

# Nutrition and oral health

The importance of a healthy lifestyle and diet are common messages shared by dental and medical professionals alike. Here, dental hygienist **Anna Middleton** and dietitian **Sophie Medlin** collaborate

## How much misinformation is there, thanks to the internet?

There is a wealth of good sources of information online, both within the nutrition and the dental industries.

However, there are also significant issues with misinformation. Unfortunately, reliable sources are often drowned out by the more non-scientific voices. This comes in the form of 'influencers', such as bloggers and celebrity endorsements. For example, charcoal has been wrongly hailed as a wonder product for both teeth whitening and as a supplement for 'detoxing'. There is no evidence to support its dental claims and taking it as a supplement can deprive the body of other nutrients and prevent the absorption of medications such as antidepressants and the contraceptive pill.

## What so-called 'healthy' trends impact negatively on health?

### Fruit teas and acidic drinks

The popularity of sipping lemon/citrus fruits in water, fruit teas, apple cider vinegar, smoothies and juices is causing an increase in the number of patients presenting with permanent and



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irreversible erosion of the tooth enamel, which can lead to sensitivity, yellowing and increased risk of decay.

People believe that citrus fruits in water will provide 'detoxification' benefits. Unfortunately, there are no products or preparations that have any impact on 'detoxifying' the body. The only things that remove any by-products of normal metabolism or ingested chemicals from drugs, medicines or alcohol are the liver and kidneys. Nothing will have any impact beyond these.

### Coconut oil pulling

While there is nothing to suggest this is harmful, patients may be using this practice to treat gum disease and/or whiten teeth. Gum disease needs to be identified and treated by a dental professional and each patient needs a tailored oral hygiene regime.

### Grazing on dried fruit

The increased frequency of consuming sugar can lead to dental decay. Dried fruit gets stuck in the pits and fissures of teeth, which are



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stagnation areas and prime ground for decay to be initiated.

### Charcoal toothpaste

There is no evidence to prove its effectiveness in tooth whitening, although it may lift light surface staining. Truth is, most so-called whitening toothpastes can be abrasive and damage the enamel. Charcoal may even contribute to negative aesthetic effects, as the particles can become embedded in cracks in the enamel or restoration margins.

In essence, there is no nutritional evidence for any of these trends and many are causing significantly more harm than good.

## Should the dental team offer diet advice at appointments?

Dental teams should have awareness of nutrition advice related to erosion and dental decay, and it is useful for dental professionals to have an awareness of oral signs of nutritional issues and the impact of systemic disease on the oral cavity e.g. diabetes and gum disease. However, they should not be offering dietary advice beyond their scope of practice.

## How should dental nurses handle misinformation?

Dental professionals should have knowledge of good quality sources of evidence-based information to which they can direct patients.

## What are the main oral manifestations of nutritional deficiencies?

In general, mineral deficiencies can affect the hard structures (teeth and bones) and vitamin deficiencies affect soft tissues. Many people suffer with aphthous ulcers, a common early sign of vitamin deficiencies.

Vitamin A deficiency is associated with very low fat diets and liver problems, causes leukoplakia and hyperkeratosis of the oral epithelium.

Vitamin B deficiencies are typically



caused by restrictive diets, such as veganism and digestive disorders, and can lead to angular stomatitis, glossitis, gingivitis and, in the case of vitamin B12, aphthae.

Vitamin C deficiency, which is rare in the UK, is caused by poor fruit and vegetable intake and causes gingival swelling and bleeding.

Folic acid deficiency, also rare due to supplementation of flour and cereals, causes glossitis, aphthae and atrophy of lingual papillae.

Vitamin D deficiency is very common in the UK, particularly among those who do not get much sunlight exposure or who are on a dairy-free diet, causing hypo-calcification and malformation of teeth.

### How does poor nutrition affect the oral cavity?

In the UK, malnutrition affects 1.3million people over the age 65 and leads to the listed oral issues above, as well as issues with poorly fitting dentures and receding gums. Soreness in the oral cavity leads to poorer oral intake, which worsens the underlying cause.

### What foodstuff should we recommend to patient to eat?

Oily fish, milk, broccoli, spinach, oranges, nuts, carrots, eggs and avocado. 'Safe snacks' in between meals include: nuts, cheese, fresh vegetables and yoghurt.

### What should they avoid?

While all foods can form part of a health balanced diet, it is important to eat from all the major food groups.

Avoiding sugary/acidic food and drink (including lemon water) between meals is important. If these are included in the diet, advise patients to keep them to three-to-four sugar/acid attacks per day and keep them to meal times.

Avoiding high sugar snacks and sugary drinks between meals will also help to keep blood sugars more stable and will help to avoid spikes and drops in blood sugars, which can improve energy levels and improve appetite regulation. As part of an overall balanced diet, we should ensure we eat plenty of plants, lean protein, nuts and healthy fats and avoid

processed foods and refined carbohydrates, including white bread and pasta and processed meats.

