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Dental caries in children

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Dental caries is a common childhood health problem in New South Wales (NSW). It disproportionately affects children from low income, Aboriginal and migrant families, and children who live in rural and remote areas.[1] If left untreated, caries can significantly undermine child health and development, and may require treatment in hospital under general anaesthesia.[2]

Disease aetiology

Caries is a bacterial disease that is modified by diet. It requires the simultaneous presence of three factors: bacteria, fermentable carbohydrates and a susceptible tooth. A number of bacteria have been linked to caries, however, there is strong empirical evidence that *Streptococcus mutans* is the primary disease agent in caries development and progression.[3] Children are not born with *S. mutans* in their mouth but are exposed to the bacteria. Bacteria are mostly transmitted from the primary carer to child via activities such as tasting the child's food before the child eats.[2]

Bacteria in dental plaque metabolise sugars and starches, producing organic acids. Organic acids lower the pH in the mouth and promote the loss of essential minerals from the tooth surface, including fluoride, calcium and phosphate. Minerals are returned to the tooth surface once the neutral pH is restored (approximately 20 minutes after eating). If there is a frequent net loss of essential minerals from the tooth surface, over time the tooth structure will break down, creating a cavity.[3]

Implications of untreated caries for child health and development

Poor oral health and untreated dental caries in childhood can impede healthy growth and development. Advanced caries may lead to: suppressed growth due to dental pain and reluctance to eat; difficulty communicating with others due to impaired speech; low self-esteem due to bad breath and an unsightly smile; and poor educational outcomes due to dental pain, interrupted sleep, difficulty concentrating and hours of schooling lost.[2,4]

Risk factors

Dental caries in children is mostly preventable and can be reversed if detected at an early stage.[5] Key modifiable risk factors include: frequent consumption of high sugar foods and drinks; poor oral hygiene; high levels of *S. mutans* in the primary carer's mouth; and restricted access to a fluoridated water supply.[2] Consumption of fluoridated water protects against caries as fluoride assists with the replenishment of essential minerals to primary teeth, and, when ingested during the development of teeth, makes them resistant to decay-causing organic acids.[3]

Prevention

A number of strategies have been proven empirically to reduce the risk of dental caries in children, including:

- Fluoridating public water supplies. Water fluoridation is a safe, effective, cheap to administer, and equity-promoting population oral health strategy.
- Brushing with adult-strength fluoride toothpaste twice daily. Regular brushing with fluoride toothpaste is important for rural and remote communities that do not have access to fluoridated water. Parents and guardians should seek advice from a dental professional before introducing adult-strength toothpaste for children aged under 6 years.

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- Curtailing the consumption of sugary foods and drinks between meals. Promoting tap water as a substitute for juices and soft drink is an important strategy, as is limiting the use of bottles containing sweet fluids, formula or milk, especially at night.
- Improving the oral health of pregnant women and recent mothers. Parents and carers with good oral health are less likely to pass *S. mutans* and other decay-causing bacteria to their young children.[2,3,6]

The NSW Early Childhood Oral Health Program

Research has indicated that use of dental services and exposure to oral health promotion are critical for the prevention and early identification of caries.[5] Despite this, visits to the dentist by Australian children aged from birth to 5 years remain infrequent and episodic, with attendance mainly occurring when the disease process is advanced.[4]

Primary health professionals, on the other hand, have more regular access to families with infants and young children, and can affect real health benefits through prevention and early identification of caries.[7]

The NSW Early Childhood Oral Health Program seeks to improve the health and wellbeing of children by:

- providing preventive oral health advice from pregnancy onwards for parents and child health professionals
- providing child health professionals with the skills and resources to integrate oral health risk assessments into child health checks
- establishing pathways for prompt and appropriate referrals from primary health professionals to dental clinics
- ensuring early management of dental disease by oral health professionals and family-centred service provision.

Key strategies of the Program include: the implementation of early childhood oral health guidelines for child health professionals in NSW; the development and broad dissemination of resources supporting prevention and early identification of dental disease in young children (e.g. the *Lift the Lip* resource and the version for Aboriginal people, *See My Smile*); and the development of education programs to assist child health professionals in providing parents and guardians with age-appropriate guidance to prevent caries in young children.

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