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SUGAR AND SALT: AN ADDICTIVE COMBINATION?

With all of the attention being paid to sugar and salt reduction in the media coupled with a lack of understanding about the different types of sugar in food, dietitians are in a unique position to provide a sensible and balanced approach to both the media and their clients.

We eat food, of course, for various reasons, one of which is the flavour. The receptors of the 'taste buds' found on the tongue and soft surfaces in the mouth,[1] detect the five different tastes of salt, sweet, sour, bitter and umami. Taste buds, except for those for salt, develop in the foetus during the first nine to 15 weeks of pregnancy and, thus, the foetus is exposed to flavours of the amniotic fluid which are derived from the mother's diet. Strong foods, for example, like curry, will provide a strong flavour to the fluid.[2] Babies are born with a love of sweet things which encourages them to take breast milk, but the taste buds for salt do not develop until about four months of age. Nevertheless, a study has indicated that babies exposed to salty foods at an early age develop a liking for it.[3]

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SALT (SODIUM CHLORIDE)

It has long been realised that excess sodium in the diet is a major public health problem in the UK, clearly linking with hypertension and cardiovascular events such as coronary heart disease and strokes.[4] In 2002, The Food Standards Agency launched a campaign to reduce salt in the estimated 26 million people in the UK who had a high dietary sodium intake. It was estimated at that time that a 3.0g/day reduction in salt could prevent 30,000 cardiovascular events and save the National Health Service at least £40million/year.[5]

The recommendations for salt intake are well publicised by easily accessed information such as that on NHS Choices.[6] The maximum levels of salt advocated are:

- 1 to 3 years - 2.0g salt a day (0.8g sodium)
- 4 to 6 years - 3.0g salt a day (1.2g sodium)
- 7 to 10 years - 5.0g salt a day (2.0g sodium)
- 11 years and over – 6.0g salt a day (2.4g sodium)

In November 2014 Public Health England revealed that hypertension affects one in four people, plus accounts for 12% of all visits to GPs.[7]
The food industry has also taken great steps to reduce the salt content of processed

food products since the late 1980s and the Food and Drink Federation reports on initiatives due to a partnership between the food industry and the Food Standards Agency. Reductions in salt of 25% in sliced bread, 43% reductions in branded breakfast cereals, as well as reductions in other food items are detailed.[8]

Such reductions by the food industry have brought benefits and the latest information from Public Health England in March 2016 announced that there has been a reduction in salt consumption for adults to 8.0g per day, showing a downward trend over the last 10 years.[9]

Interestingly, there are also other sources of salt, such as effervescent tablets, including vitamins, which can contain as much as a gram of salt per tablet and such sources of salt can be overlooked.[10]

SUGAR

Much media attention has focused on sugar over the last year with newspaper headlines on the related health issues and the recommendation to cut sugar consumption by half. This was initially based on the advice of the World Health Organisation (WHO) to reduce free sugars to 5% of energy intake.[11] The SACN report on carbohydrates also advised that only 5% of dietary energy should be taken from free sugars[12] due to the following:

- High levels of sugar consumption is associated with a greater risk of tooth decay.
- The higher the proportion of sugar in the diet the greater the risk of a high energy intake.
- Drinking high-sugar beverages results in weight gain and increases the BMI in teenagers and children.
- Consuming too many high-sugar beverages increases the risk of developing Type 2 diabetes.

The previous recommendation on sugar was to limit non-milk extrinsic sugars (NME) to 10% of total energy intake.[13]. However, the population never managed to achieve this level with the average intake of *non-milk extrinsic sugars* (NMEs) for adults of 11% and for children up to 15%.[14]

Therefore, how likely are they to achieve a maximum of 5% energy from free sugars? In an article entitled *Sugar Public Enemy No 1* (NHD Feb 2016 p12), Carrie Ruxton said that, "dietitians need to consider whether sugars are so detrimental to health that a monumental shift in eating patterns is justified". This consideration of the suitability of such reductions was also spoken about by dietitian and nutritionist Azmina Govindji at a presentation on 'Sugar - where are we heading?' given at the SENSE meeting in London on 1st March 2016. Azmina also commented on the appropriateness of recommendations for the major reduction in sugar, as well as the fact that information on sugar from the SACN report had been the main focus, while the report also included advice to increase fibre intake which largely appears to have been neglected by the media.

Children, are already shown to have a high intake of NMEs, which includes a major contribution from the sugar in soft drinks. Thus, for this group, a reduction in the sugar content of the diet can be hugely beneficial and awareness items such as the 'Sugar Swap' app from Change4Life[17] can provide information in an appropriate and helpful manner to such a technology aware group, enabling them to make early choices about how to reduce sugar in their food and drink.

In the 2016 March Budget, the Government introduced a sugar tax for soft drinks. There will be two bands of taxes, one for total sugar content

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above five grams per 100 millilitres and a second higher band for the most sugary drinks with more than eight grams per 100 millilitres and this is due to come into force in 2018.[15] The delay in introducing the sugar tax gives the industry time to respond in reformulating drinks.

Also in March 2016, the Eatwell plate was updated to the Eatwell Guide which gives clear information about foods and beverages containing sugar.[16]

For the general public there can be confusion about sugars and free sugars as food labels show total carbohydrate followed by the information on sugar without information about the nutritional benefits of the product. Thus, someone wishing to avoid sugar may mistakenly shun nutritious items such as fruit and milk due to the sugar content. Much clearer information is needed for the public based on appropriate food choices rather than constantly trying to interpret food labels.

BLISS POINT

The term 'bliss point' can be used by the food industry to adapt the amounts of three critical ingredients in a recipe - salt, sugar and fat - to deliver just the right amount of palatability to a foodstuff and to make the consumer want to eat more. To quote celebrity chef Nigella Lawson, "Ticking off the holy trinity of sugar, salt and fat - salted caramel is the class A drug of the confectionery world!"[17]

That combination of sugar, fat and salt is deeply alluring, perhaps evidenced by the fact that 12 million people watched TV's *Great British Bake off* which encourages many to try home baking in which sugar is a key ingredient. Sugar is thought to activate the pleasure (dopamine) pathways in the brain which may result in it being addictive too. Some people require regular consumption of sugar and, indeed, sugar is even felt to be addictive by some people.[18] But it is sugar and salt combined that gives maximum flavour and appeal evidenced by the ever-increasing number of products on the market, such as salted caramel puddings and sweets, salted chocolate and salted sweet biscuits.

SUMMARY

It is clear that humans are born with a liking for sugar and also an appetite for salt can occur later. Add to this the addictive quality of sugar, plus the desire for that bliss point in foods, as well as people being bombarded with various baking and cookery programmes, it is no wonder that people consume too much salt, sugar and fat with resultant consequences to health.

Advocating a drastic reduction of free sugar by both SACN and WHO to half the level which is already found to be a virtually non-achievable target may well result in simply an even wider gap of non-achievement. Fibre containing foods such as cereals may well require a little sugar to make them acceptable.

For the great majority of people, the limitation of free sugars is important to health, but it must be remembered that there are some individuals, such as older people with malnutrition, for whom sweet items are vital in encouraging them to eat. Some sports people rely on a diet higher in sugar to provide them with adequate calories to fuel the activity.

With all of the attention being paid to sugar reduction in the media, coupled with a lack of understanding about the different types of sugar in food, dietitians are in a unique position to provide a sensible and balanced approach to the inclusion of sugar and salt in the diet. Often, the whole discussion needs to be about portion sizes and dietary balance; as Mary Berry said in 2012, "Cakes are healthy too, you just eat a small slice"!