For debate: Sugar sweetened beverages
Dr Jonathan Broadbent

There is broad consensus within the dental profession that sugar-sweetened beverages (SSBs) affect dental health. Many dentists have called for taxation of SSBs in order to reduce consumption, but there is not consensus that this is the best way forward. Politicians have ruled out taxation as part of the solution to the SSB problem. In the absence of a tax, what should we do about SSBs?

Natasha Harris was a 31-year-old Invercargill mother of 8 children, and she died in 2010. The Coroner’s report squarely attributed her death to health problems arising directly from excessive consumption of Coca-Cola (Coronial Services of New Zealand, 2013). The Coroner recommended that Coca-Cola consider adding labels to their product with appropriate warnings related to the dangers of consuming excessive quantities of the product, in order to help uninformed consumers make healthier choices. Because of how Ms Harris died and in light of the Coroner’s findings, it is unlikely that Ms Harris was aware of the risks associated with consuming the product.

The Coroner’s report on the death of Ms Harris informs that “Coke contains 27 grams of sugar per 250 millilitre serve and this quantity of sugar is 29% of the recommended daily dietary intake for an adult”. A media report on the death of Ms Harris also stated that one litre of Coca-Cola provides 116% of an adult’s “recommended daily intake of sugar”, based on a 8700 kilojoule diet. Taking the Coroner’s report and media reports together, this would calculate to approximately 90 g as an adult’s recommended daily intake of sugar. This matches the nutritional information table provided on most packaging of sugar-sweetened beverages (SSBs).

The expression “recommended daily intake” reported by the Coroner and media in this case suggests to the reader that the stated daily intake is a target, not a daily limit of acceptable intake. It is based on the “average 8700 kJ diet”, not the “ideal 8700 kJ diet”. Based on the Coroner’s report and media reporting, it would be reasonable to state “to reach my recommended intake of sugar per day I should consume 90 g of sugar per day. This can be obtained by drinking 862 mL of Coca-Cola or equivalent product.”

Current SSB nutritional information labelling is based on an “average diet” of 8700 kilojoules (kJ) of energy. In that “average diet”, sugars are set at 90 g of total energy intake. If a diet of 8700 kJ is assumed, and given that 1.0 g of sugar provides 16.7 kJ of energy, 90 g of sugar would provide 1503 kJ of energy. At a 1503 kJ contribution for a diet of 8700 kJ energy, sugar would comprise 17.3% of total energy intake in the average diet. So it would seem that it is recommended that we source 17.3% of our daily energy intake from sugar.

The 2003 New Zealand Food and Nutrition Guidelines for Healthy Adults recommended that a maximum of 15% of total energy intake should be sourced from sugar because of potential problems associated with excess energy and dental caries (Ministry of Health, 2003). The more current 2015 Eating and Activity Guidelines for Adults cites the World Health Organisation recommendation that sugars should comprise no more than 10% of total energy intake, as well as a secondary upper limit of 5% to prevent dental caries. The recommended/ target average daily intake of 17.3% of total energy is well above these recommended maximum % daily intake values.

What does this look like in practice? Based on an 8700 kJ diet, the label from a 355 mL SSB can in New Zealand reports its sugar content as 42% of the %Daily Intake (DI) for sugar, while the more prominent ‘Energy’ tab reports that the can provides a mere 7% of Percent Daily Energy. A person could drink 2.4 355 mL cans of Coca-Cola or equivalent SSB before reaching the 17.3% recommended/target daily intake for sugar as set on the label. If going by the quick-reference energy tab, he/she could consume 14.3 cans to fulfil the energy requirements of an 8700 kJ diet. On the other hand, if following the guidance in the Ministry of Health’s Eating and Activity Guidelines for Adults and World Health Organisation percentage of energy intake from sugar, a person could only consume 1.4 cans before reaching the daily maximum limit for sugar using the 10% guideline, or 0.7 cans if following the 5% guideline for optimal dental health. Further comparisions are made in Table 1.

The quick-reference energy tab indicating a can of Coca-Cola provides 7% of daily energy is possibly the most misleading aspect of the current labelling system. The quick-reference tab would not make a consumer aware that by consuming the can they had already exceeded the recommended maximum daily sugar intake for an 8700 kJ diet as recommended by the NZ Eating and Activity Guidelines and World Health Organisation. Even a consumer seeking more detailed information from the nutritional information tab would likely be misled.

