

# SCIENTIFIC REVIEW OF WHO SUGARS GUIDELINE 2015

On March 4, 2015, the World Health Organization (WHO) Nutrition Guidance Expert Advisory Group (NUGAG) finalized the guidance on sugars intake<sup>1</sup>. This guidance was developed to update WHO’s 2003 guideline that “free sugars” not exceed 10% of total energy intake per day. The Nutrition Information Service at the Canadian Sugar Institute has carefully reviewed the finalized guideline, as well as the two WHO-commissioned systematic reviews and their supplementary material published separately<sup>2,3</sup>.

The WHO guideline recommends reducing free sugars intake throughout the lifetime and includes two specific targets in relation to dental caries.

- The WHO 10% guideline on free sugars intake identified as a “strong recommendation” continues to be based on evidence related to **dental caries, not overweight or obesity**. The WHO has clarified that this is “**based on moderate quality evidence from observational studies of dental caries**”.
- The WHO indicates that the “conditional recommendation” to further limit free sugars intake to less than 5% of total calories is based on “**very low quality evidence from ecological studies**” also in relation to **dental caries**.

**The WHO cautions the adoption of the 5% guideline as policy due to the very low quality evidence on which it is established.** The potential unintended consequences of reducing free sugars to 5% of total energy were NOT evaluated in the guideline document. The WHO states that “no evidence of harm is associated with this intake level”; however, the 5% guideline is not supported by available scientific evidence, and is inconsistent with the reviews of other authorities, including the Institute of Medicine (IOM)<sup>4</sup> and European Food Safety Authority (EFSA)<sup>5</sup>.

The IOM Dietary Reference Intake (DRI) report showed that when added sugars intakes are either very high (>25% energy) or very low (<5% energy), micronutrient intakes can be compromised in some populations<sup>4</sup>. A more recent systematic review found that micronutrient intakes are optimal at moderate levels of sugars in the diet<sup>6</sup>. Energy intake is the prime predictor of micronutrient adequacy and optimal intakes of sugars are difficult to quantify because levels vary depending on food choices and nutrient composition of foods.

<b>Observational studies</b>	<ul style="list-style-type: none"> <li>• <b>Observe</b> relationships between foods/nutrients and health outcomes</li> <li>• Do not prove <b>cause-and-effect relationships</b></li> <li>• <b>Are insufficient</b> to be used as the sole basis for global nutrition policy</li> </ul>
<b>Ecological studies</b>	<ul style="list-style-type: none"> <li>• Are used to generate <b>hypothesis</b></li> <li>• Provide the <b>weakest</b> evidence among observational studies</li> <li>• <b>Are unsuitable</b> for use in establishing policy</li> </ul>

WHO Recommendation	Strength of Recommendation	Strength of Evidence	Type of Scientific Evidence	WHO Reference
“In both adults and children, WHO recommends reducing the intake of free sugars to less than <b>10%</b> of total energy intake”	<b>Strong</b> <sup>a</sup>	<b>Moderate</b> , in relation to dental caries, <u>not</u> obesity	5 <b>Cohort</b> studies in children; impossible for meta-analysis due to high variability in data reporting.	Annex 1, Table 5
“WHO suggests a further reduction to below <b>5%</b> of total energy”	<b>Conditional</b> <sup>b</sup>	<b>Very low</b> , in relation to dental caries, <u>not</u> obesity	3 <b>Ecological</b> studies in Japanese children; correlation of dental caries with sugar supply before and in the years following WW II. Meta-analysis not possible due to high variability in data reporting.	Annex 1, Table 6

- a. With strong recommendations, the guideline communicates the message that the desirable effects of adherence to the recommendation outweigh the undesirable effects. This means that, in most situations, the recommendation can be adopted as policy<sup>1</sup>.
- b. Conditional recommendations are made when there is greater uncertainty about the four factors (i.e. quality of evidence, balance of benefits versus harms and burdens, values and preferences, and resource use); or if local adaptation has to account for a greater variety in values and preferences; or when resource use makes the intervention suitable for some locations but not others. This means that there is a need for substantial debate and involvement of stakeholders before this recommendation can be adopted as policy<sup>1</sup>.

The guidance was based on two systematic reviews commissioned by the WHO to assess the effects of increasing or decreasing intake of "free sugars" on body weight (Te Morenga *et al.*, 2013<sup>2</sup>) and dental caries (Moynihan *et al.*, 2013<sup>3</sup>). These reviews provide an important contribution to the scientific literature; however the guideline fails to reflect the weakness of the evidence in the two reviews and conflicts with other scientific authorities whose conclusions were developed after reviewing the totality of scientific evidence including the strengths and limitations of the reviewed studies<sup>4,5</sup>.

## Conclusion

Globally, dietary sugars consumption is declining or stable in many developed countries<sup>8</sup>. Statistics Canada data indicate that added sugars availability in Canada has been declining over the past 20 years<sup>9</sup>. Canadian Community Health Survey 2004 data indicate that Canadian consumption of added sugars was approximately 11% of total energy intake<sup>9</sup>.

The totality of scientific evidence shows that sugars are not unique in their contribution to calories or body weight compared to other energy sources<sup>2, 10-14</sup>; nor does the amount of sugars in the diet predict the healthfulness of a diet<sup>10</sup>. Nutrition experts agree that isolating or restricting a single food or nutrient such as sugars is unlikely to be an effective approach in addressing complex public health problems such as obesity<sup>15, 16</sup>. Rather, for the general Canadian population, focusing on balanced healthy eating according to *Canada's Food Guide*, managing portion size, moderation in overall food intake, and engaging in regular physical activity are key steps in achieving and maintaining a healthy body weight.

## REFERENCES

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### Body weight:

- Te Morenga *et al.*<sup>2</sup> reviewed randomized controlled trials and cohort studies on sugars and body weight.
- Among **randomized controlled trials** of adults with no strict control of food intake, a small change (on average 0.8 kg) in body weight was observed when sugars were either increased or decreased in the diet. Results were less consistent (no significant effect) in children than in adults.
- The changes in body weight were linked to changes in caloric intake (i.e., there was no unique effect of sugars as compared to other carbohydrates on body weight).
- The review **did not** provide any evidence to support a **quantitative** limitation for "free sugars".

### Dental caries:

- The Moynihan *et al.* review<sup>3</sup> on dental health concluded there was "moderate quality" evidence from 5 **cohort** studies to support limiting intake of "free sugars" to less than 10% of energy.
- There are no randomized controlled trials available to support either the 10% or 5% recommendation.
- The conditional 5% recommendation was based on three "very low quality" **ecological** studies linking changes in per capita sugar availability data for the entire country of Japan with dental caries incidence among children in two Japanese cities before and in the years following World War II. This research predates the widespread use of fluoride toothpaste and does not account for other known confounders for dental caries including frequency of intake of sugars and other fermentable carbohydrates (e.g. dietary starch)<sup>4,5</sup>.
- These isolated studies do not reflect the current situation, particularly in developed countries such as Canada, and do not consider the internationally recognized use of fluoride as the primary prevention method. The effective use of fluoride continues to be the most effective public health approach to the prevention of dental caries in the 21st century<sup>7</sup>.