

3. Ayele FA, Taye BW, Ayele TA, Gelaye KA: Predictors of dental caries among children 7–14 years old in Northwest Ethiopia: a community based crosssectional study. BMC Oral Health 2013, 13:7. doi:10.1186/1472-6831-13-7.

4. Kowash MB, Alkhabuli JO, Dafaalla SA, Shah A, Khamis AH. Early childhood caries and associated risk factors among preschool children in Ras Al- Khaimah, United Arab Emirates. Eur Arch Paediatr Dent. 2017;18:97–103.

5. Khan AA, Jain SK, Shrivastav A. Prevalence of dental caries among the population of Gwalior (India) in relation of different associated factors. European J Dent. 2008;2(2):81-5.

6. Soren AB, Mundle M, Das D, Chattachapadhyay S. A study of dental hygiene and decayed, missed, and filled status among patients attending dental OPD of Bankura Sammilani Medical College, India. The Health 2011.

7. WHO: Prevention Methods and Program for Oral Diseases WHO Technical Report Series 713. Geneva: WHO; 1984.

8. Roberson TM, Heymann HO, Swift EJ: Sturdevant's the art and science of operative dentistry. 4th edition. 2000:66–132.
9. Dash J.K, Sahoo P. K.B, Bhuyan S.K.C, Sahoo SK. Prevalence of dental caries and treatment needs among children of Cuttack Orissa. J Indian Sot Pedo Prev Dent December (2002) 20 (4): 139-143
10. Okubagze J: Epidemiology of Dental Caries in a rural High land community North West Ethiopia. Ethiop Med J 1987, 25:127.
11. Okoye LO, Ekwueme OC: Prevalence of Dental Caries in a Nigerian Rural Community: A Preliminary Local Survey. Ann Med Health Sci Res 2011, 1:187–196.
12. Venugopal T, Kulkarni VS, Nerurker RA, Damle SG, Patnekar PN. Epidemiological study of dental caries. Indian J Pediatr. 2000;65(6):883-9.

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