### What nutrients should teams recommend to maintain healthy soft tissue and teeth?

A balanced diet, with plenty of fruit and vegetables, nuts, good sources of calcium and high quality protein, is essential. If a diet is restricted through choice or for medical reasons, a good quality multi-vitamin is a good back up. It is important not to take single vitamins in isolation (apart from vitamin D and those prescribed by a doctor) as they compete for absorption in the intestines and an excess of one can lead to deficiency in another.

### Is snacking increasingly a problem?

There is a trend in the non-scientific nutrition community towards spreading meals throughout the day, which can exacerbate the dental problems. This grazing dietary pattern →

is also seen in the general population and is known to be a contributory factor in the obesity epidemic.

## What are your thoughts on probiotics?

There is significant research into the benefits of probiotics on general health and wellbeing, with new discoveries being identified all the time.

The important thing to remember if a patient is taking probiotics is that they must feed them with the right diet in order for the beneficial species to colonise effectively and suppress the less beneficial bacteria. It is recommended that they need to have plenty of plants in a diet and avoid refined carbohydrates and processed foods, including white pasta, bread and processed meat.

## Do you see evidence of poor nutrition in your day-to-day practice?

When you are working in areas of social deprivation, nutritional deficiencies are far more common. We are currently facing a social crisis, where significant proportions of the population are relying on food banks for their day-to-day diet and where access to fresh food is poor. This can easily lead to nutritional inadequacy.

Meanwhile, in more affluent communities, it is common for parents to replace cow's milk with plant-based milks, which is nutritionally suboptimal, particularly for bone and dental health. It is also common practice to encourage snacking on dried fruit and smoothies/juices, which are as detrimental to oral health as sugar.

Furthermore, the prevalence of undiagnosed diabetes is common across all population groups including those from affluent groups.

Being aware of the nutritional risk factors within the population you are caring for is essential for targeting your assessments.

## What effects can eating disorders have on oral health?

### *Anorexia nervosa*

Anorexia nervosa is hallmarked by continuous starvation with minimal nutritional intake. Clearly this can quickly and easily lead to any or all of the oral manifestations of nutrient deficiency listed above.

### *Bulimia nervosa*

Bulimia nervosa is characterised by bingeing on food and then purging through induced vomiting and/or laxative use. Stomach acid is close to the same pH as battery acid (pH1) and, therefore, when it is regurgitated into the mouth through vomiting, it will cause erosion to the enamel – identifiable on the back molars and the back of the front teeth. Those with bulimia may not be underweight and it is important to be aware of this. If you suspect your patient may be exhibiting signs of an eating disorder, it can be highly damaging to try to tackle this as someone without the relevant skills to deal with the fallout of someone who may have been successfully hiding their eating disorder for some time. The best course of action is to disclose your concerns to their GP directly who can assess and refer to relevant services.

### *Gastro-oesophageal reflux*

This is a common condition about which patients may not even be aware. Having your stomach acid refluxed into your mouth (which commonly occurs during sleep) will cause the same patterns of erosion as bulimia around the molars. Patients may

exhibit other symptoms, such as heartburn, throat clearing, disturbed sleep and belching. It is worth checking if your patient has any of these other symptoms and recommend they visit their GP if they do.

## Are handouts/posters an effective way to educate patients about nutrition?

There are some good opportunities to educate patients through posters and handouts. However, it is essential that these highlight that tailored nutrition advice may be needed and it is well known that simply being aware of key dietary advice (five-a-day and reducing sugar intake, for example) does not necessarily elicit behaviour change.

## How can dental nurses use social media to get key nutrition facts to patients?

It is important that dental professionals maintain their scope of practice and only highlight relevant, evidence-based nutritional information around dental health.

## The hidden risks of 'healthy' options

The national trend for fruit teas and lemon-infused water is fuelling a spike in the number of patients presenting with severe tooth erosion, causing unprecedented challenges for general dental practitioners. A study, from King's College London, is the latest in a raft of evidence that demonstrates the need for patients to understand the erosive effects of their lifestyle and dietary choices – habits they very often fail to realise are impacting negatively.

Researchers found that so-called healthy options, such as fruit-flavoured teas and water with lemon slices – along with cordials, diet drinks, fruit squashes and flavoured water – are responsible for an increasing number of cases of severe erosive tooth wear.

The study, published in the *British Medical Journal*, assessed the diets of 300 people and found that those who indulged in the habit of sipping these drinks twice a day between meals are more than 11 times more likely to have moderate to severe tooth erosion. This was halved when drinks were taken at mealtimes, thanks to the stimulation of salivary production. Add to this an increasing propensity to graze rather than eat three meals a day and the study suggests the compounding effects is leading to a high frequency of acid attacks on teeth – and an increasingly detrimental impact to the UK's dental health.

Authors S. O'Toole and F. Mullan suggest these are 'hidden' risk factors, due to the fact that patients are unaware of the effects of these popular trends. However, whilst patient education and other preventative measures are key in the battle against this high rate of tooth erosion, the authors acknowledge that behaviour change can be difficult to achieve – recommending specific, targeted behavioural interventions and alternative dietary suggestions in order to reverse the trend.

## Reference

1. <http://www.nature.com/articles/sj.bdj.2018.127>