

Prevalence of erosive tooth wear and associated factors in a group of Mexican adolescents

Álvaro Edgar González-Aragón Pineda, DDS, MSc;
Socorro Aída Borges-Yáñez, DDS, MPH, DrDent;
Adrian Lussi, ProfDrMedDent; María Esther
Irigoyen-Camacho, DDS, MPH, DrDent;
Fernando Angeles Medina, MO, DrDent

Tooth wear is a well-recognized problem among children and adults, but for many years, dental practitioners and public health authorities were not concerned about this condition. Practitioners diagnosed it rarely, particularly in its early stages. Only during the final stages, when dentin hypersensitivity or altered morphology appeared, did the condition become evident in a routine examination. The

acids that are responsible for erosive tooth wear are not produced by the intraoral flora but rather originate from food and intrinsic sources.¹

When the surface of a tooth is attacked by acid, the resulting loss of structural integrity leaves a softened layer on the tooth's surface, which renders it vulnerable to abrasive forces.² Moreover, there may be predisposing factors, such as saliva properties, acquired dental pellicle, tooth structure, and surrounding soft tissues, that can modify a person's susceptibility to erosive tooth wear.¹

The prevalence of erosive tooth wear in adolescents ranges from 3% to 100%.³⁻¹² Results from longitudinal

ABSTRACT

Background. Erosive tooth wear is the irreversible loss of dental hard tissue as a result of chemical processes. When the surface of a tooth is attacked by acids, the resulting loss of structural integrity leaves a softened layer on the tooth's surface, which renders it vulnerable to abrasive forces. The authors' objective was to estimate the prevalence of erosive tooth wear and to identify associated factors in a sample of 14- to 19-year-old adolescents in Mexico.

Methods. The authors performed a cross-sectional study on a convenience sample (N = 417) of adolescents in a school in Mexico City, Mexico. The authors used a questionnaire and an oral examination performed according to the Lussi index.

Results. The prevalence of erosive tooth wear was 31.7% (10.8% with exposed dentin). The final logistic regression model included age ($P < .01$; odds ratio [OR], 1.64; 95% confidence interval [CI], 1.26-2.13), high intake of sweet carbonated drinks ($P = .03$; OR, 1.81; 95% CI, 1.06-3.07), and xerostomia ($P = .04$; OR, 2.31; 95% CI, 1.05-5.09).

Conclusions. Erosive tooth wear, mainly on the mandibular first molars, was associated with age, high intake of sweet carbonated drinks, and xerostomia.

Practical Implications. Knowledge regarding erosive tooth wear in adolescents with relatively few years of exposure to causal factors will increase the focus on effective preventive measures, the identification of people at high risk, and early treatment.

Key Words. Tooth erosion; epidemiology; carbonated beverages; food habits.

JADA 2016;147(2):92-97

<http://dx.doi.org/10.1016/j.adaj.2015.07.016>

 Supplemental material
is available online.

This article has an accompanying online continuing education activity available at: <http://jada.ada.org/ce/home>.

Copyright © 2016 American Dental Association. All rights reserved.

studies have indicated that an increasing number of teeth are affected by erosive tooth wear and that the severity of erosive tooth wear increases with increasing age.¹³

Investigators in several studies have concluded that the prevalence of erosive tooth wear is higher in men,^{4-6,9,14-16} and investigators in some studies found an association between erosive tooth wear and sweet carbonated drink intake.^{4,10,16-18} Other dietary elements reported to be associated with erosive tooth wear include fruit juices,^{11,15-17} sports drinks,^{17,18} fresh fruits, vitamin C,¹⁷ vinegar, and herbal or lemon tea.¹⁸ Investigators have reported milk^{19,20} and yogurt¹⁹ to be protective factors. Investigators in other studies found no association with food or drink intake.^{7,21,22} Investigators also have found erosive tooth wear to be related to toothbrushing,^{4,16} tooth grinding,^{18,19} episodes of vomiting, and episodes of gastroesophageal reflux.¹⁶

Although no investigators have performed studies in the Mexican population, the dietary factors reported to contribute to erosive tooth wear are part of the normal dietary intake in Mexico, which suggests that erosive tooth wear may be present in a considerable proportion of the population.^{4,10,17,18} Mexico has one of the highest sweet carbonated drink intakes worldwide. More than 16 billion liters were consumed in the country in 2005, and the percentage of households consuming sweet carbonated drinks increased from 48% to 60% from 1989 to 2006.²³ The aim of this study was to estimate the prevalence of erosive tooth wear and to identify associated factors in a sample of Mexican adolescents from a high school in Mexico City, Mexico, in 2011.

