



your body matters



Teacher Notes J: Oral Health

Nourishing Body & Mind for a Healthy Life

A Primary Health and Wellbeing Curriculum Pack

Revised Version 2023



Teacher Notes J: Oral Health

Associated lesson plans		
Primary Stage	Lesson	Title
3	3.3	Oral health
4	4.1 (2)	Food Groups; What Helps My Teeth and What Harms Them"
5	5.3	Teeth and Decay
Useful websites	https://www.childsmile.nhs.scot/ <i>Provides resources, fact and information for professionals working in health, education, community, voluntary sectors who work together to improve child oral health.</i>	

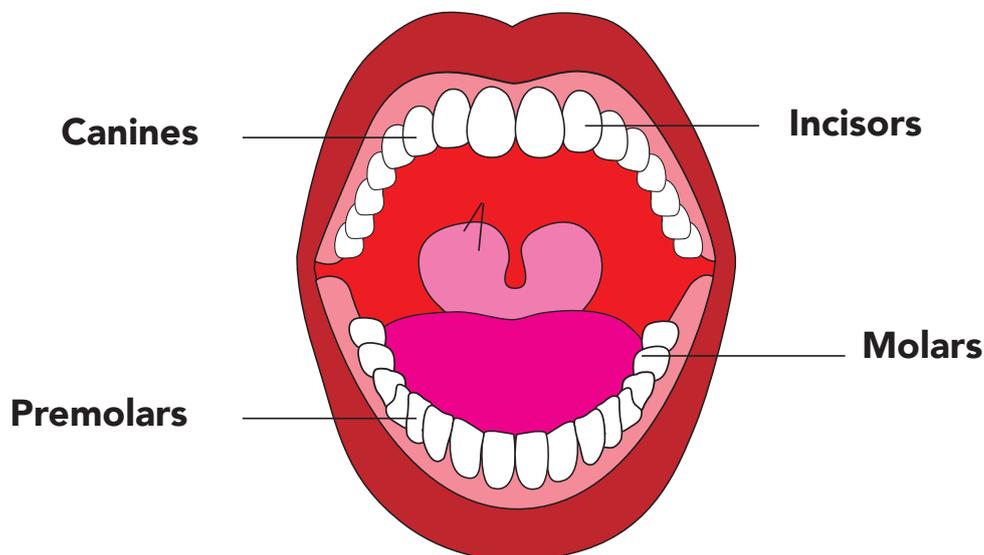
matters

What are teeth for?

Teeth are required for eating, speaking and smiling.

There are four types of teeth, each performing a different function of the chewing process:

- **Canines:** the teeth in the corners of the mouth. These teeth have very long roots and pointed tips because they tear and rip food apart.
- **Premolars:** located immediately behind the canines. They are for crushing food.
- **Incisors:** the teeth at the front of the mouth. Their function is to cut food.
- **Molars:** these teeth make up the rest of the teeth in the mouth. Molars are bigger than the premolars, with larger, flatter chewing surfaces. These teeth chew and grind food into smaller pieces, mixing it with saliva.



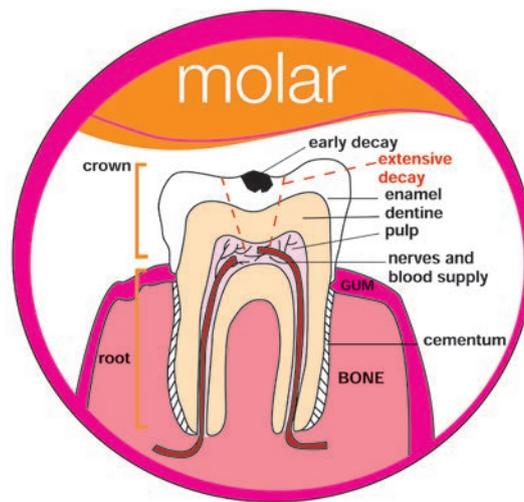
What is a tooth?

A tooth can be divided into two parts; the crown that sits above gum level (this is the part that is seen in a smile or when the mouth is opened) and the root that sits below gum level and anchors the teeth in the jawbones (this part accounts for 2/3rds of a tooth's total length).

The core of the tooth is made up of dentine, some of which is in the crown with the majority in the root. Pulp, which is made up of blood vessels is in the centre of the dentine which convey nutrients to the dentine, and nerves which carry impulses to the brain. The dentine in the crown of the tooth is covered by enamel, the hardest substance in the body. The root of the tooth is covered in cementum, a substance that helps to hold the tooth in its place in the jawbone.

