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Acid Erosion of Teeth in a Pediatric Population

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Abstract

Aim: The aim of this study was to determine the association of dental erosion with dietary factors and oral hygiene practices among school children in India.

Objectives: To investigate dental erosion among school children and to evaluate the associated risk factors.

Background: Dental erosion is increasingly recognized as a common condition in pediatric dentistry with complications of tooth sensitivity, altered aesthetics and loss of occlusal vertical dimension. The prevalence of erosion in children has been reported to range from 10% to over 80%. The primary dentition is thought to be more susceptible to erosion compared to the permanent dentition due to the thinner and less mineralized enamel. The aim of this paper was to critically review dental erosion in children with regards to its prevalence, aetiology , diagnosis and prevention.

Materials And Methods: A random sample of children was drawn from schools. Erosion was assessed using the modified equipments . A self-designed questionnaire was used to probe into the details of the children's dietary habits.

Reason: There was a high prevalence of dental erosion among school children which was mild to moderate in severity and was strongly associated with acidic dietary intake. Dietary counseling must take this into consideration.

INTRODUCTION

Acid erosion, also known as dental erosion, is a type of tooth wear. It is defined as the irreversible loss of tooth structure due to chemical dissolution by acids not of bacterial origin. Dental erosion is the most common chronic disease of children ages 5–17,[1] although it is only relatively recently that it has been recognized as a dental health problem.[2] There is generally widespread ignorance of the damaging effects of acid erosion; this is particularly the case with erosion due to fruit juices, because they tend to be seen as healthy.[3][4]

There has been considerable attention in recent times focused on the problems of tooth surface loss in both adults and children.[5-15].Dental erosion is a common condition, and its prevalence seems to be trending higher in recent decades.[16].In studies that reported prevalence of dental erosion in different age groups,there is a clear trend of increasing prevalence with age in children.[17].

The most common cause of erosion is by acidic foods and drinks. In general, foods and drinks with a pH below 5.0–5.7 have been known to trigger dental erosion effects.[18] Numerous clinical and laboratory reports link erosion to excessive consumption of drinks. Those thought to pose a risk are soft drinks and fruit drinks, fruit juices such as orange juice (which contain citric acid) and carbonated drinks such as colas (in which the carbonic acid is not the cause of erosion, but citric and phosphoric acid)[citation needed]. Additionally, wine has been shown to erode teeth, with the pH of wine as low as 3.0–3.8.[18]

METHOD AND MATERIALS

The subjects consisted of convenience samples of adolescents (age 11-18) attending one school in Chennai, A total of 207children were sampled; 124 were males and 83 were females. All the children were examined clinically within their schools under standard illumination from a Darry light using disposable plane mouth mirrors. The surfaces of all teeth present in the mouth were scored for dental erosion. All the children were examined by the same person who had previously undergone extensive training. The data were recorded by a trained assistant.

RESULT

In this examination ,104 children have dental erosion ,out of which 44 are female and 60 are male. So the prevalence of dental erosion is more in school going children.

DISCUSSION

The results of this study suggest that erosion is as prevalent in Chennai among adolescents. Possible reason include sampling variation, or regional variation, there being reason to believe that erosion is more prevalent. Comparison with other studies is difficult because of different indices used, but the prevalence reported appears of a similar magnitude. [20,21]

Regarding the site of erosion, the prevalence on the buccal surfaces was higher that that previously reported – the reason for this is unclear. The Soft drinks have many potential health problems, including dental caries and enamel erosion (Majewski, 2001).The most frequent source of the acids is soft drinks like cola. It is also indicated that the cariogenicity of cola is higher than that of milk and sucrose (Bowen and Lawrence, 2005)

Compared with caries, dental erosion seems to have much stronger relationship with soft drinks. The erosive potential of drinks is mainly represented by their pH and the buffering capacity. In previous reports, the initial pH values of some soft drinks and their buffering capacities were determined. Carbonated drinks had lower pH than fruit juices. The buffering capacities are in the following order: fruit juices>fruit-based carbonated drinks>non-fruit-based carbonated drinks (Edwards et al., 1999; Owens, 2007). Carbonated drink could reduce surface hardness of enamel, dentine, micro filled composite, and resin-modified glass ionomer. Sports drink and juices are merely effective to enamel (Wongkhantee et al., 2006). Even the sports drinks

have a stronger softening effect than fruit juices (Lussi et al., 1995; Lippert et al., 2004; Jensdottir et al., 2005). Moreover, some supplements of drinks, such as calcium, could reduce the progress of enamel demineralization (Hara and Zero, 2006).

