6 teaspoons of sugar a day helps the diseases stay down, in a most challenging way

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Here comes the next big battle in nutrition: SUGAR. Yesterday, the World Health Organization put out their widely anticipated guidelines on sugar intake for consultation.

In this blog, we review some of the underlying evidence on the health harm of sugar, and then pull back to consider the diet in total. There are many other aspects to the "sugar wars" that we do not cover here, such as sugar industry lobbying of politicians that the UK press – in particular the Guardian – has been repeatedly profiling. Instead, we try to focus on the science of the science.

The new WHO guidelines have reiterated the 2003 guidance that sugar should be less than 10% of total energy intake a day, but have gone further to state that 5% would be better still. 5% is about 6 teaspoons per day.

New Zealanders currently consume around about 27 teaspoons a day of sugar (ie, median = 107 grams), or more than 20% of total energy intake. So this is a challenging target.

Sobering, even, when you consider that much sugar is hidden in the diet in processed foods (eg, 1 tablespoon of tomato sauce includes about 1 teaspoon of sugar, and 1 standard 355 ml can of soft drink can contain around 10 or so teaspoons). There will need to be a major change in the way the food industry formulates foods to achieve 10% let alone 5% of total energy intake a day from sugar.

As is widely known, sugar causes tooth decay and this evidence has recently been updated in a systematic review. Other evidence for health impacts comes from a meta-analysis of sugar and obesity by Te Morenga, Mallard and Mann of Otago University, published in the *BMJ* in 2012. It is a key plank in the evidence-base used by WHO in its new formulation of guidance. This study included randomised trials and observational cohort studies, among adults and children, in their meta-analyses. Essentially, there was strong evidence of increasing body weight in trials and cohort studies among adults with increased sugar intake, unless the total energy intake in the diet was unchanged (ie, due to substituting non-sugary foods with the same total energy, for the sugary foods). Results from trials among children were negative, but affected by biases such as poor adherence to advice to reduce sugar. Sugar-sweetened beverages (i.e. fizzy drinks) accounted for much of the association of sugar with weight. Even given the measurement error in all these studies, and all the factors other than sugar that determine body weight, the association of increasing sugar intake with increasing weight is strong.

Another study, published just a couple of weeks ago in the *Journal of the American Medical Association* (JAMA), goes one step further. It found an association of sugar intake with the risk of death from cardiovascular disease in the US, in a cohort study of NHANES (i.e. the main health survey in the US). There was a two-fold higher mortality in the top quintile of sugary consumers, compared to the lowest quintile. One always has to worry about confounding, or 'spurious' associations, in such studies due to people in the lowest and highest quintiles differing for reasons other than just sugar. However, the study did adjust for a thorough battery of such potential confounders – and a residual association of a twofold increased risk seems unlikely to be due to residual confounding.

So what do we make of this? The evidence of health harm from sugar appears strong overall. Reducing sugar intake, therefore, does seem a sensible policy option if, as a society, we want to lower rates of obesity, heart disease and dental decay (and the associated cost burden on the health system). "Giving people information about the risks of sugar" might help reduce intakes a bit, but actually much of the sugar that can be removed from food is hidden in processed food. This food probably needs reformulation to include less sugar, and low sugar options need to be readily identifiable (eg, clear front-of-pack labelling) and easy to procure. This is a challenge, though. Sugar tastes good, and helps increase the shelf-life of processed foods. Nevertheless, foods can have reduced sugar (eg, low sugar tomato sauce) and artificial sweeteners can be used. Reformulation by the food industry might also be helped if high sugar foods are taxed eg, probably starting with a tax on sugar-sweetened beverages.

Pulling back, sugar is just one facet of the diet. But it is an obvious focus for intervention and change. Simply substituting salty or high saturated fat foods for sugary foods would not necessarily be helpful (see this blog on the complexities of food taxes).

If we as civil society are serious about obesity (especially child obesity), nutrition-related diseases, and societal and health system costs from obesity, then our diets need to shift to those with less saturated fat (but still the 'good fats'), less sugar, less salt, and more plant-based foods – or what Morgan and Simmons simplify to as "less junk food, and more real food".

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