

Sweet Taste Perception in Relation to Oral and General Health

Akademisk avhandling

Som för avläggande av odontologie doktorsexamen vid Sahlgrenska akademien, Göteborgs universitet kommer att offentligen försvaras i Föreläsningssal 3, Medicinaregatan 12E, Göteborg den 8 november, klockan 9.00

av

Heba Ashi

Fakultetsopponent:
Professor. Paula Moynihan
University of New Castle
United Kingdom

Avhandlingen baseras på följande delarbeten

- I. Ashi H, Lara-Capi C, Campus G, Klingberg G, Lingström P. Sweet taste perception and dental caries in 13- to 15-year-olds: A multicenter cross-sectional study. *Caries Res* 2017; 51: 443-450.
- II. Ashi H, Campus G, Lara-Capi C, Klingberg G, Bertéus Forslund H, Lingström P. Childhood obesity in relation to sweet taste perception and dental caries - a cross-sectional multicenter study. 2017 (Submitted).
- III. Ashi H, Campus G, Bertéus Forslund H, Hafiz W, Ahmed N, Lingström P. The influence of sweet taste perception on dietary intake in relation to dental caries and BMI in Saudi Arabian schoolchildren. *Int J Dent* 2017. <https://doi.org/10.1155/2017/4262053>.
- IV. Sonbul H, Ashi H, Aljahdali E, Campus G, Lingström P. The influence of pregnancy on sweet taste perception and plaque acidogenicity. *Matern Child Health J* 2017; 21: 1037-1046.

**SAHLGRENKA AKADEMIN
INSTITUTIONEN FÖR ODONTOLOGY**



Sweet Taste Perception in Relation to Oral and General Health

Heba Ashi

Department of Cariology, Institute of Odontology, Sahlgrenska Academy, University of Gothenburg, Gothenburg, Sweden

Abstract

The aims of this thesis were to study the difference in sweet taste perception, dental caries and BMI between three different geographical areas (Italy, Mexico and Saudi Arabia) and to elucidate the relationship of sweet taste perception with caries and BMI. Dietary habits were also assessed in relation to sweet taste perception in Saudi Arabia. In addition, the differences in sweet taste perception and plaque acidogenicity between pregnant and non-pregnant Saudi Arabian women were assessed. *Materials and methods:* For papers I, II and III, 669 schoolchildren, 13-15 years-old (220 Italian, 224 Mexican and 225 Saudi Arabian) were included, while in Paper IV the study subjects were a total of 121 Saudi Arabian women (41 non-pregnant, 40 early pregnant and 40 late pregnant). Sweet taste perception was determined by evaluating the sweet taste threshold (TT) and sweet taste preference (TP). For caries registration, DMFS, DMFT and ICDAS indices were used. The BMI-for-age scale was used for anthropometric assessments of the schoolchildren in paper II. In paper III, Saudi schoolchildren were assessed on their dietary habits via an estimated three-day dietary record and questionnaire. Plaque acidogenicity was determined for Saudi Arabian women in paper IV using the strip method. Comparisons between sweet taste perception and the different variables were conducted using different parametric and non-parametric tests. *Results:* Differences were found when comparing the three countries in terms of sweet taste perception (TT and TP). When assessing differences between the countries regarding the dental caries variables, a significant difference was found for DMFS and initial caries, with the highest mean value found among the Saudi Arabian schoolchildren. Sweet taste perception (TT and TP) was found to be related to DMFS and manifest caries in the three countries (Italy, Mexico and Saudi Arabia). A statistically significant difference was found between the three countries in terms of BMI value. No correlation was found for sweet taste perception (TT and TP) and BMI. In Saudi Arabia, sweet taste perception was found to be related to different dietary habits. Sweet taste perception differed significantly between non-pregnant, early pregnant and late pregnant women. In addition, significant differences were reported for plaque acidogenicity, with a lower pH value in the pregnant group. In conclusion, the existing differences observed in schoolchildren between the countries in terms of sweet taste perception, dental caries and BMI are believed to be due to cultural and environmental factors. The sweet taste perception level was found to have an effect on dental health while no such relationship was found with BMI. In addition, findings also suggest a higher risk of developing dental caries among pregnant women. Thus, they should be addressed as high risk group.

Keywords: BMI, Caries prevalence, Children, Dental caries, Dietary habits, Italy, Mexico, Obesity, Plaque pH, Pregnancy, Saudi Arabia, Sweet taste perception