CONCLUSION

The high prevalence of dental erosion reported in children calls for further research into its prevention, such as the use of protective additives to alleviate the erosive effects of acidic foods and beverages.[24].Excessive intake of soft drinks could cause complex dental consequences including dental erosion and caries. It is necessary to educate patients about soft drinks consumption and advise them with the following tips to prevent dental erosion :limiting soft drinks, improving the drinking habit, tooth brushing at least twice a day, avoiding brushing tooth within 1 hour after consuming acidic food, and using fluoride or remineralizing tooth paste.[25]

Name	Gender	Age	Prevalence of dental erosion	
Prabhu	Male	15	Yes	
Sasikanth	Male	15	Yes	
Paramish	Male	15		No
Gowtham	Male	15	Yes	
Manoj	Male	15	Yes	
Mahesh	Male	15	Yes	
Abdul	Male	15		No
Sudhar	Male	15	Yes	
Mohamed	Male	15		No
Kevin	Male	15		No
Fayaz	Male	15	Yes	
Karthi	Male	15		No
Hari	Male	15	Yes	
Karthi.K	Male	15	Yes	
Rafyk	Male	15	Yes	
Kalyan	Male	15	Yes	
Abrar	Male	15		No
Durai	Male	15	Yes	
Thosvin	Male	15	Yes	
Nithya	Female	14	Yes	
Sona	Female	14	Yes	
Melina	Female	15	Yes	
Malavika	Female	14	Yes	
Magithga	Female	14	Yes	
sowfar	Female	14		No
Jameena	Female	14	Yes	
Anees	Female	14	Yes	
Charles	Male	15		No
Ebenzer	Male	13		No
Robert	Male	15	Yes	
Richard	Male	12	Yes	
Vimal	Male	15	Yes	
Shankar	Male	13		No
Denny	Male	15	Yes	
Mathwes	Male	17	Yes	
Imanuel	Male	12		No
Semon	Male	13	Yes	
Stephen	Male	13	Yes	
Alleshion	Male	15	Yes	
Stephen.b	Male	17		No
Richard.b	Male	18		No
Lewis	Male	16		No
Adam	Male	16	Yes	
Jennifer	Female	16		No
Sai kumar	Male	14		No
Jeswanth	Male	15	Yes	
Helen	Female	14		No
Tharun	Male	13		No
Varun	Male	15		No
Jhon	Male	14		No
Surya	Male	18		No
Roger	Male	18		No
Thomai	Male	12		No
Nithish	Male	17		No
Alisha	Female	15	Yes	
Christopher	Male	18	Yes	
Albiness	Male	9	Yes	
Samuel	Male	12		No
Laura	Female	15	Yes	
Rahul	Male	11	Yes	
Geniri	Female	19		No
Mohan	Male	12	Yes	
Kiko	Male	13		No
Gerald	Male	16		No
Davidson	Male	18		No
Savio	Male	12		No
Mohamed.b	Male	16		No
Vincent	Male	18		No
Chandru	Male	12		No
Sathish	Male	15	Yes	
Mary	Female	15	Yes	
Annic	Female	13	Yes	
Joselin	Female	9	Yes	
Anthony	Male	12		No
Alwin	Male	12		No
Dominic	Male	12		No
Denius	Male	11		No
Shakina	Female	17	Yes	
Thilothama	Female	19		No
Arun	Male	13		No
Aravind	Male	16	Yes	
Chella	Female	16		No
Catherin	Female	16	Yes	
Kate	Female	16	Yes	
Nirmala	Female	16		No
Navin	Male	16	Yes	
Shabana	Female	16		No
Mufeedha	Female	16	Yes	
Gopal	Male	16		No
Gowtham.b	Male	16	Yes	
Daksh	Male	16		No
Deepika	Female	16	Yes	
Sowmiya	Female	16		No
Mouika	Female	16		No
Santhosh	Male	16	Yes	
Princy	Female	16		No
Jennifer.b	Female	16	Yes	
Praveen	Male	16	Yes	
Selva	Male	16		No
Swetha	Female	16	Yes	
Bina	Female	16	Yes	
Charitha	Female	16		No
Adithya	Male	16	Yes	
Saritha	Female	16		No
Anmol	Male	16	Yes	
Sarvana	Male	16	Yes	
Bala	Male	16		No
Apsara	Female	16	Yes	
Binish	Male	16	Yes	
Adithi	Male	16	Yes	
Selvi	Female	16	Yes	
Bharathi	Female	16	Yes	
Madhan	Male	16		No
Megana.b	Female	16	Yes	
Bhuvana	Female	16		No
Nilesh	Male	16	Yes	

