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ORIGINAL RESEARCH

Determination of dental erosion among 7-14 years school children- A cross sectional study

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***ABSTRACT*:**
Background: Dental erosion is characterized by the progressive, irreversible loss of dental tissue. The present study was conducted to assess dental erosion among 7-14 years school children. **Materials & Methods:** The present study was conducted on 184 school children age ranged 7-14 years of both genders. Dental erosion was evaluated using the Basic Erosive Wear Examination (BEWE), which is scored as follows: 0 = No loss of tooth enamel; 1 = initial loss of enamel surface texture; 2 = Loss of hard tissue (dentin) on <50% of the surface area; and 3 = loss of hard tissue (dentin) on more than 50% of the surface area. **Results:** Age group 7-8 years had 23, 9-10 years had 54, 11-12 years had 65 and 13-14 years had 42 children. The difference was significant (P< 0.05). The mean BEWE score was 0 in 102, 1 in 52, 2 in 12, 3 in 10, 4 in 5, 5 in 2 and 8 in 1 children. The difference was significant (P< 0.05). Frequency of intake of acidic foods was 1 time per day seen in 62% and 2 times per day in 38%. Frequency of intake of acidic beverages was 1/day in 56% and 2/day in 44%. Mode of ingesting acidic beverages was with glass in 74% and with straw in 26%. The difference was significant (P< 0.05). **Conclusion:** The excessive usage of acidic food and beverages among school children is alarming. Dental erosion is result of these bad habits.
Key words: Acidic food, Children, Dental erosion

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INTRODUCTION

Tooth wear of multifactorial etiology (erosion, attrition and abrasion) is a well-recognized problem in dentistry. Its increase in prevalence and severity is a major concern for the dental profession.[1] Dental erosion is characterized by the progressive, irreversible loss of dental tissue stemming from a chemical process without bacterial involvement. The etiology of this condition is associated with acids of an extrinsic origin, such as food, beverages or the workplace, as well as an intrinsic origin, namely the stomach, the acid of which comes into contact with the oral cavity through the process of involuntary regurgitation or voluntary regurgitation in the case of individuals with bulimia nervosa.[2]

Epidemiological studies have been published but the results are not easily comparable because of the wide range of indices used to measure and record tooth wear or erosion and the inevitable variation in diagnostic criteria. Further difficulty arises in distinguishing between wear caused primarily by acid erosion as opposed to that caused mainly by abrasion and/or attrition. Presentation of data on smooth surface wear and exclusion of incisal and occlusal surfaces attempts to overcome this problem.[3]

Clinical features of erosion include shallow, broad, smooth, glazed wedge-shaped depression within the enamel surface adjacent to cemento enamel junction, cupping of cusp tips and grooving of incisal edges, wear on non-occlusal surface, non-tarnished and raised amalgam surface.

Symmetrical erosive dentine exposures on the cuspal inclines of the molar teeth are described as a cup or bowl-shaped lesions.[4] The present study was conducted to assess dental erosion among 7-14 years school children.

MATERIALS & METHODS

The present study was conducted in the department of Community dentistry. It comprised of 184 school children age ranged 7-14 years of both genders. Ethical approval was obtained from institute prior to the study. All were informed regarding the study.

General information such as name, age, gender etc. was recorded. In all students, a careful oral examination was performed using probe, mirror and twizzer. All primary teeth were evaluated for dental erosion. Dental erosion was evaluated using the Basic Erosive Wear Examination (BEWE), which is scored as follows: 0 = No loss of tooth enamel; 1 = initial loss of enamel surface texture; 2 = Loss of hard tissue (dentin) on <50% of the surface area; and 3 = loss of hard tissue (dentin) on more than 50% of the surface area. The vestibular, occlusal, and lingual/palatal surfaces of the teeth were examined. The highest score was recorded and the tooth with the highest score was recorded for the sextant. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Age wise distribution of patients

Age group (Years)	Number	P value
7-8	23	0.05
9-10	54	
11-12	65	
13-14	42	

Table I shows that age group 7-8 years had 23, 9-10 years had 54, 11-12 years had 65 and 13-14 years had 42 children. The difference was significant (P< 0.05).

Table II Mean scores on Basic Erosive Wear Examination

BEWE score	Number	P value
0	102	0.01
1	52	
2	12	
3	10	
4	5	
5	2	
8	1	

Table II shows that mean BEWE score was 0 in 102, 1 in 52, 2 in 12, 3 in 10, 4 in 5, 5 in 2 and 8 in 1 children. The difference was significant (P< 0.05).

