

RESEARCH SUMMARY

Tooth wear and dental erosion and their relationship with diet and habit

Epidemiological studies of tooth wear and dental erosion in 14-year old children in North West England. Part 2: The association of diet and habits **A. Milosevic, P. F. Bardsley and S. Taylor** *Br Dent J* 2004; **197**: 479-483

Objective

To determine the strength of association (expressed as Odds Ratios) of potential risk factors with erosion and tooth wear in 14-year-old schoolchildren.

Design

A random sample of 2,385 children were selected by a stratified two-stage technique based on schools and children.

Setting

Schools in NW England.

Methods

Tooth wear was assessed by one examiner on three surfaces of all 12 anterior teeth (labial, incisal and palatal) and the occlusal surface of all four first molars using a four-point scale. Enamel wear was scored 0, dentine exposure <1/3 scored 1, >1/3 scored 2 and secondary dentine or pulpal exposure, scored 3. A questionnaire enquired about general health, dental health, habits and the frequency of intake of a wide range of foods and drinks.

Results

The Odds Ratios for tooth wear on any surface for habits, reflux and certain foods were: bruxism, 1.10; stomach upset, 1.45; pickles 1.86; vinegar 1.36; salt and vinegar crisps 1.33; brown/other sauces 1.57. Similarly, the odds ratios for potentially erosive drinks were: fizzy drinks 1.32; sport drinks 1.58; herbal/lemon tea 3.97. The frequency of intake was bi-modal with 397 children drinking a can per day and 207 drinking two cans per day. A significant number drank acidic beverages at bedtime but this was not associated with dental erosion.

Conclusion

Although odds ratios greater than unity indicate an association, this was not high for carbonated beverages and many other acidic foods or drinks. Examining at fourteen years may not be ideal, as the determinants of erosion/tooth wear have not acted for long, the indices do not discriminate sufficiently and proportionately few subjects have dentine exposed on smooth surfaces.

COMMENT

Tooth wear is thought to be produced by three factors; attrition, abrasion and erosion. The causality of tooth wear in an individual patient may be determined by history taking and by information gained from questionnaires. However, the complexity of the aetiology has made it difficult to demonstrate strong associations between suspected aetiological factors and tooth wear, a particular example being that between acid drinks and dental erosion. The present study aims to assess the strength of associations between diet, oral hygiene, bruxism and tooth wear. The detailed presentation of the findings may prove confusing to the casual reader since the messages conveyed are complex. Some previously held theories and assertions are upheld whilst others receive only equivocal support or are dismissed. Fortunately there are several clear positive findings, associations are reported between tooth wear and the consumption of acidic foods such as grapefruit and pickles, whilst fizzy drinks again feature as an erosive danger. Herbal or lemon tea emerged as the most serious danger, with an odds ratio of almost 4. However, drinking acidic beverages at bedtime was not associated with dental erosion.

The reasons behind the confusion probably lie in the multifactorial aetiology of tooth wear, which in turn demands careful study design, sample selection and statistical analysis of results of spurious conclusions are to be avoided. An increasing body of evidence suggests that tooth wear increases throughout the teens and an important conclusion from the present study is that much of the previous work in the field of erosion/tooth wear has been based on subjects in the 12-14 age range who were therefore too young for the aetiological factors to have fully exerted their effects. The cumulative erosive effect of relatively innocuous foods and drinks is suggested as a dietary effect worthy of more detailed investigation and late teenagers or young adults are suggested as representing a more appropriate age group for such studies.

W. P. Rock,
School of Dentistry, University of Birmingham
doi:10.1038/sj.bdj.4811744

IN BRIEF

- A wide range of foods and drinks were associated with tooth wear and dental erosion but the strengths of association (Odds Ratios) were generally low.
- Dentists should question patients, even teenagers, with dental erosion about heart burn, reflux and any positive family history of reflux disease.
- Teenagers know little about acids and dental erosion, thus dentists need to educate parents and children about the risks to dental health using patient information leaflets and commercially available literature etc.