Association between Sweet Consumption and Oral Health in European Population

Martin Samohyl¹, Pavol Beno², Katarina Hirosova¹, Lubica Argalasova¹, Diana Vondrova¹, Jana Jurkovicova¹

¹Institute of Hygiene, Faculty of Medicine, Comenius University, Bratislava, Slovak Republic.
²Department of Laboratory Medicine, Faculty of Health Sciences and Social Work, Trnava University, Trnava, Slovak Republic.

Author to whom correspondence should be addressed: Martin Samohyl, Institute of Hygiene, Faculty of Medicine, Comenius University in Bratislava, 24 Spitalska, Bratislava 813 72, Slovak Republic. Phone: +421 902 660 880. E-mail: martin.samohyl@fmed.uniba.sk.

Academic Editors: Alessandro Leite Cavalcanti and Wilton Wilney Nascimento Padilha

Received: 03 June 2018 / Accepted: 26 September 2018 / Published: 08 October 2018

Abstract

Objective: To evaluate the association between frequency sweet consumption of drink (food) and teeth number, prevalence of dental check-ups and teeth pain in European population. Material and Methods: In this descriptive study, the data was evaluated from Eurobarometer database 72.3. It was involved 30.292 of citizens from EU-27 (European Union) countries in Eurobarometer research. The necessary conditions for the including of European countries in our research were complete information about: (i) frequency of sweet consumption (%) in each EU-27 countries, population percentage who has all natural teeth (%) in each EU-27 countries, (iii) prevalence of dental check-ups (%) in each EU-27 countries and (iv) frequency teeth pain in each EU-27 countries. Results: The highest proportion of often teeth pain (9.0%) was in Romania. Positive association between often sweet consumption of drink (food) and teeth number was found. Negative association between often sweet consumption of drink (food) and inhabitants' percentage who have all natural teeth was found. Negative association between often sweet consumption of drink (food) and prevalence of dental check-ups was observed. Conclusion: Our results about the impact sweet consumption of drink (food) on oral health are applicable in oral health programs. It is necessary to include more world countries (more European citizens) into linear regression model of oral health.

Keywords: Oral Health; Dietary Sugars; Toothache; Referral and Consultation.
Introduction

One of the main risk factors of poor oral health are dietary habits (high consumption of sweetened foods [1,2] and drinks) and poor oral hygiene [3]. The chemical constituents are adding to foods by food industries and it makes the foods sweeter and more acidic [4]. High sugars concentration was found in children's foods [5].

The free sugars consumption <10.0% of total daily energy intake lower the teeth decay risk. The lowest sugar energy intake (7.0-8.0% of total daily energy intake) was found in Norway and Hungary and the highest sugar energy intake (16.0-17.0% of total daily energy intake) was observed in the United Kingdom and Spain [6].

The sugar drink consumption was associated with teeth loss. Higher the losing odds 1-5 of teeth were in adults who sugar beverage consumption 0-<1 times a day (OR=1.44), 1-2 times a day (OR=1.58), and >2 times a day (OR = 1.97) than in non-sugar beverage consumers [7]. Most teeth pain occurs as a dental caries result, which are caused by sugars consumption [8].

The aim of the present study was to evaluate the association between frequency sweet consumption of drink (food) and teeth number, prevalence of dental check-ups and teeth pain in European population.

Material and Methods

Study Design

In this descriptive study, the data were evaluated from Eurobarometer database 72.3. It was involved 30.292 of citizens from EU-27 (European Union) countries in Eurobarometer research [9]. The necessary conditions for the including of European countries in our research were complete information about: (i) frequency sweet consumption (%) in each EU-27 countries, population percentage who has all natural teeth (%) in each EU-27 countries, (iii) prevalence of dental check-ups (%) in the last 12 months and (iv) frequency teeth pain in each EU-27 countries.

Statistical Analysis

Multiple linear regression analysis was conducted via the IBM SPSS Statistics, version 24 (IBM Corp., Armonk, NY, USA) at a significance level of less than 0.05.

Results

The data about association between often sweet consumption of drink (food) and often teeth pain are presented in Figure 1.

The most proportion of often sweet consumption was in Malta (30.4%). The most proportion of often teeth pain was in Romania (9.0%). Positive association between proportion of often sweet consumption of drink (food) and proportion of often teeth pain was found.

Negative association between proportion of often sweet consumption of drink (food) and inhabitants' percentage who have all natural teeth was found (Figure 2).
Figure 1. Association between proportion of often sweet consumption of drink (food) (%) and proportion of often teeth pain (%).

Figure 2. Association between proportion of often sweet consumption (%) of drink (food) and inhabitants' percentage who have all natural teeth in European population (EU-27 countries), the latest available Eurobarometer data.

The lowest prevalence of dental check-ups was in Romania (40.8%). The association between proportion of often sweet consumption of drink (food) and prevalence of dental check-ups in the last 12 months was negative (Figure 3).
Discussion

In our study was found one positive association between proportion of sweet consumption of drink (food) and teeth pain. Positive association can be partly explained by the high sugar consumption in EU-27 population. Sugars are one of the most dental caries cause [10] and the consequences of dental caries are cause pain [11,12]. Sugars consumption were 30.2 kg per person/year in the Slovak Republic in 2015 [13]. In a previous studies 49.0% of 14-15y population [14] and 40.0% of United Kingdom population [15] experienced teeth pain. Relative sugars intake is higher in children population (16.0-26.0% of energy intake) than in adults (15.0-21.0% of energy intake) in selected European countries [16]. WHO recommends sugar intake maximum to 10.0% of total daily energy intake (children and adults population). Some authors have shown that 72.0% of schoolchildren reported teeth pain once in lifetime [17]. Foods, which contain minimum 22.5 g of sugar (per 100.0g), are foods with high share sugar [18].

Tooth loss is a population marker of oral health in many countries and advancing age is risk factor of tooth loss [19]. Some findings have shown that the age-standardized incidence rate of teeth loss was >414 per 100,000 person-years in Brazil [20] and 351-414 per 100,000 person-years in the Slovak Republic. Age-standardized proportion of severe teeth loss was >5.3% in Brazil and 4.2-5.3% in the Slovak Republic [20]. Negative association between proportion of often sweet consumption of drink (food) and number of all teeth was found. It can be partly explained poor dental hygiene (teeth brushing). The regular brushing teeth twice a day decrease dental caries. Previous research has shown that 59.7% of adolescents were satisfactory with level of the oral hygiene [21]. A significant correlation has been observed between teeth brushing times (>2 minutes: 47.0% of respondents) and dental caries activity [22].
It was observed that often sweet consumption of drink and foods has negative impact on prevalence of dental check-ups. It can be partly explained as the main risk factors of infrequent dental check-ups, where it does not include often sweet consumption of drink and foods. Among four main risk factors of infrequent dental check-ups are: (i) lower income level, (ii) male gender, (iii) no place for dental care, (iv) dental care anxiety \[23\].

**Conclusion**

Positive association between proportion of sweet consumption of drink (food) and teeth pain was observed. Negative association between proportion of often sweet consumption of drink (food) and inhabitants' percentage who have all natural teeth (percentage of dental check-ups) was found.

**References**


