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John N Newton, Nick Young, [...], and John Morris

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Dental caries remains a significant public health problem in many countries and an important cause of health inequalities. In England, almost a third of 5-year-old children and over two-fifths of 15-year-old teenagers are affected, and substantially higher rates of disease are seen among deprived communities.¹ Dental disease can cause impaired nutrition and growth,^{2 3} and is one of the most common causes of child hospital admission. Long-term impacts on appearance, speech, schooling and self-confidence may add up to a substantial disadvantage for affected children.

Water fluoridation schemes were first introduced in England in the 1950s and around six million people across the country now live in areas where the level of fluoride in drinking water is adjusted to an optimum level for oral health. Worldwide, hundreds of millions of people have experienced the benefits of water fluoridation for many decades. The possible health effects of water fluoridation have been studied and reviewed many times.^{4 5} The dental effects of fluoridation, namely reduced dental decay and dental fluorosis, are well described. Water fluoridation is one of

the few interventions that can be expected to directly reduce public health inequalities, although the empirical evidence for this remains relatively weak. Many non-dental health conditions have been alleged as a consequence of water fluoridation, but there is no consistent scientific evidence to support any of these putative associations. In general, the literature suggesting adverse health effects of fluoridation is characterised by poor-quality studies that do not adequately adjust for potential confounding variables.

We have a number of concerns about the paper published this week in *JECH* reporting an apparent association between water fluoridation and hypothyroidism.⁶ The authors have not established a clear prior hypothesis for the association, have misrepresented the conclusions of the existing literature, seem not to have taken adequate account of the potential for confounding, have categorised variables with arbitrary cut-offs that deviate from normal practice, and seem to have made a basic error in reporting the results of their own model. Most important is that they have drawn conclusions which greatly exceed the evidence available from this study, even if the methods used had been reliable.

Hypothyroidism in this country is largely an autoimmune disease, the aetiology of which is well described.⁷ The evidence provided in support of the authors' prior hypothesis of an association with water fluoridation is, therefore, likely to be irrelevant to patients listed on Quality and Outcomes Framework registers in England in 2012, who are not generally at risk of iodine deficiency. In addition, some 20–30% of these patients will be receiving levothyroxine because of

