

**BASCD 2023 ABSTRACT #22****Impact of reducing water fluoride on fluorosis in maxillary central incisors**

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**Background:**

In 2007, water fluoride concentration in Ireland was reduced from 0.8-1.0 to 0.6-0.8 ppm. Results from the Fluoride and Caring for Children's Teeth (FACCT) study indicated no difference in fluorosis measured clinically using Dean's Index (whole-mouth score) in 2016-17 compared with 2002. However, with this measurement method, changes in fluorosis in the aesthetically important maxillary incisors were not assessed.

**Objective:**

To determine the difference in fluorosis levels in maxillary central incisors following reduction of water fluoride concentration.

**Methods:**

Following ethical approval, a before-and-after study compared fluorosis measured from standardised oral photographs of FACCT study 8-year-olds, randomly selected in Cork-Kerry 2016-17 (n=1066) with their counterparts from the National Survey of Children's Oral Health 2002 (n=499). Children were categorised as having lifetime or no exposure to community water fluoridation (Full-CWF/No-CWF). Fluorosis in maxillary central incisors was scored blind, using the Thylstrup-Fejerskov (TF) Index by two trained and calibrated dentists. Photographs were scored in duplicate, and disagreements resolved by consensus. Effect of examination year on fluorosis (highest score on central incisors;  $\geq$ TF 1,  $\geq$ TF 2) was evaluated using multivariable logistic regression adjusted for the effects of other explanatory variables.

**Results:**

Among children with Full-CWF (2002: n= 294, 2016-17: n=331), prevalence of  $\geq$ TF 1 was 75% in 2002 and 40% in 2016-17 (adjusted OR 0.24, 95% CI [0.17, 0.34], p<0.001). Prevalence of  $\geq$ TF 2 was 27% in 2002 and 15% in 2016-17 (adjusted OR 0.50, 95% CI [0.33, 0.75], p=0.001). In 2016-17, fluorosis among children with Full-CWF was predominantly TF 1 and TF 2 and prevalence of  $\geq$ TF 3 (possibly of aesthetic concern) was <5%.

**Conclusion:**

The policy decision to reduce water fluoride concentration in Ireland was effective at reducing fluorosis in the aesthetically important maxillary central incisors. Following the reduction, fluorosis was predominantly of low severity and not of public health concern.

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