British Society of Paediatric Dentistry

Improving children's oral health

The British Society of Paediatric Dentistry (BSPD) produces position statements on key topics of media interest. These documents are, wherever possible, based on the existing evidence-base and are updated as new evidence becomes available. BSPD position statements represent the views of a collective expert group and have been approved by BSPD Council.

Water Fluoridation – a Position Statement

Summary

Water fluoridation is a public health measure that was first introduced 70 years ago and now benefits an estimated 380 million people worldwide in some 25 countries. It results in substantial reductions in dental decay and resulting sequelae such as abscesses, toothache, tooth extraction and need for general anaesthetic and hospital admission. Dental decay is of medical, social and economic significance. The widespread use of fluoride-containing toothpaste has reduced the burden of dental caries in the UK, but there remains considerable morbidity which is particularly severe in more deprived communities. These communities benefit substantially from water fluoridation. The British Society of Paediatric Dentistry (BSPD) supports the fluoridation of public water supplies in communities where the burden of dental decay is severe enough to warrant this public health measure and fluoridation is technically feasible.

Fluoride and the prevention of dental decay

For nearly a century it has been known that fluoride in drinking water prevents dental decay.

In 1945, the fluoride concentration in the water supply of the US city of Grand Rapids, Michigan, was adjusted to the optimum concentration of 1 mg per litre of water. Subsequent surveys showed substantial improvements in dental health in children who had received fluoridated water. Water fluoridation schemes were introduced in other communities in the United States and in other countries. The success of these public health programmes resulted in the development of other ways of using fluoride's ability to prevent dental decay, for example in toothpastes and mouthrinses. The effectiveness of these is very well established and has resulted in substantial improvements in oral health worldwide.

Water fluoridation worldwide

There are water fluoridation programmes in some 25 countries. In these countries, approximately 380 million people receive water with the fluoride concentration adjusted to the optimum for that climate and other circumstances, while an additional 50 million drink water with near optimum concentrations of fluoride, making a total of about 430 million people receiving an optimum level of fluoride in drinking water. In the USA and in Ireland, about 70% of their populations receive fluoridated water. In Hong Kong and in Singapore there is 100% coverage. In Australia, there is 80% coverage, and in New Zealand 60% coverage. In the UK, about 10% of the population receive optimally fluoridated water.

International support for water fluoridation

The World Health Organization first published a technical report on water fluoridation in 1958. Since then, WHO has consistently found water fluoridation to be safe and effective and has urged countries to consider introducing this public health measure. The Sixtieth World Health Assembly in Geneva in 2007 considered oral health and recommended water fluoridation as an equitable, effective and safe public health measure. The US Centers for Disease Control and Prevention have identified water fluoridation as one of ten great public health achievements in the twentieth century. The two leading international dental organisations – the World Dental Federation and the International Association for Dental Research – have consistently supported water fluoridation.

UK support for water fluoridation

Leading professional organisations in the UK supporting water fluoridation include: Public Health England, the Faculty of Public Health of the Royal Colleges of Physicians of the UK, the British Medical Association, and the British Dental Association. Support has come from across the political spectrum, with facilitating legislation having been introduced over the past thirty years by Conservative and Labour health ministers. Between around two thirds and three quarters of respondents in many national and regional opinion surveys conducted over that period thought fluoride should be added to water if it can reduce tooth decay.

Water fluoridation and child dental health

The effectiveness of water fluoridation has been evaluated in many countries; most of these investigations have evaluated effectiveness in children. As an overview, water fluoridation cut decay experience by half (50% reduction) before the widespread use of fluoride-containing toothpastes, while more recently, since the widespread use of fluoride-containing toothpastes, reduction in dental decay due to water fluoridation has been 35% to 40%. The decay preventing effects of fluoride in water and fluoride in toothpastes are additive so that children living in communities receiving fluoridated water and who use a fluoride-containing toothpaste benefit from both. To provide detail: prior to 1990, 113 publications in 23 countries identified 66 studies of primary teeth providing a modal reduction (the most common reduction) of 40-50% and 86 studies of permanent teeth providing a modal reduction of 50-60%. Since 1990, 59 publications in 10 countries have yielded 30 studies examining primary teeth providing a modal reduction of 30-60% and the 53 studies providing

modal reductions in permanent teeth of 40-50%.

Authoritative reviews have been published in several countries. In the UK, a major review in 2000 concluded that, for children aged 5 to 15 years, the average reduction in decay was 2.2 teeth; this is equivalent to about a 40% reduction. In a follow-up review in 2015, the average reduction in caries in primary teeth was 35%. In the USA, a major review put the per cent reduction in decay due to water fluoridation at between 30 and 50%. Major reviews in Australia and New Zealand have confirmed the clinical effectiveness and cost effectiveness of water fluoridation.

There are other benefits to children from water fluoridation other than the reduction in the number of decayed teeth. Badly decayed teeth cause abscesses and toothache, and the occurrence of dental abscesses and toothache is reduced by water fluoridation. Extraction of decayed teeth is much less common in children living in fluoridated communities; likewise, the experience of general anaesthetics for tooth extraction is less. Extraction of decayed teeth is one of the most common reasons for admitting children to hospital in the UK and other countries. These hospital admissions are expensive – studies in England, Israel and Australia show that water fluoridation approximately halves the need for these admissions.

The most deprived and vulnerable children in our society, unfortunately, have the most dental decay. An excellent attribute of water fluoridation is that it reaches all people in the community, requiring no personal effort or expense by parents and carers. Very many surveys in this country and in other countries have shown that it is these children who benefit most from water fluoridation. That is why the World Health Organization calls water fluoridation an equitable public health measure.

The need for water fluoridation in the UK

As a result of the widespread use of fluoride-containing toothpastes, dental health of children in the UK has improved substantially over the past 40 years. However, much morbidity remains, and dental decay is one of the most prevalent and expensive diseases. The national survey of children's dental health in the UK in 2015 indicated that 25% of 5 year.olds had decayed primary teeth. For those with decay, an average of 3.4 teeth were affected per child. There are substantial differences in experience between social groups and areas of the country. For example, in the 2011/12 survey of 5 year olds, the number of decayed teeth per child showed a sixfold difference between the worst and best local authority in England; in the 2008/9 survey of 12 year olds, the number of decayed teeth showed an eightfold difference between the worst and best local authority in England.

Hospital admissions of children for dental extractions are far too high. In 2014/15, there were 63,196 admissions of children and adolescents (aged 0 to 19 years) in England for 'dental extractions'. In 2015, a report by the Royal College of Surgeons of England stated: 'Approximately 46,500 children and young people under 19 were admitted to hospital for a primary diagnosis of dental caries in 2013–14. These numbers were highest in the five- to nine-year-old age group, which showed a 14 per cent increase between 2010–11 and 2013–14, from 22,574 to 25,812. The second highest admissions in 2013–14 were for tonsillitis, with approximately 11,500 cases, making dental caries by far the most common reason for children aged between five

and nine to be admitted to hospital.' The report continues: 'Not only is the process a distressing experience for both child and parents, it is costly for the NHS, with £30 million spent on hospital-based tooth extractions for children aged 18 years and under in 2012-13.'

While community programmes aimed at preventing dental caries may be targeted at communities with greatest need, water fluoridation is unique in its ability to reach all people at minimal cost.

Position statement

The British Society of Paediatric Dentistry supports the fluoridation of public water supplies in communities where the burden of dental decay is severe enough to warrant this public health measure and fluoridation is technically feasible.

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