Teeth do not have to be straight, bright and shiny white to be healthy and strong. However, we do need to look after our teeth to keep them healthy, strong and to prevent them from becoming unhealthy, weak and decayed.

We have two sets of teeth during the life cycle; 20 baby teeth (primary teeth) and 32 adult teeth (permanent teeth). Our adult teeth replace baby teeth in stages from about the age of 6 when the first adult tooth erupts behind the existing baby teeth. Between the age of 6 and 12, children have a mixture of baby teeth and adult teeth. Baby teeth maintain the space required for the adult tooth to erupt and grow into. It is important to look after both our baby and adult teeth as they are required for eating, speaking and smiling.



Dental health in Scotland

The introduction of preventative oral health programmes has resulted in significant improvements in children's oral health over the years. However, the concerted efforts of health, education and parents must continue if we are to see further improvements in children's oral health.

Childsmile Core is a Scotland-wide initiative to help improve the health of children's teeth. Childsmile School provides clinical prevention programmes twice yearly including fluoride varnishing, through community and primary care dental services for children attending priority primary schools.

Although children's dental health is continuing to improve, 27% of Scottish school children have dental disease by age 5, and the proportion of children in Scotland estimated to have severe decay or abscess has increased from 6.6% in 2020 to 9.7% in 2022 (NDIP, 2022).

In Greater Glasgow and Clyde, 57% and 86.3% of primary 1 children had no obvious sign of decay in the most and least deprived areas, respectively; highlighting the health inequalities gap that exists between the most and least deprived children in Glasgow.

Tooth Decay: the process

The environment in the mouth holds the enamel of the teeth in a constantly changing balance between demineralisation by acid (produced by dental plaque) and remineralisation (through the nutrients brought to the teeth in the saliva).

Dental plaque is composed of a variety of substances including bacteria and if left undisturbed (i.e., through lack of dental hygiene and toothbrushing) it accumulates thickly around the gums and between teeth.

When sugars enter the mouth, the bacteria in plaque on the surfaces of the teeth rapidly absorb the sugars. Inside the bacterial cells, the sugars are converted into acids, which then accumulate in the plaque layer. When the pH of the plaque coating on teeth falls to approximately 5.5 (the critical pH) minerals are dissolved in the enamel; this process is known as demineralisation. If no further sugars enter the mouth to be converted by plaque, the plaque will return to its normal pH level between 40-60mins. When this happens minerals from the saliva flow into the tooth and remineralisation occurs. Frequent exposure to foods and drinks that contain sugars will increase the frequency and duration of the demineralisation period and will subsequently decrease the opportunities for remineralisation.

The first signs of decay from the effects of plaque-induced acid attack are chalky white spots on the teeth. At this stage, the damage can be reversed if the frequency of sugar consumption is reduced, and the teeth are brushed regularly with a fluoride toothpaste to remove plaque from the surface of the teeth (reducing the potential for acid attack) and to coat the teeth in fluoride to allow remineralisation to occur.

Later decay can be seen as staining and discolouration of the enamel, which can further progress to damage the underlying dentine causing a cavity to form in the tooth. At this stage the tooth will probably be sensitive to hot and cold stimuli. The damage to the tooth can be halted at this stage by a visit to the dentist for a filling. Untreated decay of the dentine can become severe and can result in damage to the pulp. If the pulp becomes affected painful dental abscesses can form. If this happens, the tooth is dead and may require more complex treatment (root treatment) or extraction.

Plaque + Sugar > Acid
Acid + Tooth > Decay

Dental disease (caries) can cause:

- Pain, discomfort and suffering
- Speech difficulties
- Difficulty eating
- Embarrassment, low confidence & self-esteem
- Absence from school
- Avoidance of normal social interaction such as playing
- Hospital admission for tooth extraction under General Anaesthetic

Dental Erosion

Dental erosion is the loss of tooth enamel caused by acid exposure from our diet. It is thought that the increased consumption of acidic soft drinks, including carbonated drinks and fizzy water, citrus fruits and juices, diet drinks, sports & energy drinks and water containing additives such as squash and citrus fruits are linked to dental erosion.

Dental Erosion

The Scottish population consumes too few fruit and vegetables, fish and starchy carbohydrates and conversely eats too many foods high in fats, sugars and salt. This dietary imbalance increases the risk of developing chronic diseases such as obesity, heart disease, certain cancers and tooth decay. The main dietary sources of these sugars in children include soft drinks (including fresh fruit juice), cereals and cereal products, confectionery, preserves and sweet spreads.

