

Prevalence of Dental Caries among School Children in Sundarban, India

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Abstract

Introduction: Dental caries is a public health problem in developing countries like India. The problem is dreadful among school children particularly of lower socio-economic status. The present study was planned to assess the prevalence of dental caries among students after the eruption of permanent dentition and to find out the association of socio-demographic characteristics with the prevalence of dental caries.

Methodology: The present study was conducted in a rural high school in a hard to reach area of Sundarban, West Bengal, India. Students studying in class VII aged 13-14 years were checked for presence of dental caries and asked about the hygienic habit and socio-demographic characteristics with the help of predesigned questionnaire.

Results: Total 114 students participated in the study and the overall prevalence of dental caries was found to be 72%. The prevalence of dental caries was significantly higher among students belonging to family having less per capita monthly income. The prevalence was significantly lower among students who had brushing habits twice a day as compared to those having brushing habit once daily or not every day. Students having more than one sibling had higher prevalence as compared to students having no or one sibling.

Conclusion: Dental caries can be prevented by proper hygienic habits. Awareness among students and their mothers should be generated for primary prevention of this condition. Early diagnosis and prompt treatment can prevent further damage and can save the teeth.

Keywords: Dental caries; Toothache; Treatment

Introduction

Dental health is often neglected by a vast majority of population. In the developing countries like India the prevalence of dental caries is very high particularly among the children and adolescents. The prevalence is even higher in rural people and among school children. The absence of practice of healthy habits often leads to this type of problem. Dental caries is not only a medical problem but many socio-demographic factors are said to be associated with this. Usually the habit of taking care of dental health is obtained from the parents and other senior members of family. In India where the birth rate is still high and there is less spacing between two births, mothers often are not capable of giving proper care to all the children. The unhealthy practice of children often leads to many medical problems some of which can cause permanent damage. If dental caries develops after the eruption of permanent dentition and proper care is not taken, it may lead to permanent damage and spread of infection throughout the body can also occur. Utmost care must thus be taken so that dental caries should not develop. Early diagnosis with prompt treatment is also necessary. The present study was conducted in a rural hard to reach block of Sundarban to assess the prevalence of dental caries among students after the eruption of permanent dentition to find out the association of socio-demographic characteristics with the prevalence of dental caries.

Methodology

Study area and study population

The study was conducted in a high school located at Gosaba block of Sundarban of South-24 parganas of West Bengal. The area is considered as a hard to reach area in the delta island of Sundarban. All the students studying in class VII were included in the present study. Usually the age of the students studying in class VII is 13-14 years and so, they have complete eruption of permanent dentition except 3rd molar.

Study tools and techniques

The study was done by interviewing the students using a pre-designed, pre-tested, semi-structured questionnaire and an examination of the condition of the teeth was done by dentist.

Statistical analysis

The data generated were entered in Microsoft excel sheet and copied into a SPSS sheet (version 16.0). The analysis was done using SPSS (version 16.0). Chi square test was used to test the statistical significance between different groups.

Results

Majority of the students were 13 years and 14 years old (42.98% and 40.35% respectively). A small percentage (16.67%) of the students were 15 years old. 56.14% students were male and 43.86% were female. 66.67% students belonged to Hindu religion and the rest students were Muslims. As far as socio-economic status is considered, using modified Prasad scale, majority belonged to lower middle and upper lower socio-economic class (22.81% and 33.33% respectively). Only 7.89% students belonged to upper class. 49.12% students had one sibling, 22.81% had two siblings and 28.07% students were the only child of their parents.

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The students were asked about the habits and practices regarding the dental health. 68.42% students used to brush once daily, 16.67% students had the brushing habit more than once daily and 14.91% students did not have the habit of brushing every day. They used to brush the teeth occasionally, not daily. The students were asked about the habit of washing mouth after taking food. It was found that majority (67.80%) had the habit of washing their mouth rarely, mainly after taking major meals, not after taking any other food. 22.80% student often washed their mouth after taking food and 11.40% students replied that they washed their mouth always after taking any meal. 57.89% students complained of toothache and the rest did not have any episode of toothache in last 15 days. 25.44% students were taking medicines for the toothache.

According to physical examination, 82 (72%) students had dental caries. Prevalence of dental caries was assessed according to different socio-demographic parameters. It is seen that 61.2% of the students aged 13 years, and 80% of the students aged more than 13 years had dental caries. So, prevalence of dental caries increased with increase in age and this difference is statistically significant ($p=0.027$). It was seen that 68.8% of boys had dental caries as compared to 76% girls having the same problem. However, this difference is not significant statistically. 71.1% Hindu students as compared to 73.7% of Muslim students had dental caries though the difference is not significant statistically. Median per capita income of the family of the students was found to be Rs. 1800/- and the students were grouped into two categories based on this median per capita income. It is seen that 84.2% of the students belonging to the less income group had dental caries in comparison to 59.65% students in higher income group and this difference is statistically significant. Prevalence of dental caries was assessed according to presence of siblings. It is observed that students having no sibling or one sibling were significantly less commonly suffering from dental caries as compared to students having more than one siblings.

