

## *Original Article*

### **A Cross Sectional Study to Evaluate Various Factors Associated with Dental Erosion in School Going Children**

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#### **ABSTRACT:**

**Background:** Dental erosion has been considered the major component of tooth wear in children, it often co-exists with other forms of tooth wear such as attrition and abrasion. The present study was conducted to assess the factors leading to dental erosion in school going children. **Materials & Methods:** The present study was conducted in the department of pediatric dentistry on 842 school children age ranged 8-15 years old. 430 students were from private school and 412 were from government school. A questionnaire was designed to record information about socio-demographic characteristics, oral hygiene practices, dietary habits and risk factors for dental erosion. Careful clinical examination was done and O'Sullivan Index was used for recording dental erosion among school children. **Results:** Out of 842 subjects, boys were 480 and girls were 362. Dental erosion was seen in 22 boys and 14 girls of private school and 24 boys and 16 girls of government school. The prevalence was 8.3% in private school and 9.7% in government school children. Causative factors for dental erosion was sweets in boys (40) and girls (24), lemon in boys (32) and girls (20), cold drinks in boys (42) and girls (18), snacks in boys (38) and girls (26). Anterior teeth were involved in 12 cases in boys and 11 in girls whereas posterior teeth were 34 in boys and 19 in girls. The difference was significant ( $P < 0.05$ ). **Conclusion:** Boys had higher prevalence of dental erosion. Government school exhibited higher cases than Private school. Causative factors were sweets, lemon, cold drinks and snacks.

**Key words:** Dental erosion, lemon, sweets

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#### **INTRODUCTION**

Dental erosion, defined as the progressive, irreversible loss of dental hard tissues by a chemical process without bacterial involvement, is currently considered a significant clinical challenge. Even though erosion has been considered the major component of tooth wear in children, it often co-exists with other forms of tooth wear such as attrition and abrasion.<sup>1</sup> The prevalence of dental erosion is not well documented and measures of erosive tooth wear have been rarely reported. In addition, it is often difficult to compare the outcomes of different epidemiological studies on dental

erosion due to the difference in examination standards, including scoring systems, samples and groups examined.<sup>2</sup> Studies carried out in the United Kingdom suggest that not only is the younger population at risk but the incidence in this age group is increasing. Over the past 10-15 years, there has been a steady increase in reports of erosion seen especially in young adolescents and young children. Also the trend from UK prevalence data indicates an increase in the proportion of children with tooth wear, the percentage of teeth with exposed dentine in 14-year olds being 30% in 1994 and 53% in 2004.<sup>3</sup>

An understanding of the prevalence of this condition can assess in planning the most adequate treatment. The current increase in the consumption of highly processed foods and beverages by children from both high income and low income families has led to a consequent increase in the number of cases of dental erosion.<sup>4</sup> The present study was conducted to assess the factors leading to dental erosion in school going children.

**MATERIALS & METHODS**

The present study was conducted in the department of pediatric dentistry. It comprised of 842 school children age

ranged 8-15 years old. 430 students were from private school and 412 were from government school. Schools were informed regarding the utility of study and written permission was obtained.

A questionnaire was designed to record information about socio-demographic characteristics, oral hygiene practices, dietary habits and risk factors for dental erosion. Careful clinical examination was done and O’Sullivan Index was used for recording dental erosion among school children. Results thus obtained were subjected to statistical analysis using chi- square test. P value less than 0.05 was considered significant.

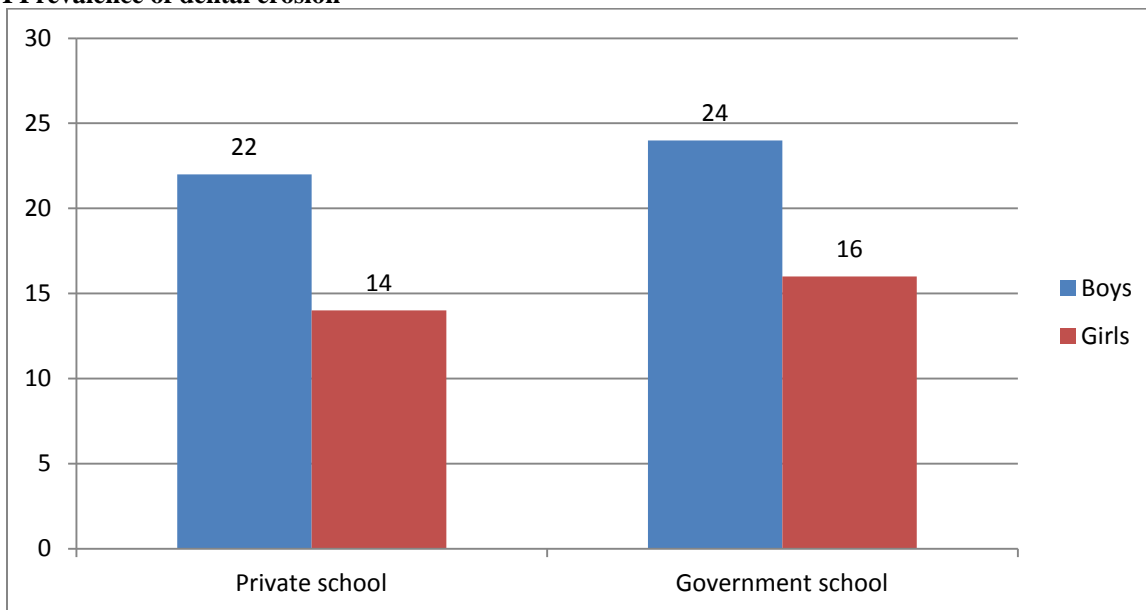
**RESULTS**

**Table I Distribution of subjects**

Gender	Boys	Girls
Number	480	362

Table I shows that out of 842 subjects, boys were 480 and girls were 362.

