



## Sugar: pure, white and deadly

Dental caries is the most widespread non-communicable disease and a major global public health problem. The linkage between the level of sugar consumption and dental caries is well-proven. Dentistry in general, and endodontics in particular, primarily exists to tackle the scourge of excessive sugar consumption. Effectively, excluding periodontal disease and dental trauma, the majority of our everyday clinical practice is dedicated to treating the ravages of dental caries.

Certain age groups, such as children, are particularly susceptible to dental caries. In 2017 to 2018, over 26,000 UK children aged 5 to 9 were admitted to hospital due to dental caries<sup>1</sup>. This figure is more than double that admitted for tonsillitis per annum, and represents another increase for the second consecutive year.

In the UK, the recommended daily maximum sugar intake for children aged 4 to 6 is 19 g (or roughly equivalent to five sugar cubes); 24 g (six sugar cubes) for children aged 7 to 10; and 30 g (seven sugar cubes) for those aged 11 and over<sup>2</sup>. It has been reported that, in recent years, sugar consumption by UK children has declined slightly; unfortunately, it is still around 52 g (13 sugar cubes) per day<sup>3</sup>. Public Health England (PHE) estimated that based on their total sugar consumption from the age of 2, children would have already exceeded the maximum recommended sugar intake for an 18-year-old by the time they reach their tenth birthday<sup>4</sup>!

Dental caries is not the only undesired consequence of excessive sugar consumption. Eating too much sugar contributes to obesity and the associated risk of diabetes. In addition, Type 2 diabetes in children is invariably always associated with obesity, prompting another worrying health issue: the 'time bomb' of childhood obesity. Regardless of age, the 'obesity epidemic' is a growing public health concern. For example, in the UK over 41,000 overweight patients, including seven

teenagers, received new hips and knees in 2018<sup>5</sup>. In just 8 years, there has been a six-fold increase in the number of obese patients who have had joint replacement surgery; from 6,191 patients in 2009 to 2010 to 41,761 patients in 2017 to 2018. This represents a 575% increase and a cost of £200 million a year to the UK's National Health Service.

In the effort to tackle childhood obesity in the UK, the Soft Drinks Industry Levy (Enforcement) Regulations 2018 came into effect on 6 April 2018. This piece of government legislation is aimed at encouraging manufacturers to cut the sugar content of their soft drinks<sup>6</sup>. The levy on sugar-sweetened beverages, commonly referred to as the 'Sugar Tax', has already resulted in many manufacturers reformulating and reducing the sugar content of their products.

The 'Sugar Tax' is only one of many UK public health initiatives. At the start of this year and under the Change4Life banner, PHE launched a new health campaign to reduce sugar in children's diets in order to tackle growing rates of childhood obesity<sup>7</sup>. The campaign highlighted ways to help families swap higher, for lower, sugar-containing food items. It advises reading labels and using the free Change4Life Food Scanner smartphone app to check and help pick products with the lowest sugar content.

Apart from dental caries, obesity and diabetes, there is also a correlation between sugar and heart disease. Intended for a lay readership, *Pure, White and Deadly* by John Yudkin was first published in 1972. A revised and expanded version of the book was issued in 1986. In the USA, it appeared with the less alarming title, *Sweet and Dangerous*. Yudkin was a British physiologist, nutritionist and physician and the founding Professor of the Department of Nutrition at Queen Elizabeth College, London, now part of King's College London. Drawing on the available evidence at that time, including epidemiological data from various

sources, Yudkin outlined the health problems beyond just dental caries, especially heart disease, associated with sugar. Unfortunately, Yudkin's prophetic message was met with scepticism and derision from many quarters. Apart from a lack of acceptance and opposition to his views, there was also a concerted campaign by the food industry and a number of scientists to discredit his work. Since then, several advances and further discoveries have provided evidential credence to Yudkin's theories. Finally, Yudkin's conclusions received due attention as they could no longer be ignored. Forty years after it first went to press and with a new introduction by Robert H. Lustig, an American paediatric endocrinologist, Yudkin's book was republished in 2012.

To date, approaches including smarter digital communication, advertising restrictions, better food labelling, public health campaigns and regulatory steps have all been utilised to help reduce sugar consumption. At a recent summit on sugar and oral health hosted by the British Dental Association, a human-rights-based angle was even considered<sup>8</sup>. It was suggested that the sale of high sugar-containing products to children could be considered a breach of human rights as their health should be protected by the state. The need to resort to a human-rights-based argument may be viewed as a sign of desperation. Despite the many and varied approaches, the battle to tackle excessive sugar consumption is far from being won.

Given the many stakeholders and conflicts of interest, the impact of sugar consumption on health will remain a controversial issue. In the case of dental caries, although its correlation with sugar is long known, it is a disappointment shared by many that despite expectations, there is arguably lamentable inertia at curbing excessive consumption. It seems that it is only the realisation that excessive sugar consumption may damage more than just teeth that has led to increased measures to control sugar consumption. Since

the danger of excessive sugar consumption is a global public health issue, there is no room for complacency. We must all actively participate in the fight to control sugar consumption. If coffin nails may be used as a metaphor for cigarettes because of the harmful effects of smoking, then unless excessive consumption is curtailed, sugar may be considered akin to sweet oral poison.



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## References

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