Students were asked about their habit of brushing the teeth. It is seen that 47.4% of the students who used to brush twice a day had dental caries as compared to 76.84% of the students having habit of brushing the teeth either once daily or not every-day suffered from dental caries. This difference is statistically significant. 56.41% of the students having habit of washing mouth after taking food always or most of the time had presence of dental caries. The prevalence is 80% among students who rarely used to wash mouth after taking food. This difference is again statistically significant. 95.5% of the students having toothache were suffering from dental caries; on the other hand those did not have toothache, 39.6% of them were suffering from dental caries and this difference is again statistically significant (Tables 1-4).

Discussion

Dental caries is one of the leading problems in school going children as well as in adults. The World Health Organization (WHO) has recognized dental caries as a pandemic and reported its prevalence among school children to range from 60-90% [1]. Present study has found out the prevalence of dental caries to be as high as 72% in the rural adolescents in India. Another study by Shingare et al. [2] in Maharashtra, India reported the prevalence of dental caries among 3-14 years old children to be 80.92% which is higher than reported in the present study. Dixit et al. [3] conducted a study among school children in Nepal and they found that the prevalence of dental caries among the school children aged 12-13 years was 41% which is far below the prevalence in the present study. In Kenya, Ng'ang'a and Valderhaug

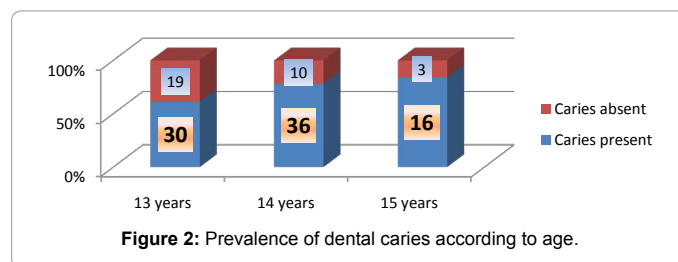
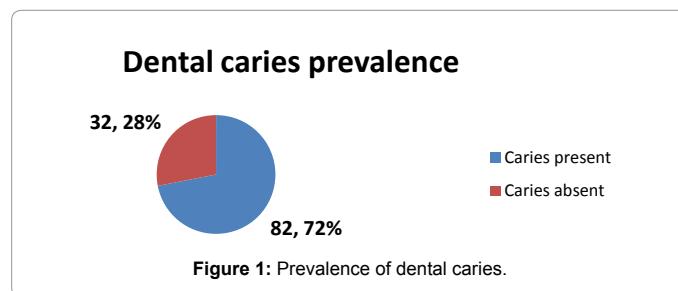
[4] reported a prevalence of 40-50% among children aged 13-15 years. Another study was conducted by Kassim et al. [5] in Nairobi in 2006 which revealed that the prevalence to be 43% among rural adults (Figures 1-3); however as it investigated prevalence among adults, its prevalence should not be compared with the prevalence of the present study. In our study, the prevalence of dental caries was higher in girls (76%) than in boys (68.8%). Dixit et al. [3] also reported a higher prevalence among girls (48.4%) than in boys (32%) although the overall prevalence in their study was lower than in present study. Similar to our

Socio-demographic parameters		Number	Percentage
Age	13	49	42.98%
	More than 13 years	65	40.35%
Sex	Male	64	56.14%
	Female	50	43.86%
Religion	Hindu	76	66.67%
	Muslim	38	33.33%
Socio-economic status	Upper	9	7.89%
	Upper middle	13	11.40%
	Lower middle	26	22.81%
	Upper lower	38	33.33%
	Lower	28	24.57%
Siblings	None	32	28.07%
	One	56	49.12%
	More than one	26	22.81%

Table 1: Socio-demographic characteristics of the study population.

Parameters		Number	Percentage
Brushing the teeth	Twice daily	19	16.67%
	Once daily	78	68.42%
	Not everyday	17	14.91%
Washing mouth after taking food	Always	13	11.40%
	Often	26	22.80%
	Rarely/ only after taking major meals	75	67.80%
Toothache in last 15 days	Yes	66	57.89%
	No	48	42.11%
Taking medicine due to toothache	Yes	29	25.44%
	No	85	74.56%

Table 2: Habits of the study population.



