Evaluation of water fluoridation scheme in Cumbria: the CATFISH prospective longitudinal cohort study

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Tooth decay is the most common disease of childhood, and tooth extraction due to decay is the main reason why children have a general anaesthetic in hospital. It is known that fluoride can prevent tooth decay and can be provided via the water. Research in the USA and UK in the 1940s/50s showed that water fluoridation produced dramatic falls in tooth decay. However, the introduction of fluoride toothpaste in the 1970s also caused large reductions in dental decay.

We undertook a study in Cumbria to see if water fluoridation, reintroduced in 2013, was still useful in reducing tooth decay and if it represented good value for money. We recruited a group of children at birth from September 2014 to September 2015 (referred to as the birth cohort). In addition, a second group of children who were turning 5 years old in 2013–14 were recruited from primary schools (referred to as an older school cohort). We followed the birth cohort until age 5 years and followed the older school cohort until age 11 years, and measured whether or not the younger children had any obvious dental decay in their baby (milk) teeth and the older children had decay in their permanent (adult) teeth. We compared levels of decay in children living in areas with fluoridated water and in children living in areas without fluoridated water.

We found that, in the case of the children followed since they were born, fluoridation did make a modest difference, with 4% fewer children who drank fluoridated water having obvious decay in their baby teeth. Although a difference of a similar size (3%) was seen in children in the older school cohort, where we looked at the permanent teeth, there was not enough evidence to determine if this difference was achieved by chance. For both groups of children, fluoridated water was likely to represent value for money.

The 4% difference we found may not be large enough to convince communities to support water fluoridation schemes. Other ways of preventing tooth decay may be better now that use of fluoride toothpaste is so common and levels of tooth decay are much lower than they were 40 years ago.
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