Links between diet, dental and weight problems in 3 year old children?

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Objectives: A poor quality diet may be a common risk factor for both obesity and dental caries. While both conditions are dietary induced health problems their aetiology is multi-factorial and the relationship between them is complex. Classification trees have been widely used in clinical research but less so to analyse public health data. This study used classification tree analysis (CTA) to explore factors related to obesity and dental problems in a cohort of Irish pre-school children.

Methods: Data were derived from the second (2010/2011) wave of the GUI infant cohort at 3 years of age, n=9,793. CTA was used to classify variables and describe interactions between multiple pre-selected independent variables including socio-demographics, diet quality, health related behaviour, BMI classification and the target variable, having a dental problem, using IBM SPSS Modeller 14.2 and CHAID algorithm.

Results: The prevalence of those with a dental problem was 5.0% (n=493). The tree model showed a sensitivity of 67% and specificity of 58.5% and overall correctly classified 59% of children. Ethnicity was the most significant predictor of having a dental problem at 3 years. In the majority of the cohort (87%), longstanding illness or disability was followed by mother's BMI and household income. Child's BMI classification and intake of foods such as low fat dairy products, fresh fruit and vegetables were related to the target variable at higher levels.

Conclusion: The highest prevalence of dental problems was among those children who were obese or underweight with a longstanding illness and an overweight mother. Ethnic background may be an important subgroup to target for dental problems in pre-schoolers particularly if cultural differences in food intake patterns can be discerned. The assessment of the role of diet as a common risk factor may require more sensitive dietary intake variables in cohort surveys.

Keywords: dental, child, obesity, food, classification