



King Saud University  
The Saudi Journal for Dental Research

www.ksu.edu.sa  
www.sciencedirect.com



ORIGINAL ARTICLE

# Dental hard tissue erosion rates and soft drinks – A gender based analysis in Chennai city, India



Annapurna Kannan, M.A. Adil Ahmed, Prabu Duraisamy \*, Sunayana Manipal, Preethi Adusumillil

SRM Dental College, Bharathi Salai, Ramapuram, Chennai 600 089, India

Received 18 October 2012; revised 19 August 2013; accepted 19 August 2013  
Available online 10 September 2013

## KEYWORDS

Dental erosion;  
Soft drinks;  
Gender association

**Abstract** *Background:* A shift in the type and quantity of beverages consumed has been noticed, especially the decrease in the intake of milk and increased consumption of soft drinks. Soft drinks have a pH level of 2 which causes the need to assess its effect on the oral cavity, especially that of dental erosion. The study was done to evaluate if dental erosion was more prevalent in any one particular gender. Also a comparison was done between carbonated and non carbonated type of soft drinks, the various amounts and frequencies of consumption, the favourite brand of soft drink and their consequent dental erosion rates were evaluated.

*Materials and methods:* A cross sectional descriptive study was done among 400, middle income adults, belonging to the age group of 18–25 years. They were examined between January and March in the year 2012, by a single examiner. A questionnaire was circulated previously in two zones of Chennai, India and the subjects were chosen by lottery method. Clinical approval was obtained from the Ethics Committee of the Department of Public Health Dentistry, SRM Dental College, India to conduct the dental assessment. The dental erosion rates were estimated using Smith and Knight Index.

*Results:* Participants who consumed beverages weekly (17.65% males) had less erosion than those who consumed it daily (61.23% males). Higher the quantity of consumption more was the Erosion Index. Higher index values were seen in those who consumed only carbonated soft drinks (35.16 of female) than those who consumed only non-carbonated soft drinks (15.93% of female). On

\* Corresponding author. Tel.: +91 0 9944483919; fax: +91 044 22492429.

E-mail address: [drdp76@yahoo.co.in](mailto:drdp76@yahoo.co.in) (P. Duraisamy).

Peer review under responsibility of King Saud University.



Production and hosting by Elsevier

comparison of variables between genders, the  $p$  values (0.221 for type of soft drink, 0.826 for quantity of soft drink consumed) obtained were greater than the level of significance ( $> 0.05$ ).

**Conclusions:** Erosion causes deleterious effects to the dental hard tissues. No sex predilection was seen.

© 2013 Production and hosting by Elsevier B.V. on behalf of King Saud University.

## 1. Introduction

Continuous evolution and experimentations with food and beverages have caused a plethora of changes in our staple diet [1–2]. Contemporary changes include shift in the types and quantities of beverages consumed, the manner in which they are consumed and their role in the diet. Most notable, is the decrease in the intake of milk and increased consumption of carbonated and non-carbonated soft drinks [3–5].

Nutrient profiles of these beverages differ, and substitution of these drinks against natural dairy products, have important nutritional implications as most of these soft drinks have a pH in the ranges of 2 [6]. Less recognized, however, are the implications that changes in beverage consumption can have for oral cavity. Oral bacteria ferment carbohydrates and produce acids. The inherent acids and sugars have both acidogenic and cariogenic potential, resulting in dental caries and potential enamel erosion [7,8].

Dental erosion (erosive tooth wear) is the situation of a chronic loss of dental hard tissue that is chemically etched away from the tooth surface by acid and/or chelation without bacterial involvement [9]. These acids can be from diet through the ingestion of food and beverages, or from stomach acids when they reverse course and travel through the oesophagus to the mouth [10,11]. This leads to a significant impact on patients' oral health by creating loss of tooth structure, tooth sensitivity and changes in the appearance of teeth. The pattern of erosion is related to how frequent the dental tissue is exposed to acidic fluid. Many studies have showed a positive relationship between caries and dental erosion and the consumption of soft drinks [6,12–15].

## 2. Materials and method

This cross sectional descriptive study was conducted among four hundred, middle income adults [16] (287 females and 113 males) belonging to the age group 18–25 years. They were examined in Chennai between January and March in the year

2012. Dental examination using mouth mirror and dental explorer (Type III examination) was completed by a single examiner on the permanent dentition of all the participants. Clinical approval was obtained from the Ethics Committee of the Department of Public Health Dentistry, SRM Dental College, Ramapuram, Chennai, India to conduct the dental assessment. Examination for tooth wear was done using Smith and Knight's Tooth Wear Index and scores were recorded for each participant. Smith and Knight's index records wear on all four surfaces (buccal, cervical, lingual and incisal–occlusal), irrespective of the aetiology of dental erosion [17]. The scores were given based on the characteristics seen on the enamel, dentin and pulp [Table 1]. Maximum score obtained by the individual for the most eroded tooth (full tooth or any particular surface) was noted down.

The participants of the study were chosen from those who responded to the questionnaires previously distributed in two zones of Chennai, prior to the oral examination. A lottery method was employed to choose 400 subjects among those who responded to the total number of 700 questionnaires circulated. The questionnaire consisted of essential demographic details and multiple choice questions regarding the subjects' preferred way of consumption of soft drink beverages, type of soft drink, average quantity and frequency of consumption of soft drink. Participants were asked to name their favourite brand of soft drink. All the answers were correlated to participants' score of Smith and Knight's Tooth Wear Index. Varied answers for the favourite brand of soft drinks were given [Table 2].

### Statistical analysis

A master chart was prepared in Microsoft Excel. SPSS software version 15.0 was used for the analyses. The characteristics of the study were analysed separately based on the gender. This was followed by, comparison of the variables between genders. Chi square test was employed. 0.05 was set as the level of significance. Any significant correlation present within each variable connecting the genders was analysed.

## 3. Results

### 3.1. Consumption of soft drinks

The number of female respondents who consumed soft drinks was 279 as against 8, who did not consume it. Among the male respondents, 108 participants consumed soft drinks as against 5, who did not consume it [Table 3].

Higher Smith and Knight Index values were recorded in those who consumed soft drinks than those who did not consume them [Table 3].

$\chi^2 = 0.345$ ,  $p = 0.557$  – no significant association between genders on who consumed more soft drinks [Table 3].

**Table 1** Smith and Knight tooth wear index [16].

Score	Criteria
0	No loss of enamel surface characteristics
1	Loss of enamel surface characteristics
2	Buccal, lingual, and occlusal loss of enamel, exposing dentin for less than 1/3 of the surface; incisal loss of enamel; minimal dentin exposure
3	Buccal, lingual, and occlusal loss of enamel, exposing dentin for more than 1/3 of the surface; incisal loss of enamel; substantial loss of dentin
4	Buccal, lingual, and occlusal complete loss of enamel, pulp exposure, or exposure of secondary dentin; incisal pulp exposure or exposure of secondary dentin

Download English Version:

<https://daneshyari.com/en/article/3175232>

Download Persian Version:

<https://daneshyari.com/article/3175232>

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