

Over- and undernutrition: challenges and approaches. 29 June–2 July 2009

Sugar intake and risk of treatment for dental decay: results from a national survey of children in Scotland

L. F. Masson¹, G. McNeill¹, C. Sheehy², L. C. A. Craig¹, J. I. Macdiarmid³, B. A. Holmes⁴ and M. Nelson⁴

¹Division of Applied Health Sciences, University of Aberdeen, Aberdeen AB25 2ZD, UK, ²Scottish Centre for Social Research, Edinburgh EH9 9AW, UK, ³Rowett Institute of Nutrition and Health, University of Aberdeen, Aberdeen AB21 9SB, UK and ⁴Nutritional Sciences Division, King's College London, London SE1 9NH, UK

Dental health of children in Scotland compares poorly with that of the rest of the UK⁽¹⁾. Non-milk extrinsic sugars (NMES) are a major cause of dental decay, and the Survey of Sugar Intake among Children in Scotland⁽²⁾ conducted in 2006 found that mean NMES intake was 17.4% food energy in 3–17 year olds, which is considerably higher than the Scottish dietary target of <10% total energy (<11% food energy)⁽³⁾. As part of this survey the association between NMES intake and risk of treatment for dental decay and the impact that frequent tooth brushing has on this association were investigated.

Children aged 3–16 years were randomly selected from eighty postcode sectors across Scotland using the Child Benefit Register. After an opt-out exercise, the Scottish Collaborative Group FFQ⁽⁴⁾ was mailed to 2352 parents for completion by the parent and/or child (depending on the age of the child). Interviews were carried out for 1700 children by trained field workers who asked about dental health amongst other topics. In total 1512 FFQ were returned, of which fifty-one incomplete FFQ and seventy with extreme energy intakes were excluded from the analysis. Usable data on both diet and treatment for decay were available for 1329 children.

OR for the association between NMES intake and risk of treatment for decay were adjusted for age, Scottish Index of Multiple Deprivation quintile⁽⁵⁾, type of teeth (milk or second teeth), having had treatment to stop decay (e.g. painting or sealing), age of first brushing teeth and frequency of tooth brushing. These data are shown in the Table.

Over half (56%) the children had received treatment for decay (fillings or teeth removed because of decay) and 69% of children brushed their teeth more than once daily. Although frequent brushing of teeth (more than once daily) attenuates the risk of treatment for decay associated with high NMES intakes, children who brush their teeth more than once daily were still at significantly increased risk of treatment for decay if they had high NMES intakes.

NMES intake	% food energy	Frequency of tooth brushing					
		All subjects		More than once daily		Once daily or less	
		OR	95% CI	OR	95% CI	OR	95% CI
Low	≤14.82	1.00	–	1.00	–	1.00	–
Medium	14.83–19.94	1.49	1.11, 2.00	1.39	0.99, 1.94	2.15	1.01, 4.59
High	≥19.95	1.84	1.28, 2.65	1.73	1.14, 2.62	2.50	1.28, 4.87
<i>P</i> (trend)			0.001		0.010		0.011

To improve dental health in children in Scotland, dental health strategies must continue to stress the importance of both good oral hygiene and reduced NMES intake.

Work funded by the Food Standards Agency, Scotland.

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