How could research and health policy recommendations be translated into better labelling on SSB products? Reporting of DI based on “average consumption” instead of recommended maximum amounts has the potential to confuse consumers. It is accepted that on average, New Zealanders consume too much sugar, so the current system whereby the DI is pegged to the average intake is never going to result in a reduction of consumption. Many (including the media and Coroner in the death of Ms Harris) assume that the %DI of sugar reported on Coca-Cola packaging is equivalent to the % Recommended Daily Intake (RDI) of sugar. This has not just the potential to mislead consumers – it really does mislead consumers, especially when the word “recommended” is inserted in media reports of %DIs.

Australian nutrient guidelines state that sugar-sweetened beverages are not recommended drinks for children (National Health and Medical Research Council, 2013). Here in New Zealand, the Ministry of Health has recommended for children aged 2-18 years of age that “if consumed, sugary drinks should be consumed only occasionally (less than once a week), in small quantities (one glass or less) and with food rather than between meals” (Ministry of Health, 2015). This guidance seems clear...
but has not been converted into enforceable legislation. As the Ministry of Health has clearly indicated that SSBs are not suitable for children, perhaps they should be clearly labelled with text such as “Not recommended for children. Milk and water are recommended drinks for children.” Furthermore, sales to children could be restricted, since the Ministry of Health has effectively stated that these should be considered “adult only” drinks.

When purchasing food and beverages a person is very unlikely to be confronted with public health messages recommending minimising sugar in the diet. He or she is much more likely to come across advertising promoting the consumption of SSBs. Advertising is effective at encouraging people to take certain actions that they may otherwise not. Companies would avoid spending money on advertising and sponsoring sports teams if it did not improve their business profile and increase sales of their products. Shops near schools are often covered with advertisements for SSBs and further advertising is in the form of highly visible packaging and bottle labelling. Where are the public health messages to balance these? If we are to rely on “better educating the public” about the health harms of SSBs, then maybe “reverse advertising” is required for SSBs. Since we have a problem with lack of knowledge about what is healthy for the teeth, coupled with excess consumption of SSBs, public health messages advising to avoid consumption of SSBs should be more prominent than advertising that is promoting their consumption. Unfortunately, funding to produce such public health messages are unavailable and public health messages are easily out-competed by SSB advertising.

Together with Diabetes New Zealand and the Heart Foundation, the New Zealand Dental Association recently expressed support for a change.org petition requesting the New Zealand Government consider introducing a tax on SSBs. The New Zealand Dental Association’s Background Paper on Nutrition and Oral Health also recommended that the New Zealand Government consider introducing a tax on SSBs, with the goal of reducing the consumption of SSBs (New Zealand Dental Association, 2015). Introducing such a tax would follow the lead of France, Norway, the United Kingdom, Mexico, parts of the United States, and Canada.

New Zealand has already had experience with taxation of tobacco products. The latest Budget announced plans to increase the existing taxation of tobacco products, as the Government considers taxation to be a “necessary measure to reduce and eliminate smoking in New Zealand” and the current Associate Health Minister has stated that “raising tobacco tax [is] the most powerful tool to bring down rates of smoking” (Jones & Johnston, 2016). Unfortunately, New Zealand policymakers’ enthusiasm for tobacco product taxation has not extended to enthusiasm for introducing a tax on SSBs. A very different rhetoric has been used when discussing SSB taxation. The Minister of Health has “ruled out” a tax on SSBs and has stated “there is no evidence a sugar tax works and further regulation is not the answer” (Watkins, 2015). The Government’s current position seems to be more aligned with the views of industry players, rather than health researchers and practitioners. For example:

• In 2014 the general manager of Coca-Cola Oceania Ltd stated that SSB taxation was unacceptable to their company (Bowden, 2014).
• The New Zealand Beverage Council represents the companies that account for 95% of all juice and non-alcoholic beverage sales in New Zealand. The Beverage Council is strongly against an SSB tax as they believe the tax will be ineffective and may damage their member’s business interests (New Zealand Beverage Council, 2016).
• The New Zealand Initiative is a business group that represents a broad range of companies, including Imperial Tobacco and Foodstuffs. They recently produced a report which portrayed taxes on health-harming products as ineffective and unnecessary (Jeram, 2016; Armitage 2016).
• The Sugar Research Advisory Service (SRAS) is funded by the New Zealand Sugar and the Australian Sugar Industry Alliance. SRAS-funded health researchers produce reports which often overemphasise the potential downsides of SSB taxes.