Name	Gender	Age	Prevalence of dental erosion	
Kayal	Male	16	Yes	
Ujjuiyal	Male	16		No
Sandeep	Male	16	Yes	
Riya	Female	16		No
Riyadha	Female	16		No
Sherya	Female	16	Yes	
Kalyan	Male	16	Yes	
Megana.b	Female	16	Yes	
Pavithra	Female	16	Yes	
Sajan	Female	16		No
Rifa	Female	16		No
Sangavai	Female	16	Yes	
prithvika	Female	16	Yes	
Pooja	Female	16		No
Thejaswari	Female	16	Yes	
kanniamma	Female	16	Yes	
Paul	Male	16	Yes	
Rohit	Male	16		No
Wilson	Male	16		No
Rochelle	Female	16		No
Danniel	Male	16		No
Radin	Male	16	Yes	
Gifson	Male	16	Yes	
Thera	Female	16		No
Ranjitha	Female	16		No
Aiswarya	Female	16	Yes	
Badamisiri	Female	16	Yes	
Chandini	Female	16		No
Abilash	Male	16		No
Ahamed	Male	16	Yes	
Ragini	Female	16		No
Judith	Female	16	Yes	
Benitha	Female	16		No
Kelshiya	Female	16	Yes	
Angelina	Female	16	Yes	
Robert	Male	16		No
Mohana	Female	16		No
Kumar	Male	16	Yes	
Sandra	Female	16		No
Juliet	Female	16	Yes	
Thanvur	Male	16	Yes	No
Afridi	Male	16		No
Jaqfar	Male	16		No
Annah	Female	16	Yes	
Anitha	Female	14		No
Liya	Female	14		No
Gayathri	Female	14	Yes	
Mounika	Female	14	Yes	
Elizabath	Female	14		No
Michelle	Male	14	Yes	
Sasi	Male	14		No
Peter	Male	14		No
Keerthi	Female	14		No
Prathana	Female	14	Yes	No
Vinothini	Female	14		
Nalini	Female	14	Yes	
Kirpa	Female	14		No
Vimal	Male	14	Yes	
Babu	Male	14		No
Sai	Male	14	Yes	
Varsha	Female	14	Yes	
yuviraj	Male	14		No
Vignesh	Male	14		No
Lokesh	Male	14	Yes	
Lalith	Male	14		No
Akash	Male	14		No
Annamalai	Male	14		No
Darshan	Male	14	Yes	
Harish	Male	14		No
Priya	Female	14	Yes	No
Priya.K	Female	14		
Shruthi	Female	14		No
Sathish.b	Male	14	Yes	
Jamuna	Female	14		No
Nisha	Female	14		No
Anisha	Female	14	Yes	
Reshma	Female	14		No
Prithivi	Male	14	Yes	
Sanjay	Male	14		No
Ajmal	Male	14	Yes	
James	Male	14		No
Nabeel	Male	14	Yes	
Aahil	Male	14		No
Anwar	Male	14		No
Jarrenda	Male	14		No
Afraz	Male	14		No
Ankitha	Female	14	Yes	
Darren	Male	14		No
Ashik	Male	14		No
Joe	Male	14	Yes	
Oliver	Male	14		No
	Total		104	103
	Female		44	39
	Male		60	64