To maintain good oral health, dietary advice should include the following:

- Reducing the amount and frequency of food and drinks containing sugar
- Sugary food and drinks should only be consumed at mealtimes, if at all, rather than between meals
- Avoid sugar-containing foods and drinks at bedtimes

Fresh fruit and vegetables play an important place in the nutritional content of our diet but do naturally contain sugars. Fruit juices, dried fruit, smoothies, purees and mashed fruit are best eaten as part of a meal as the structure of the fruit has been altered which means the sugar is released quicker than whole fruit. This can damage teeth in a similar way to sugar, sweets, desserts and fizzy drinks. All fizzy drinks, including diet/light and energy/sports versions all contain acid and or sugars, which contribute to acid erosion, and decay.

Often, we are not aware of the amount of sugar that is within many of the foods and drinks that we consume.

Approximate added sugar content of some common foods:

Food portion	Approximate sugar content (tsp)	Food portion	Approximate sugar content (tsp)
Chocolate digestive	1	Strawberry jam (1 tbsp.)	2
Plain digestive	½	Strawberry flavoured water (500ml)	1 ½
Jaffa Cake	1 ½	Chocolate spread (1 tbsp.)	2
Can of regular coke (330ml)	8 ¾	Orange energy juice (fizzy 380ml)	4 ¼
Can of Irn-Bru (330ml)	4	Vanilla ice cream (1 scoop)	2
Mars Bar (51g)	7 ¾	Jellybeans (25g 1/8 of a bag)	3
Polo mints (tube 34g)	8	Chocolate milk (1 glass)	4
Coco Pops Cereal Bar (20g)	2	Petits Filous Fruity smooth yogurt	3

Hidden Sugars in the diet

Sugar can be labelled in various ways which can be confusing and misleading. Some alternative names for sugar to look out for include:

Beet sugar	High fructose glucose syrup
Brown sugar	Hydrolysed starch
Cane Sugar	Invert sugar
Corn Sweetener	Invert sugar syrup
Dextrose	Icing sugar syrup
Fruit Juice Concentrate	Isoglucose
Fructose	Levulose
Glucose	Maltose
Glucose syrup	Molasses
Fructose glucose syrup	Sucrose
Glucose fructose syrup	Sucrose syrup
Granulated sugar	Sugar
High fructose corn syrup	Syrup

*If you see one of these near the top of the ingredients list then the product is high in sugars. Many food products labelled 'healthy', 'low sugar' or 'no added sugar' or 'herbal' may still contain sugar. These sugars are still damaging to teeth and should be limited and restricted to mealtimes.

Toothbrushing & Fluoride

All children should use at least **1000 – 1450 ppm fluoride** (parts per million) fluoride toothpaste (this is written on the toothpaste tube) and be assisted by an adult until at least 7 years old. Children under 3 should use a smear amount of toothpaste and a pea size amount once over the age of 3. The benefits of brushing with a fluoride toothpaste are maximised if toothpaste is spat out and not rinsed with water or mouth wash, which will wash away the fluoride and reduce the benefits. Regular visits to a dentist will help to maintain oral hygiene practice.

Regular daily brushing with a fluoride toothpaste is highly effective in preventing dental decay, fluoride has not been added to our water in Scotland, so this is our only way of including it in our oral health. Brushing twice a day removes plaque from teeth, particularly from the gum line and between the teeth where plaque is likely to accumulate. Fluoride has a protective effect on teeth and increases their resistance to decay by:

- Even at very low levels, fluoride in the plaque and saliva can alter the balance between demineralisation and remineralisation, favouring the remineralisation process. As the remineralisation happens in the presence of fluoride, the new mineral crystals are stronger and less susceptible to acid attack.
- When fluoride is present in the saliva, the fluoride ions become concentrated in the plaque. When sugars then enter the plaque, the presence of fluoride reduces the conversion of dietary sugars into acid by plaque bacteria with less acid produced.

How fluoride varnish works:

- It slows down the development of decay by stopping demineralisation
- It makes the enamel more resistant to acid attack (from plaque bacteria), and speeds up remineralisation (remineralising the tooth with fluoride ions, making the tooth surface stronger and less soluble)
- It can stop bacterial metabolism (at high concentrations) to produce less acid.
- Fluoride varnish leads to heavy remineralisation of the enamel surface, and subsequent acid attacks will allow fluoride ions to penetrate more deeply into the tooth structure. Varnishes like Duraphat® are useful because they stay on the tooth surface for some hours, allowing slow release of the fluoride ion.