The sugar industry supplies the products that drive dental caries in New Zealand. The industry groups listed above all have conflicts of interest in a discussion on the advantages and disadvantages of an SSB tax or other regulations aimed at reducing SSB consumption. Their funders and members have direct or indirect involvement in the production and/or sale of SSBs, so their profits may be affected by a tax. Their publicly-stated views reflect this financial reality – they do not want the tax. They are interested in consumption promotion, not health promotion.

### Table 1. Sugar content of common sizes of sugar sweetened beverages, as a percentage of recommended values in an 8700 kJ per day diet.

<table>
<thead>
<tr>
<th>Guideline value for 8700 kJ daily energy intake</th>
<th>Total grams of sugar per pack</th>
<th>Total energy from sugar</th>
<th>% contribution if sugar guideline set at 17.3% of energy in an 8700 kJ diet</th>
<th>% contribution if sugar should be limited to 15.0% of energy in an 8700 kJ diet</th>
<th>% contribution if sugar should be limited to 10.0% of energy in an 8700 kJ diet</th>
<th>% contribution if sugar should be limited to 5.0% of energy in an 8700 kJ diet</th>
</tr>
</thead>
<tbody>
<tr>
<td>250 mL can</td>
<td>26.5</td>
<td>442.6</td>
<td>29.4</td>
<td>33.9</td>
<td>50.9</td>
<td>101.7</td>
</tr>
<tr>
<td>330 mL bottle</td>
<td>35.0</td>
<td>584.2</td>
<td>38.8</td>
<td>44.8</td>
<td>67.1</td>
<td>134.3</td>
</tr>
<tr>
<td>355 mL can</td>
<td>37.6</td>
<td>628.4</td>
<td>41.8</td>
<td>48.2</td>
<td>72.2</td>
<td>144.5</td>
</tr>
<tr>
<td>600 mL bottle</td>
<td>63.6</td>
<td>1062.1</td>
<td>70.6</td>
<td>81.4</td>
<td>122.1</td>
<td>244.2</td>
</tr>
<tr>
<td>1000 mL</td>
<td>106.0</td>
<td>1770.2</td>
<td>117.6</td>
<td>135.6</td>
<td>203.5</td>
<td>406.9</td>
</tr>
<tr>
<td>1500 mL bottle</td>
<td>159.0</td>
<td>2655.3</td>
<td>176.4</td>
<td>203.5</td>
<td>305.2</td>
<td>610.4</td>
</tr>
<tr>
<td>2250 mL bottle</td>
<td>238.5</td>
<td>3983.0</td>
<td>264.6</td>
<td>305.2</td>
<td>457.8</td>
<td>915.6</td>
</tr>
</tbody>
</table>
Health scientists and health organisations have expressed views that are in direct opposition to industry. For example:

- The New Zealand Medical Association recently praised Britain’s newly-implemented sugar tax (New Zealand Medical Association, 2016).
- The New Zealand Dental Association has requested that the government consider introducing a tax on SSBs (New Zealand Dental Association, 2015; Bezzant, 2016).
- An open letter signed by a number of New Zealand health academics recently called for a health tax on SSBs (Swinburn et al, 2016).
- A review published by the World Health Organisation concluded that a tax on SSBs would be effective at reducing their consumption (Thow et al, 2010).

Polls suggest that a majority within the New Zealand public have views aligned with those of health scientists and health organisations. A September 2014 Southern Cross Health Society survey (n=2021) found 39% of survey respondents agreed that an SSB tax should be introduced, but popular support for the tax appears to have grown in the two years since then. A March 2016 NZ Herald poll (n=11700) found 83% approval and an April 2016 One News Colmar Brunton poll (n=1011) found 66% approval for an SSB tax. If the Government wished for a public opinion mandate and the support of health organisations and researchers before introducing an SSB tax, it would appear that public and academic opinion are already on the side of the tax. Unfortunately, it appears that the views of the SSB industry currently have more weight in influencing this decision than the opinions of the public and health profession. Both major political parties have indicated that they do not currently support an SSB tax (Moir J, 2016).

This lack of support may be partly because the level of the proposed tax is relatively low. Tax on tobacco is effective at changing smoking behaviours but is at several hundred percent, while the proposed entry-level tax for SSBs is only 20%. It is likely that such a tax will affect behaviour patterns and reduce dental disease to a degree, but the tax will also raise considerable revenue (Schwendicke et al, in press). Rather than limiting ourselves to the argument that we need the tax to change behaviours, perhaps the focus in lobbying for this tax should be on highlighting the benefits of the tax for revenue-gathering to fund relevant health services? Certainly, New Zealand has a need for improved access to publicly-funded dental services (especially for adults), and this is only achievable through increased funding. Reduced consumption of SSBs is a welcome side-effect, but not the primary goal of the tax. The tax should be viewed as a method for raising funds from a health-harming product to be used to address the health harms caused by that product. Currently, dental public health services are funded by taxes, but these taxes are not raised from activities that cause the dental health harm. An SSB tax has the added bonus of popular approval.