REFERENCES:

1) U.S. Department of Health and Human Services (8 August 2007). Preventing Chronic Diseases: Investing Wisely in Health. National Center for Chronic Disease Prevention and Health Promotion.
2) Dugmore, C.R; Rock W.P (13 March 2004). "A multifactorial analysis of factors associated with dental erosion" (PDF). British Dental Journal 196 (5): 283–6;discussion: 273. doi:10.1038/sj.bdj.4811041. PMID 15017418. Retrieved 2009-05-21.
3) Beezy Marsh. "Fruit juice can cause tooth decay". Daily Mail. Retrieved 2009-05-21.
4) "'Health juices' harm baby teeth". BBC News Online. 2 August 2007. Retrieved 2009-05-21.
5) Kelleher M, Bishop K. Tooth surface loss: an overview. Br Dent J 1999; 186: 61-66.
6) Milosevic A. Eating disorders and dentist. Br Dent J 1999; 186: 109-113.
7) Shaw L, Smith, A J. Dental erosion — the problem and some practical solutions. Br Dent J. 1999; 186: 115-118.
8) Capp N J. Occlusion and splint therapy. Br Dent J 1999; 186: 217-222.
9) Faigenblum, M. Removable prostheses. Br Dent J 1999; 186: 273-276.
10) King P A. Adhesive techniques. Br Dent J 1999; 186: 321-326.
11) Wickens J L. Prevention and maintenance. Br Dent J 1999; 186: 371-376.
12) Wickens J L. Dealing with failures. Br Dent J 1999; 186: 443-446.
13) Harley K. Tooth wear in the child and the youth. Br Dent J 1999; 186: 492-496.
14) Ibbetson R. Treatment planning. Br Dent J 1999; 186: 552-558.
15) Ward V J. Surgical crown lengthening. Br Dent J 1999; 186: 21-24
16) Jaeggi T, Lussi A. Prevalence, incidence and distribution of erosion. Monographs in Oral Sci. 2006;20:44-65
17) Dental Erosion: Etiology, Diagnosis and PreventionA Peer-Reviewed Publication Written by Yan-Fang Ren DDS, PhD, MPH
18) Mandel, Louis. "Dental erosion due to wine consumption". American Dental Association. Retrieved 2008-01-03.
19) Dental erosion in a group of British 14-year-old, school children. Part I: Prevalence and influence of differing socioeconomic backgrounds. Y. H. Al-Dlaigan,1 L. Shaw,2 and A. Smith,
20) Bartlett, DW. Coward, PY. Nikkah, C. Wilson, RF. The prevalence of tooth wear in a cluster sample of adolescent schoolchildren and its relationship with potential explanatory factors. Brit Dent J 184:125-29, 1998.
21) Milosevic, A, Young PJ, Lennon MA. The prevalence of tooth wear in 14-year-old schoolchildren in Liverpool. Community dent health 11:83-86.1994.

22) . Hussey, DL. Irwin, CR. Kime, DL. Treatment of anterior tooth wear with gold palatal veneers. Brit Dent J 176: 422- 25, 1994
23) The prevalence of dental erosion in a United States and a United Kingdom sample of adolescents Christopher Deery BDS, MSc, PhD, FDS RCS (Edinburgh) Mark L. Wagner, DMD, FACD, FICDChristopher Longbottom BDS, PhD Rachel Simon BA, DDS Zoann J. NugentBSc, MSc,PhD, Dip Appl State.
24) A literature review of dental erosion in children\ S Taji,* WK Seow* *Centre for Paediatric Dentistry Research and Training, School of Dentistry, The University of Queensland.
25) Dental erosion and severe tooth decay related to soft drinks: a case report and literature review*Ran CHENG, Hui YANG, Mei-ying SHAO, Tao HU†‡, Xue-dong ZHOU(Department of Operative Dentistry and Endodontics, West China College of Stomatology, Sichuan University, Chengdu 610041, China)