**Graph I Prevalence of dental erosion**



Graph I shows that dental erosion was seen in 22 boys and 14 girls of private school and 24 boys and 16 girls of government school. The prevalence was 8.3% in private school and 9.7% in government school children.

**Table II Causative factors for dental erosion**

Factors	Boys	Girls	P value
Sweets	40	24	0.01
Lemon	32	20	
Cold drinks	42	18	
Snacks	38	26	
Anterior teeth	12	11	
Posterior teeth	34	19	
Total	46	30	

Table II shows that causative factors for dental erosion was sweets in boys (40) and girls (24), lemon in boys (32) and girls (20), cold drinks in boys (42) and girls (18), snacks in boys (38) and girls (26). Anterior teeth were involved in 12 cases in boys and 11 in girls whereas posterior teeth were 34 in boys and 19 in girls. The difference was significant (P< 0.05).

## DISCUSSION

It is generally accepted that the prevalence of tooth surface loss increases with age, however, the exact prevalence is unclear mostly because of different assessment criteria. Frequent and excessive consumption of specific dietary elements such as citrus fruits, lemon juice, orange juice, fruit squashes, cola-flavored soft drinks and citrus flavored drinks have all been implicated. Unusual eating, drinking and swallowing habits; for example holding an acid beverage in the mouth before swallowing, increases the contact time of an acidic substance with the teeth and thus increases the risk of erosion. It can be stated that dietary factors represent the most important external risk factor for children to develop dental erosion.<sup>5</sup>

Lussi et al.<sup>6</sup> conducted a study in which a total of 391 randomly selected Swiss individuals of two different age groups; 26-30 year olds and 46-50 year olds were examined and questioned regarding dietary habits, lifestyle, oral hygiene, general illnesses related to erosion, ingestion of medication and tooth sensitivity. Thirteen per cent (13%) of the older age group had at least one tooth affected with facial erosion with involvement

In present study, the prevalence was 8.3% in private school and 9.7% in government school children. Dental erosion was seen in 22 boys and 14 girls of private school and 24 boys and 16 girls of government school. This is in agreement with Harding et al.<sup>7</sup>

Gopinath et al.<sup>8</sup> conducted a study to assess the prevalence and severity of dental erosion and to determine the potential risk factors for dental erosion among 11- to 14-year-old school children in South India. The total sample size for the study was 605, of which 303 school children were from private schools and 302 from public schools. A questionnaire was designed to record information about sociodemographic characteristics, oral hygiene practices, dietary habits and risk factors for dental erosion. The children who consumed lemon several times a day and those who preferred carbonated drinks had a higher tendency to develop dental erosion. The overall prevalence of dental erosion was found to be low (8.9%). Erosion was found to be greater in posterior teeth (65.6%) than anterior teeth (34.4%). Loss of enamel only with loss of surface contour was observed in most (94.8%) of the cases. The prevalence of dental erosion was found to be low in school children. Private school children were affected more by dental erosion. Frequency of lemon consumption and consumption of carbonated drinks were identified as risk factors.

We observed that causative factors for dental erosion was sweets in boys (40) and girls (24), lemon in boys (32) and girls (20), cold drinks in boys (42) and girls (18), snacks in boys (38) and girls (26). Anterior teeth were involved in 12 cases in boys and 11 in girls whereas posterior teeth were 34 in boys and 19 in girls. This is similar to study conducted by Vargase et al.<sup>9</sup>

Deshpande et al.<sup>10</sup> conducted a study on 439 subjects of 8-year-olds and 555 subjects of 15-year olds children. The subjects were asked to fill in a questionnaire to give an indication of their social, oral hygiene, dietary and medical history. The Basic Erosive Wear Examination Index (BEWE) was used to measure the erosion scores and the calculated cumulative score values were later divided into four risk categories in accordance with the risk level guide to clinical management. The prevalence of erosion in 8-year olds was 69.7% whilst that in 15-year olds was 76.3%. The BEWE mean score for 8-year olds was 4.63 whereas the mean score for 15-year olds was 3.5. The difference in erosion between the two age groups was statistically significant with a higher incidence of tooth erosion reported for the 8-year olds. The severity of tooth erosion between the two age groups was also significantly different with 8-year olds having higher BEWE scores. Various contributing factors such as gender, BMI and medical conditions were observed to have a correlation to the incidence of the subjects' tooth erosion.

## CONCLUSION

Boys had higher prevalence of dental erosion. Government school exhibited higher cases than Private school. Causative factors were sweets, lemon, cold drinks and snacks.

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