The primary argument used against the introduction of a tax on SSBs is a lack of high-quality evidence on the effects of the tax on consumption patterns over time. The best evidence for an SSB tax could only be gained by introducing a tax and following its effects, so it is disappointing that an SSB tax has been dismissed out-of-hand and New Zealand health researchers will not have opportunity to research the real-world effects of such a tax in a New Zealand context. If policymakers have ruled out SSB taxation, how should health scientists and health professionals respond? What if a tax is never going to be implemented in New Zealand? In the interests of being pragmatic, what other approaches could be considered for reduction of consumption of SSBs in New Zealand? Do we just need to educate people to make healthier food choices?

There is another important area of regulation – besides taxes – and that is health warnings and advertising restrictions. If the Coroner in the case of Ms Harris can be confused about the nutritional labelling and what is a “recommended” daily intake of sugar, then what hope is there for people like Ms Harris? Can we rely on organisations such as the New Zealand Beverage Council to self-regulate and stop selling SSBs to children and warn consumers of the negative health consequences from consuming them? SSBs cause known health harms, so failure to inform consumers of these products of these could be grounds for legal action, such as that which has been taken against tobacco companies. Tobacco companies must now advise consumers of dental health harms (such as periodontitis and oral cancer) caused by those products, so perhaps SSB manufactures could be required to include images and warnings of dental erosion and caries on their packaging? It is likely that this would provide greater assistance to consumers in making healthy food choices than the current and misleading nutritional information presented on the packaging of the products.

The Minister of Health has indicated that “taxation and regulation” are off the table. Does this mean regulation through new labelling and advertising restrictions are off the table, as well as taxes? Are dentists limited to advising individual patients not to consume the products, and promoting secondary solutions such as exercise and fluoride to address the effects of excess sugars on body weight and dental caries? If we are obese do we just need to exercise more? If we are affected by dental caries do we just need more fluoride?

A common risk factor shared by both obesity and dental caries is excess sugar in the diet, so while appropriate levels of exercise and fluoride are both beneficial, they are not adequate alone. They help reduce the effects of an inappropriate diet (on obesity and dental caries, respectively), but do not address the underlying cause. A medically fit and active person who consumes excess sugar may still suffer from dental caries. A person who consumes excess sugar may be able to use a fluoride dentifrice to help keep their caries risk under control, but the dentifrice will do nothing to prevent weight gain or increased risk of diabetes. The role of excess sugar as a risk factor for so many health problems provides a powerful argument for addressing it as their root cause, rather than going for the intermediary factors like exercise, fluoride, and tooth-brushing.

SSBs are “low value nutrition” and cause health harm. Their nutritional value is negative, and a person can go an entire lifetime without consuming SSBs and be healthier for it. How can we ensure that consumption of SSBs in New Zealand is drastically reduced? What is the solution to the SSB problem? The New Zealand Beverage Council argues that their New Zealand members operate under effective self-regulation and that taxes should not be introduced (Armitage, 2016). Following the death of Ms Harris in 2010, the Coroner recommended that Coca-Cola add warning labels to their products. It is half a decade later and their labels have not changed. Can the industry players be relied on to self-regulate?
REFERENCES


Coronial Office of New Zealand 2013. In the matter of an inquiry into the death of Natasha Marie Harris NZCorC Invercargill CSU-2010-DUN-000069, 11 February 2013.


INTERNATIONAL ASSOCIATION FOR DENTAL RESEARCH (IADR)

A joint IADR General Session–Asia Pacific Region – and ANZ Division meeting was held in Seoul, South Korea in June. The New Zealand Section was well represented with 16 staff, two postgraduate and three undergraduate students attending. All either presented posters or gave oral presentations.

The dental research of New Zealand members was recognised through several awards: Associate Professor Nick Chandler was awarded the ANZ Division Alan Docking Science Award (the highest award by the Division). Dr Sunyoung Ma was awarded the J. Morita Junior Investigator Award for Geriatric Oral Research Second Prize in the post-doctoral category for Best Presentation in Geriatric Oral Research. Fifth year BDS student Chuen Lin Hong was runner up in the ANZ Division Colgate Poster Competition. She will now present her work at the IADR General Session in San Francisco in March 2017.