



Prof. Janette C Brand-Miller AM, BSc, PhD, FAIFST, FNSA, MAICD

September 1, 2014

Subject: Response to Draft SACN Carbohydrates and Health Report

In my view, the draft guideline to reduce the UK population target intake of added sugar from 10% to 5% energy (E) is a large-scale experiment that may have unintended consequences. No trial has been performed to determine the benefit, safety and efficacy of this major change in diet. There is the possibility of harm.

The evidence of what might be expected is as follows:

1. There will be absolutely no effect on weight of substituting added sugar for other sources of carbohydrates in either children or adults, as shown in the meta-analysis undertaken for WHO by Te Morenga et al. ¹.
2. There will be no desirable effect on population prevalence of overweight and obesity. In Australia, during the same timeframe that obesity tripled (1980 to 2010), apparent consumption of refined sugar declined by 16% ². The inverse relationship between total sugar intake, sources of added and rise in obesity (*The Australian Paradox*) has been confirmed by recent national dietary survey data.³
3. In Australia, Levy and Shrapnel⁴ showed that sales of sugar-sweetened carbonated soft drinks fell over 15 years at a rate of 0.7% per annum, with a drop in volume share of 18%. Added sugar contribution from water-based beverages and soft drinks fell 17% and 26% respectively.
4. In 2007, national dietary surveys showed that Australian children consumed only half as much sugar-sweetened soft drink as they did in 1995 (1.6%E vs 3.3%E)⁵. Yet, the prevalence of overweight and obesity in children continued to increase over that timeframe.
5. In 342 Canadian individuals with type 2 diabetes, Wolever et al.⁶ showed that those who consumed less added sugar, ate more starch and had diets with a higher average glycaemic index (GI). As a group, these individuals would have had more nutrition education than most, so the effect is the 'best case scenario'.

6. High GI starchy foods containing no added sugars are also highly fermentable in the oral cavity and capable of causing dental caries^{7,8}. Hence substitution of starch for added sugars may have no discernable effect of the prevalence of caries.

I believe there is a good sociological and physiological case for maintaining moderate intake (10%E) of added sugars as part of a nutritious diet, particularly when foods with added sugars contribute essential nutrients. Wholegrain foods are made more palatable with modest addition of sugar (eg porridge oats, muesli, breads + preserves and breakfast cereals) and we do not want to discourage this. Many sugar-sweetened products, such as yogurt and milk, contribute protein and calcium that are also linked to better weight control⁹.

In the scientific literature, there are diverging expert opinions on the nutritional significance of added sugars and even soft drinks. The recent systematic review of nutritively sweetened beverage (NSB) consumption and obesity concludes¹⁰: *The current evidence does not demonstrate conclusively that NSB consumption has uniquely contributed to obesity or that reducing NSB consumption will reduce BMI levels in general.*

In my view, trials that compare an energy-containing product (eg sugar-sweetened beverage) to water have poor study design. They simply demonstrate that obligatory consumption of calories encourages weight gain. A better study design would compare soft drink with the same amount of energy as plain milk.

The human desire for sweetness is not new. Hunter-gatherers ate concentrated sources of sugars such as honey (in greater quantities than is commonly recognised¹¹) and made sweet drinks using honey and floral nectars. Indeed, at certain times in history, consumption of honey rivalled our current consumption of refined sugar¹². White rice, another food of marginal nutritional value, has contributed as much as 50%E to Asian diets for thousands of years. There is no movement to reduce the intake of white rice.

In summary, I believe a 5% target of added sugars has the very real capacity to cause harm. It means that 50% of individuals must consume 0-5%. This very substantial decrease in energy would increase the intake of refined starch, high glycemic index carbohydrates⁶, energy¹³, saturated fat¹⁴ and salt¹⁵, contributing to a higher risk of cardiovascular disease¹⁶.

In my view, foods of low nutritional value should be limited irrespective of their added sugar content. Cakes, biscuits (sweet and savoury), crackers, chips, chocolate, confectionery, sugar-sweetened soft drinks and fruit juice, are undesirable for many reasons, and their content of added sugar is not the overwhelming reason.

I hope that the SACN will consider these points in their finalisation of the draft report on Carbohydrates and Health.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'J. Brand-Miller', with a stylized, cursive script.

JENNIE BRAND-MILLER

PS References overleaf

References

1. Te Morenga L, Mallard S, Mann J. Dietary sugars and body weight: systematic review and meta-analyses of randomised controlled trials and cohort studies. *BMJ* 2013;346.
2. Barclay A, Brand-Miller J. The Australian Paradox: A Substantial Decline in Sugars Intake over the Same Timeframe that Overweight and Obesity Have Increased. *Nutrients* 2011;3:491-504.
3. Australian Bureau of Statistics. Australian Health Survey: Nutrition First Results - Foods and Nutrients, 2011-2012. In. Canberra; 2014.
4. Levy GS, Shrapnel WS. Quenching Australia's thirst: A trend analysis of water-based beverage sales from 1997 to 2011. *Nutrition & Dietetics* 2014;n/a-n/a.
5. Clifton P, Chan L, Moss C, Miller M, Cobiac L. Beverage intake and obesity in Australian children. *Nutrition and Metabolism* 2011;8:87-98.
6. Wolever T, Nguyen P, Chiasson J, et al. Determinants of diet glycemic index calculated retrospectively from diet records of 342 individuals with non-insulin-dependent diabetes mellitus. *Am J Clin Nutr* 1994;59:1265-9.
7. Lingstrom P, Holm J, Birkhed D, Bjorck I. Effects of variously processed starch on pH of human dental plaque. *Scand J Dent Res* 1989;97:392-400.
8. Lingstrom P, Liljeberg H, Bjorck I, Birkhed D. The relationship between plaque pH and glycemic index of various breads. *Caries Res* 2000;34:75-81.
9. Mozaffarian D, Hao T, Rimm EB, Willett WC, Hu FB. Changes in Diet and Lifestyle and Long-Term Weight Gain in Women and Men. *New England Journal of Medicine* 2011;364:2392-404.
10. Mattes RD, Shikany JM, Kaiser KA, Allison DB. Nutritively sweetened beverage consumption and body weight: a systematic review and meta-analysis of randomized experiments. *Obesity Reviews* 2011;12:346-65.
11. Marlowe FW, Berbesque JC, Wood B, Crittenden A, Porter C, Mabulla A. Honey, Hadza, hunter-gatherers, and human evolution. *Journal of Human Evolution* 2014;71:119-28.
12. Allsop KA, Miller JB. Honey revisited: a reappraisal of honey in pre-industrial diets. *British Journal of Nutrition* 1996;75:513-20.
13. Blundell JE, Macdiarmid JI. Fat as a Risk Factor for Overconsumption: Satiation, Satiety, and Patterns of Eating. *Journal of the American Dietetic Association* 1997;97:S63-S9.
14. Blundell JE, Macdiarmid JI. Passive Overconsumption Fat Intake and Short-Term Energy Balance. *Annals of the New York Academy of Sciences* 1997;827:392-407.
15. Sullivan SA, Birch LL. Pass the sugar, pass the salt: Experience dictates preference. *Developmental Psychology* 1990;26:546-51.
16. Jakobsen MU, Dethlefsen C, Joensen AM, et al. Intake of carbohydrates compared with intake of saturated fatty acids and risk of myocardial infarction: importance of the glycemic index. *Am J Clin Nutr* 2010;91:1764-8.