

Sugars and Tooth Decay

Introduction:

Tooth decay, or 'dental caries', occurs when acid from within the mouth attacks the enamel and dentine of the teeth causing holes or cavities to form. The acid is produced by bacteria that are found within the plaque – a sticky and thin film that repeatedly forms over the teeth. When **sugar** is consumed it interacts with the bacteria within the plaque to produce acid¹. This acid is responsible for dental caries because it slowly dissolves the enamel creating holes or cavities in the teeth. Tooth decay can lead to tooth abscesses, which may result in the tooth having to be removed².

Despite the decreasing levels of tooth decay over the past decades, it still remains one of the most common problems in the UK, second only to the common cold³. It is estimated that **1 in 3 adults** suffers from dental caries and close to **1 in 4 children** equally suffer from some form of tooth decay⁵.

Sugar and tooth decay:

Sugars in food and drinks play a major role in the development of dental caries. Bacteria within the plaque use the sugar as energy and release acid as a waste product, which gradually dissolves the enamel in the teeth¹.

In 2010, the World Health Organisation (WHO) commissioned a systematic literature review to answer a series of questions relating to the effects of sugars on dental caries. The systematic review showed a consistent evidence of moderate quality supporting a relationship between the amount of sugars consumed and dental caries development. There was also evidence of moderate quality to show that dental caries is lower when free sugars intake is less than 10% of energy intake. Tooth decay progresses with age, and the effects of sugars on the dentition are lifelong. Even low levels of caries in childhood are of significance to levels of caries throughout the life-course. Analysis of data suggests that there may be benefit in limiting sugars to less than 5% of energy intake to minimise the risk of dental caries through the life course.¹⁰

Furthermore, the Scientific Advisory Committee on Nutrition (SACN) recently published a report indicating a clear link between the consumption of sugars-containing foods and sugars-containing beverages and the incidence of dental caries both in deciduous and permanent teeth. SACN reviewed 11 cohort studies that identified a relationship between consumption of sugars-containing foods and the incidence of dental caries in deciduous dentition in children. They also reviewed seven cohort studies that presented evidence on the relationship between dental decay in children and sugars-sweetened beverages. A greater frequency of consumption was also found to be associated with higher incidence of dental caries⁷.

Free sugars are now found in almost all food and are the most important factor in the deterioration of oral health. It is especially problematic in children who have become accustomed to sugar at an early age. Tooth decay is the leading cause for hospitalisation among 5-9 year olds in the UK, with 26,000 children being hospitalised each year due to tooth decay – in other words, 500 each week!⁸

Who is at risk of tooth decay?

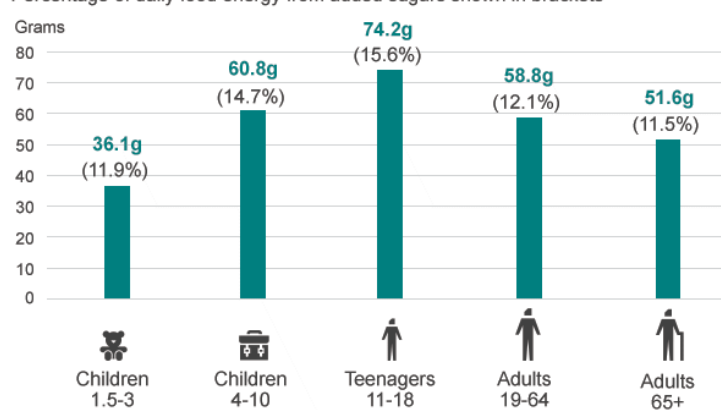
Everyone is at risk of tooth decay, but children and adolescents are most at risk. Dental caries are the most common cause of tooth loss in young people³. Plaque begins to build up on teeth only 20 minutes after we begin eating and if it is not removed effectively, tooth decay starts. People who regularly consume sugar have a higher risk of developing dental caries, particularly if the food they eat is sticky or consumed in between mealtimes. Sugars-containing snacks and sugars-sweetened beverages have particularly bad effects on teeth. People who smoke and consume alcohol are also more at risk.¹ The prevalence of dental caries is also associated with social factors – where adults from lower income households are more likely to suffer from dental caries than those from higher income households (37% compared with 26%)⁶.

Dietary Advice:

At present, we consume far too much sugar each day. In light of a recent review published by SACN and WHO, the recommended daily intake of sugar has been lowered to less than **5%** of daily energy intake, or approximately **7 teaspoons/cubes (=30g)** of sugar per day for anyone age 11 or above. The recommendation for children between 4 and 6 years old is **19g**, and the recommendation for children between 7 and 11 years old is **24g**. This 5% recommendation is far below the current intake which is 11.9% in children aged 1.5 to 3; 14.7% in children aged 4 to 10; and 15.6% in children 11 to 18. The evidence suggests that if this daily intake were reduced to 5% it would have a major effect on reducing the amount of dental caries and improving oral health in general⁹.

Daily added sugar intake, by age groups

Percentage of daily food energy from added sugars shown in brackets



Source: National Diet & Nutrition Survey, rolling programme 2008-12

Other ways to reduce dental caries include⁴:

- ✓ Brushing teeth thoroughly twice a day with fluoride-containing toothpaste as well as flossing daily.
- ✓ Reducing the amount of sugars-containing sticky food, and rinsing the mouth with water if they are consumed.
- ✓ Reduce snacking; which helps reduce the production of acid in the mouth.
- ✓ Reduce the consumption of sugars-sweetened beverages.

References:

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