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Is fluoride a risk factor for bone cancer? Small area analysis of osteosarcoma and Ewing sarcoma diagnosed among 0–49- year-olds in Great Britain, 1980–2005

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Abstract

Background: Artificial fluoridation of drinking water to improve dental health has long been a topic of controversy. Opponents of this public health measure have cited the possibility of bone cancer induction. The study objective was to examine whether increased risk of primary bone cancer was associated with living in areas with higher concentrations of fluoride in drinking water.

Methods: Case data on osteosarcoma and Ewing sarcoma, diagnosed at ages 0–49 years in Great Britain (GB) (defined here as England, Scotland and Wales) during the period 1980–2005, were obtained from population-based cancer registries. Data on fluoride levels in drinking water in England and Wales were accessed through regional water companies and the Drinking Water Inspectorate. Scottish Water provided data for Scotland. Negative binomial regression was used to examine the relationship between incidence rates and level of fluoride in drinking water at small area

level.

Results: The study analysed 2566 osteosarcoma and 1650 Ewing sarcoma cases. There was no evidence of an association between osteosarcoma risk and fluoride in drinking water [relative risk (RR) per one part per million increase in the level of fluoride = 1·001; 90% confidence interval (CI) 0·871, 1·151] and similarly there was no association for Ewing sarcoma (RR = 0·929; 90% CI 0·773, 1·115).

Conclusions: The findings from this study provide no evidence that higher levels of fluoride (whether natural or artificial) in drinking water in GB lead to greater risk of either osteosarcoma or Ewing sarcoma.

Keywords: Osteosarcoma, Ewing sarcoma, bone cancer, children, young people, artificial fluoridation, fluoride, drinking water, Great Britain, small area analysis



Area	Osteosarcoma	Ewing sarcoma
England	2566	1650
Scotland
Wales

Area	Osteosarcoma	Ewing sarcoma
England
Scotland
Wales

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Scotland
Wales

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