

## The not-so-sweet truth behind the nation's sweet tooth

On average, we consume approximately 93g of sugar every day, here in the UK. This puts us seventh in the world for the highest average sugar consumption per individual – behind countries such as Germany, Australia and the United States – and means we consume about three times the NHS recommended daily intake of 30g.

This is particularly concerning – not only since a wealth of research has shown that sugar is addictive (on a neurobiological level, perhaps even more addictive than cocaine), but also because it can be particularly damaging to our health.

Indeed, sugar consumption has been linked to obesity, with a number of studies finding a demonstrable link between the two.<sup>1</sup> In the UK, it is estimated that as many as two-thirds of the adult population are overweight<sup>2</sup> – and this is linked with many other health issues, including gallstones, diabetes, high blood pressure, coronary artery disease and an increased risk of stroke.<sup>3</sup>

What's more, despite the fact that sugar has been shown to release endorphins, it has been proven that there is a link between a high level of sugar consumption and mental health conditions – notably depression and anxiety.<sup>4</sup> For example, sugars have been shown to suppress the BDNF hormone in the brain – similar to how the stress hormone *corticosterone* does in people who suffer from chronic depression.<sup>5</sup>

In addition to this, sugar has a significant impact on our oral health. Dental caries, in particular, is demonstrably linked to sugar consumption. In the UK, an estimated 31 per cent of the adult population has dental caries<sup>6</sup> – the effects of which can lead to infection and tooth loss. Interestingly, however, it is not the *amount* of sugar that is consumed that leads to dental caries, but rather the frequency of consumption. Nevertheless, it stands to reason that those people who consume more sugar will be doing so more frequently. As we know, sugars react with acid-producing bacteria (particularly, *Streptococci mutans*), present in plaque. The acid produced begins to demineralise the calcium-rich surface of the teeth until cavities form. Once cavitation reaches a certain point, the mouth's natural remineralisation process – which is regulated by saliva – will not be able to repair the damage, leading to a permanent weakening of the tooth structure. Remineralisation and protection therapies, including fluoride treatments, will also be ineffective in this scenario, necessitating restorative fillings or, in the worst case, extraction of teeth.

Therefore, it is important that dentists detect dental caries at its earliest stages, before the damage becomes irreparable. However, this is not always a simple task – with the majority of caries detection methods relying on clinical subjectivity and experience. Fortunately, however, new technology is set to make this easier. For example, the new CALCIVIS imaging system\* due to be launched in the UK later this year, uses a unique photoprotein to identify active demineralisation, and can help clinicians detect dental caries at an early enough stage for oral care advice and remineralisation therapy to be effective.

However, dental professionals should also make it a priority to impress upon their patients the importance of a thorough oral hygiene protocol and the dangers of excess sugar consumption. This will ultimately come under the remit of preventive dentistry and will help more patients keep their natural teeth for longer. It is also incredibly important for dental professionals to be mindful of their patients' general health, since they are in a front-line position to recognise the dangers of excess sugar consumption.

\*For more information on the CALCIVIS imaging system visit [www.CALCIVIS.com](http://www.CALCIVIS.com)

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<sup>1</sup> Cambridge University Press: *Association between sucrose intake and risk of overweight and obesity*. G. Kuhnle, N. Tasevska, M. Lentjes, J. Griffin. Published online: 02/2015 Link: <https://www.cambridge.org/core/journals/public-health-nutrition/article/div-classtitleassociation-between-sucrose-intake-and-risk-of-overweight-and-obesity-in-a-prospective-sub-cohort-of-the-european-prospective-investigation-into-cancer-in-norfolk-epic-norfolkdiv/D03FB174E80C7D347FOCA242C2EF0A3E> [accessed 25/01/17]

<sup>2</sup> The Guardian: *How obese is the UK? and how does it compare to other countries?* Published online 05/14. Link: <https://www.theguardian.com/news/datablog/2014/may/29/how-obese-is-the-uk-obesity-rates-compare-other-countries> [accessed 25/01/17]

<sup>3</sup> WebMD: *Health Risks of Obesity*. Link: <http://www.webmd.com/diet/obesity/tc/obesity-health-risks-of-obesity> [accessed 25/01/17]

<sup>4</sup> Psychology Today: *4 Ways Sugar Could Be Harming Your Mental Health*. Published online: 09/13. Link: <https://www.psychologytoday.com/blog/where-science-meets-the-steps/201309/4-ways-sugar-could-be-harming-your-mental-health> [accessed 25/01/17]

<sup>5</sup> Warner-Schmidt JL, Duman RS (2006). "Hippocampal neurogenesis: opposing effects of stress and antidepressant treatment". *Hippocampus*. **16** (3): 239–49. doi:10.1002/hipo.20156

<sup>6</sup> Oral Health Foundation: National Smile Month, Facts and Figures. Link: <http://www.nationalsmilemonth.org/facts-figures/> [accessed 25/01/17]