Graph I Mean scores on Basic Erosive Wear Examination

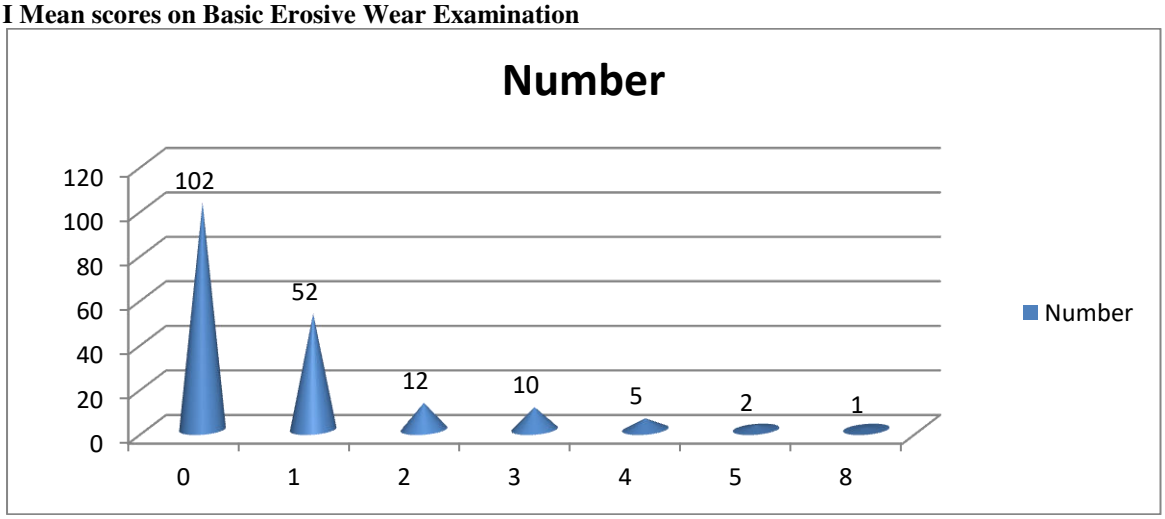

Table III Frequency distribution of consumption of acidic foods and beverages

Variables	Number	P value
Frequency of intake of acidic foods		
1/day	62%	0.03
2/day	38%	
Frequency of intake of acidic beverages		
1/day	56%	0.56
2/day	44%	
Mode of ingesting acidic beverages		
With glass	74%	0.01
With straw	26%	

Table III shows that frequency of intake of acidic foods was 1 time per day seen in 62% and 2 times per day in 38%. Frequency of intake of acidic beverages was 1/day in 56% and 2/day in 44%. Mode of ingesting acidic beverages was with glass in 74% and with straw in 26%. The difference was significant (P< 0.05).

DISCUSSION

Dental erosion is increasingly recognized as a cause of tooth structure loss, not only in adults, but also in children and adolescents which results in tooth sensitivity, eating difficulties, poor esthetics, altered occlusion and in severe cases may cause pulp exposure and abscesses.[5] It has a multifactorial etiology which may be intrinsic or extrinsic acid sources. Intrinsic is when gastric acid enters the mouth secondary to gastro-esophageal reflux, eating disorders, chronic vomiting, persistent regurgitation, or rumination.[6] Extrinsic acid sources include acidic beverages and foods, medications, battery and fertilizer factory workers, professional wine tasters, laboratory technicians, environmental acids, and in competitive swimmers. In addition, many modifying factors affecting the host and parafunctional habits significantly increases tooth susceptibility to dental erosion.[7] The present study was conducted to assess dental erosion among 7-14 years school children.

In this study, age group 7-8 years had 23, 9-10 years had 54, 11-12 years had 65 and 13-14 years had 42 children. Al-Majed et al[8] conducted a study to evaluate the prevalence of dental erosion in schoolchildren and associated factors. The male sex accounted for 50.2% of the sample and the female sex accounted for 49.8%; 62.8% attended the public school and 37.2% attended the private school. The prevalence of dental erosion was 11.7%, with the highest prevalence among 9-year-olds (46.4%). Dental erosion was significantly associated with age (P = 0.009) and type of school (P < 0.001).

We found that mean BEWE score was 0 in 102, 1 in 52, 2 in 12, 3 in 10, 4 in 5, 5 in 2 and 8 in 1 children. Harding et al[9] conducted a study among randomly selected 500 school children aged between 4 and 15 years. The examination was done in a systematic approach, and the degree of tooth wear and scoring were recorded according to modified Smith and Knight Index. Of 500 children examined, dental erosion was seen in 73 (25.17%) boys and 55 (24.09%) girls. 5-year-old children showed 42.10% of dental erosion. 23.93% of primary teeth and 8.55% of permanent teeth had dental erosion. Of the surfaces examined the labial surface of deciduous maxillary central and lateral incisor (32.81% and 28.39%, respectively) and the occlusal surface of mandibular first deciduous molar (26.92%) were affected predominantly. 82 children (64.06%) had low dental erosion, 26 children (20.31%) had moderate erosion, and 20 children (15.62%) showed severe erosion.

We observed that frequency of intake of acidic foods was 1 time per day seen in 62% and 2 times per day in 38%. Frequency of intake of acidic beverages was 1/day in 56% and 2/day in 44%. Mode of ingesting acidic beverages was with glass in 74% and with straw in 26%. Saliva plays an important role in arresting the erosive process by removing acid from dental surfaces, thereby impeding the aggravation of surface mineral loss and assisting in the process of remineralization. Based on this salivary function, toothbrushing should ideally be postponed for a time after the teeth come into contact with acidic foods or beverages.[10]

CONCLUSION

The excessive usage of acidic food and beverages among school children is alarming. Dental erosion is result of these bad habits.

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