

# Effect of fluoridated water on invasive NHS dental treatments for adults: the LOTUS retrospective cohort study and economic evaluation

Deborah Moore,<sup>1\*</sup> Blessing Nyakutsikwa,<sup>1</sup>  
Thomas Allen,<sup>2</sup> Emily Lam,<sup>3</sup> Stephen Birch,<sup>2</sup>  
Martin Tickle,<sup>1</sup> Iain A Pretty<sup>1</sup> and Tanya Walsh<sup>1</sup>

<sup>1</sup>Division of Dentistry, The University of Manchester, Manchester, UK

<sup>2</sup>Manchester Centre for Health Economics, The University of Manchester, Manchester, UK

<sup>3</sup>Independent Patient and Public Engagement Representative

\*Corresponding author [deborah.moore@liverpool.ac.uk](mailto:deborah.moore@liverpool.ac.uk)

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## Plain language summary

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## Plain language summary

Fluoride is a natural mineral that prevents tooth decay. It is added to some drinking water and toothpastes to improve dental health. Water with fluoride added is known as 'optimally fluoridated'. Most research on water fluoridation was carried out before fluoride was added to toothpastes in the 1970s and only included children.

We wanted to know if water fluoridation still produced large reductions in tooth decay, now that decay levels are much lower because of fluoride in toothpaste. We also wanted to look at its effect on adults and teenagers.

Dental patients we spoke to told us they worried about needing treatment with the 'drill', or 'injection', losing their teeth and paying for their dental care. To see if water fluoridation helped with these concerns, we compared the National Health Service dental records of 6.4 million adults and teenagers who received optimally fluoridated or non-optimally fluoridated water in England between 2010 and 2020.

We found water fluoridation made a very small difference to each person. Between 2010 and 2020, the number of NHS fillings and extractions was 3% lower per person for those who received optimally fluoridated water. We found no difference in the number of teeth lost per person and no strong sign that fluoridation reduced differences in dental health between rich and poor areas.

Between 2010 and 2020, the cost of optimal water fluoridation was £10.30 per person (not including setup costs). National Health Service dental patients who received optimally fluoridated water cost the National Health Service £22.26 (5.5%) less and paid £7.64 (2%) less per person in National Health Service dental charges over the 10 years.

The benefits we found are much smaller than in the past, when toothpastes did not contain fluoride. The cost to set up a new water fluoridation programme can be high. Communities may need to consider if these smaller benefits would still outweigh the costs.

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