Sugars and dental caries

Key facts

- **Dental caries (also known as tooth decay or dental cavities) is the most common noncommunicable disease worldwide.**
- **Severe dental caries affects general health and often causes pain and infection, which may result in tooth extraction.**
- **Dental caries is an expensive disease to treat, consuming 5–10% of healthcare budgets in industrialized countries, and is among the main reasons for hospitalization of children in some high-income countries.**
- **Free sugars are the essential dietary factor in the development of dental caries. Dental caries develops when bacteria in the mouth metabolize sugars to produce acid that demineralizes the hard tissues of the teeth (enamel and dentine).**
- **In many countries, sugars-sweetened beverages, including fruit-based and milk-based sweetened drinks and 100% fruit juices, are a primary source of free sugars, as well as confectionery, cakes, biscuits, sweetened cereals, sweet desserts, sucrose, honey, syrups and preserves.**
- **Limiting free sugars intake to less than 10% of total energy intake – and ideally even further, to less than 5% – minimizes the risk of dental caries throughout the lifecourse.**
- **Severe dental caries is a frequent cause of absenteeism at school or work. An association between dental caries and undernutrition in children has been reported in some low- and middle-income countries; however, whether this is cause or effect, or both, remains to be determined.**

Dental caries is a major public health problem globally and is the most widespread noncommunicable disease (NCD). It is also the most prevalent condition included in the 2015 Global Burden of Disease Study, ranking first for decay of permanent teeth (2.3 billion people) and 12th for deciduous teeth (560 million children).

Dental caries can be prevented by avoiding dietary free sugars. Moreover, dental caries is largely preventable through simple and cost-effective population-wide and individual interventions, whereas treatment is costly, and is often unavailable in low- and middle-income countries.

Teeth affected by caries are often extracted (pulled out) when they cause pain or discomfort.

Severe dental caries can impair quality of life, including difficulties in eating and sleeping, and in its advanced stages (abscesses), it may result in pain and chronic systemic infection or adverse growth patterns. Tooth decay is a frequent cause of absence from school or work.

Risk factors

Everyone is at risk of dental caries, but children and adolescents are most at risk. Almost half of the world's population is affected by dental caries, making it the most prevalent of all health conditions. High levels of dental caries occur in middle-income countries, where sugars consumption is high. The majority of dental caries occurs in adults because the disease is cumulative. There is a clear dose-response relationship between sugars consumption and dental caries. The disease is also associated with socioeconomic status, with high prevalence rates among the poor and disadvantaged population groups.

Dental caries develops over time; loss of tooth substance (enamel and dentine) is caused by acid production resulting from bacterial metabolism of sugars. Early stages are often without symptoms, but advanced stages of dental caries may lead to pain, infections and abscesses, or even sepsis.

It has been estimated that, globally in 2010, US$ 298 billion was spent on direct costs associated with dental caries. In addition, indirect costs came to US$ 144 billion, with the total financial cost reaching US$ 442 billion in 2010.

Prevention and control

Population-wide strategies to reduce free sugars consumption are the key public health approach that should be a high and urgent priority. Because dental caries is the result of lifelong exposure to a dietary risk factor (i.e. free sugars), even a small reduction in the risk of dental caries in childhood is of significance in later life; therefore, to minimize the lifelong risk of dental caries, free sugars intake should be as low as possible.

It is important that population-wide prevention interventions are universally available and accessible. Such interventions include the use of fluoride and comprehensive patient-centred essential oral health care.

Challenges

Dental caries disproportionally affect poor and disadvantaged populations, which have lower access to prevention and care. Often, dental caries does not receive adequate priority in health planning due to an underestimation of the true burden and impact of the disease. The focus of interventions is generally characterized by an isolated disease approach and a focus on costly clinical treatment, rather than on integrated cost-effective public health strategies that address entire populations and focus on common risk factors for NCDs.

Economic growth is associated with increased access to sugar-sweetened beverages and other dietary sources of free sugars. Increased availability of sugars in the absence of adequate oral health preventive measures is associated with a marked increase in the burden of oral disease.