Parameters		Dental Caries		Total
		Present	Absent	
Age	13 years	30 (61.2%)	19 (38.8%)	49 (100%)
	14 years	52 (80%)	13 (20%)	65 (100%)
	Chi square= 4.88, p=0.027, Odds ratio= 0.3, 95% C.I. of Odds ratio= 0.16—0.98			
Sex	Male	44 (68.8%)	20 (31.2%)	64 (100%)
	Female	38 (76%)	12 (24%)	50 (100%)
	Chi square= 0.73, p=0.393, Odds ratio=0.69, 95% C.I. of Odds ratio= 0.28—1.73			
Religion	Hindu	54 (71.1%)	22 (28.9%)	76 (100%)
	Muslim	28 (73.7%)	10 (26.3%)	38 (100%)
	Chi square= 0.09, p=0.768, Odds ratio=0.88, 95% C.I. of Odds ratio= 0.33—2.28			
Per capita monthly income	Up to Rs. 1800/_	48 (84.2%)	9 (15.8%)	57 (100%)
	Above Rs. 1800/_	34 (59.7%)	23 (60.3%)	57 (100%)
	Chi square= 8.52, p=0.004, Odds ratio=3.61, 95% C.I. of Odds ratio= 1.37—9.67			
Siblings	No	59 (67%)	29 (33%)	88 (100%)
	More than one	23 (88.5%)	3 (11.5%)	26 (100%)
	Chi square= 4.56, p=0.033, Odds ratio=0.27, 95% C.I. of Odds ratio= 0.06—0.98			

Table 3: Association of prevalence of dental caries with socio-demographic characteristics of the study population.

Parameters		Dental Caries		Total
		Present	Absent	
Brushing the teeth	Twice daily	9 (47.4%)	10 (52.6%)	19 (100%)
	Once daily or not every day	73 (76.8%)	22 (23.2%)	95 (100%)
	Chi square= 6.81, p=0.009, Odds ratio=0.27, 95% C.I. of Odds ratio= 0.09—0.84			
Washing mouth after taking food	Always or most of the time	22 (56.4%)	17 (43.6%)	39 (100%)
	Rarely	60 (80%)	15 (20%)	75 (100%)
	Chi square=7.07, p=0.008, Odds ratio=0.32, 95% C.I. of Odds ratio= 0.13—0.82			
Toothache	Yes	63 (95.5%)	3 (4.5%)	66 (100%)
	No	19 (39.6%)	29 (60.4%)	48 (100%)
	Chi square= 42.96, p<0.001, Odds ratio=32.05, 95% C.I. of Odds ratio= 8.01—149.52			

Table 4: Association of prevalence of dental caries according to hygienic habit.

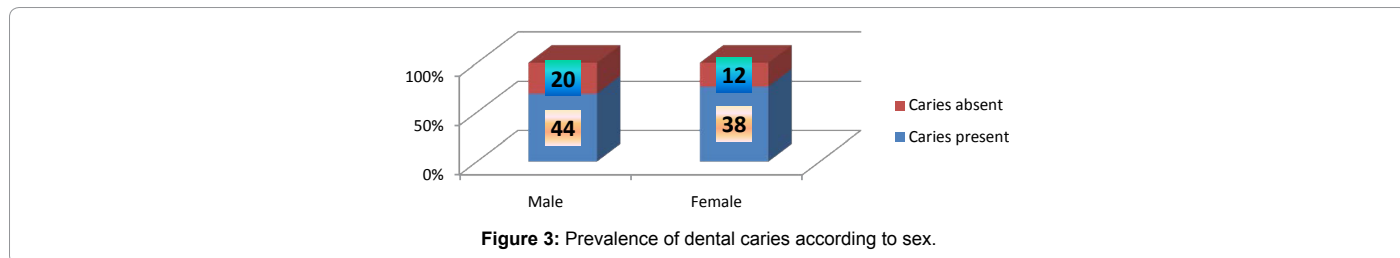


Figure 3: Prevalence of dental caries according to sex.

findings, there was no significant difference in prevalence between girls and boys. Gathecha et al. [6] revealed that the difference of prevalence of dental caries between boys and girls are not significant. Contrary to our report and the report of Dixit et al. [3], Natapov et al. [7] reported a higher prevalence among 5 years old boys than girls.

The present study found that prevalence of dental caries was significantly higher in lower income group as compared to upper income group. Usually people belonging to lower income group are devoid of hygienic practice and they live in unhygienic environment. These factors often lead to dental caries. Prevalence of dental caries was significantly higher among children having more than one sibling. Usually when the number of children increases, less care is given to each child by the mother and the elder ones suffer most. As a result the prevalence of diseases related to hygiene increases. Students were asked about their habit of brushing the teeth and it is revealed that those who used to brush twice a day had significant less prevalence of dental caries as compared to those whose brushing habit is either once daily or not every day. Gathecha et al. [6] in a study in Kenya have

found that brushing habit has no significant effect on the prevalence of dental caries which is contradictory to the results of present study. In the present study 16.67% children had brushing habit more than once per day. However Dixit et al. [3] in their study found that 24% children had the brushing habit more than once a day and overall prevalence of dental caries is less in their study as compared to the present study. Rao and Bharambe [8] in their study found that 60.8% children were habituated to clean their teeth with toothpaste. They found that tribal children showed a better oral health status than urban children.

Dental caries is not only a medical problem but also a social problem. Awareness among students can be generated by the school teachers because they are the role model for the students. Parents should be aware of the dental health of their children. Parent/teacher meetings should be regularly organized during which parents are educated on the importance of good hygiene practices in disease prevention. Health education should be incorporated within the regular activities of the school. Overall education, particularly female education can help to solve the problems in future.

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