METHODS

We conducted a cross-sectional study in a sample of 14- to 19-year-old students from 1 high school who agreed to participate. The Ethics and Research Committee, Facultad de Odontología, Universidad Nacional Autónoma de México approved the study protocol (agreement AA8 [CO/SA/SO133/11]). The parents and tutors who agreed to participate signed an informed consent form.

We estimated the sample size assuming a prevalence of erosive tooth wear of 44% obtained in a pilot study of 80 adolescents. The required sample size was 334; we increased it to 417 after considering a possible loss of 20% of the adolescents. The sample frame was constructed based on the alphabetical list of the students' names and through random sampling selection.

We excluded tooth surfaces with orthodontic appliances, extensive restorations covering more than two-thirds of a surface, and third molars from the dental examination. The number of excluded tooth surfaces was 1,232 of 35,028 total surfaces (3.5%).

Variables. We designed a questionnaire to collect the following data: age, sex, acidic dietary intake time, time to finish the beverage or keep or agitate the beverage in the mouth, drinking a beverage just before bedtime, sucking

lemons, gastroesophageal reflux, heartburn, vomiting, acidity in the mouth, time between food or drink intake and toothbrushing, frequency of toothbrushing, toothbrush hardness, brushing strength, brushing direction, xerostomia, tooth sensitivity, and frequent intake of medication. When the answer was dichotomous (yes or no), we followed a positive answer with a question asking about the frequency of the condition.

We included a food frequency questionnaire. This questionnaire asked questions regarding the intake of fruit juice, sports drinks, sweet carbonated drinks, water, fresh and canned fruits, yogurt, condiments, pickled vegetables, spicy food, and canned or preserved peppers. The questionnaires in Spanish and English are included in [Appendixes 1 and 2](#) (available online at the end of this article).

Clinical examination. One standardized examiner (A.E.G.A.P.) who was trained to identify erosive lesions (κ coefficient = 0.83) performed the clinical examinations. The participant was seated under an artificial source of light and assessed with a number 5 dental mirror. The examiner dried the teeth with gauze before the clinical examination.

The examiner assessed each permanent tooth according to the Lussi index.²⁴ The examiner examined the occlusal, vestibular, and oral surfaces of the posterior teeth, as well as the vestibular and oral surfaces of the anterior teeth.

The examiner recorded the presence of erosive tooth wear when a loss of hard dental tissue with enamel or enamel and dentin was observed according to the following criteria:

- In vestibular or oral smooth surfaces, depressions in enamel where the amplitude was clearly greater than the depth, undulating edges in the lesion, incisal translucency of the enamel, loss of the characteristics of the enamel surface (such as perikymata), or preservation of enamel in the gingival crevice
- In occlusal surfaces, concavities on occlusal cusps and restorations protruding from the tooth wear
- The examiner identified the hard tissues involved in erosive tooth wear according to the following codes: 0, no evidence of erosion; 1, initial wear of enamel, with no dentin involved, smooth and glossy surface, and the deepest part of the lesion is white; 2, deep enamel wear, more pronounced signs than those associated with the previous criterion, and yellow translucency through the enamel; and 3, tooth wear with exposed dentin, and the deepest part of the lesion looks yellow. The examiner followed the criteria for every surface and recorded a case of erosive tooth wear if at least 1 of the surfaces had erosive tooth wear. In the case of doubt between 2 criteria, the examiner chose the least affected surface for classification. The examiner reported the presence of erosive tooth wear if a participant had 1 or more affected surfaces and the absence of erosive tooth wear if all of the participant's tooth surfaces were free from erosive tooth wear.

Download English Version:

<https://daneshyari.com/en/article/3136460>

Download Persian Version:

<https://daneshyari.com/article/3136460>

[Daneshyari.com](https://daneshyari.com)