Oral health promotion strategy: integrating oral health promotion into general health promotion through sugars reduction, targeting schoolchildren

Paula Moynihan
Professor of Nutrition and Oral Health
Director, WHO Collaborating Centre for Nutrition and Oral Health
Outline of presentation

• Oral health status of children
• WHO Oral Health Strategy
• Links between oral health and general health: the common risk factors
• WHO Guideline on Sugars Intake
• Current sugars intake by children
• Implications of WHO Guideline for policy and practice-approaches to reducing sugars consumption
• Sugars reduction and oral health promotion—the whole school approach
The oral health status of children

• Untreated tooth decay is the most common disease of the 310 conditions included in the 2015 Global Burden of Disease Study:
  – ranking 1st for decay of permanent teeth (>2.3 billion people)
  – ranked 12th for deciduous teeth (560 million children)
• Globally, tooth decay (permanent teeth) increased by 14.6% between 2005 and 2015
  

• Worldwide 60–90% of school children have dental cavities
• The prevalence of oral disease including tooth decay is increasing in low- and middle-income countries
• In all countries the oral disease burden is significantly higher among poor and disadvantaged population groups
Severity of dental caries (tooth decay) in children age 12 years

Dental caries levels (DMFT) among 12-years-old, December 2014

* based on most recent data in CAPP
Impact of oral disease

• “The incidence of tooth decay in low- and middle-income countries is rapidly increasing among children and there will be a huge burden of this health problem in the future without sustainable prevention programmes”

  Professor Poul Erik Petersen, Director, WHO Collaborating Centre of Community Oral Health & Research University of Copenhagen

• If left untreated, dental diseases can cause severe pain, infection and negatively impact the quality of life, children’s growth, school attendance and performance
Oral health: action plan for promotion & integrated disease prevention

- Oral health should be incorporated into policies for the integrated prevention and treatment of chronic diseases
- Evidence-based approaches should be used, that incorporate oral health into national policies for integrated prevention and control of NCDs
- Provide coverage of the population with essential oral-health care
- Promote the availability of oral-health services that are directed towards prevention - integrated with programmes for NCD prevention
- Consider the development and implementation of fluoridation programmes, e.g. in drinking-water, milk, affordable fluoride toothpaste
- Continued...
Oral health: action plan for promotion & integrated disease prevention

• Promote capacity building for oral-health personnel e.g. dental hygienists, nurses
• Address human resources and workforce planning for oral health as part of every national plan for health
• Incorporate an oral-health information system into health surveillance plans
• Strengthening the evidence base – research
• Budgetary provision for the prevention and control of oral disease
• Develop and implement the promotion of oral health for school children as part of activities in health-promoting schools
WHO Global Oral Health strategy; summary

• Oral Health is integrated within the strategy of non-communicable disease prevention and health promotion

• Emphasis is put on developing global policies in oral health promotion and oral disease prevention including:
  – building oral health policies towards effective control of risks to oral health;
  – stimulating development and implementation of community-based projects for oral health promotion and prevention of oral diseases, with a focus on disadvantaged and poor population groups;
  – advocacy for a common risk factor approach to simultaneously prevent dental caries and other non-communicable diseases
NCDs including oral diseases have common risk factors

**Unhealthy diet:**
- low fruit & vegetables
- high sugars, high fat

**Tobacco**

**Alcohol**

**Systemic NCDs**
- Obesity
- Diabetes (Type ii)
- Cardiovascular disease
- Cancer

**Oral NCDs**
- Tooth decay (dental caries)
- Gum disease (periodontitis)
- Oral cancer
Gum disease (periodontitis) and diabetes have a reciprocal relationship

- Periodontal disease is a complication of diabetes mellitus
- Treatment of gum disease through oral hygiene improves diabetic control (Cochrane review 2010 & 2015)
- Obesity in children is leading to increased prevalence of diabetes in adolescence
Tooth decay and obesity have a common risk factor

Dietary sugars (free sugars)

Diabetes
Cardiovascular disease
Some cancers

Obesity

Tooth decay (dental caries)

Intervention to restrict sugars intake will benefit both general and dental health
The common risk factor approach

• The WHO Oral Health Strategy supports the common risk factor approach

• Public health solutions for oral diseases such as tooth decay (dental caries) are most effective when they are integrated with those for other chronic conditions, such as obesity, and with national public health programmes
Preventing tooth decay

• Tooth decay (dental caries) is caused by dietary sugars
• Oral bacteria metabolise sugars to acid and the acid demineralises the enamel and dentine (the hard tissues of the tooth) – over time a cavity can develop
• Dental cavities can be part mitigated by maintaining a constant low level of fluoride in the oral cavity
• The burden of tooth decay and obesity can be decreased simultaneously by reducing free sugars intake and promoting a healthier diet
Dietary Sugars

Mono and di saccharides
- glucose, galactose, fructose
- sucrose, maltose, lactose

Added sugars
- all added mono-and di-saccharides. Sometimes includes honey and syrups e.g. maple syrup, agave nectar

Natural sugars
- Sugars physically located in the cellular structure of grains, fruits and vegetables plus those naturally present in milk and milk products

Free sugars (WHO, 2014)
- All mono- and di-saccharides added by manufacturer, cook or consumer plus the sugars naturally present in honey and syrups, fruit juices and fruit juice concentrates

WHO Collaborating Centre for Nutrition & Oral Health
WHO Guideline: sugars intake for adults and children, 2015

**Recommendations**

- WHO recommends reduced intake of free sugars throughout the life-course (*strong recommendation*)
- In both adults and children, WHO recommends that intake of free sugars not exceed 10% of total energy (*strong recommendation*)
- WHO suggests further reduction to below 5% of total energy (*conditional recommendation*)

**Remarks**

- For countries with low free sugars intake, levels should not be increased
Strength of recommendation

- WHO used Grading of Recommendations Assessment, Development and Evaluation (GRADE) method to assess the quality of evidence and to determine the strength of the recommendations.

- The strength of the recommendation is an indicator for the confidence that the desirable effects of adherence to a recommendation outweigh the undesirable effects.

- **Strong recommendation:**
  - should be adopted as policy in most situations

- **Conditional recommendation:**
  - more debate and stakeholder involvement is probably required to implement as policy
WHO Guideline Development Process (WHO 2014)

- identification of priority questions and outcomes
- retrieval of the evidence – comprehensive systematic reviews of scientific literature
- assessment and synthesis of the evidence
- formulation of recommendations

• The WHO Nutrition Guidance Expert Advisory Group (NUGAG) Subgroup on Diet and Health – reviewed the evidence, drafted recommendations and considered the strength of the recommendations based on:
  - desirable and undesirable effects of the recommendation
  - the quality of the available evidence
  - values and preferences related to the recommendation in different settings
  - the cost of the options available to public health officials and programme managers in different settings

• The WHO Guideline Review Committee oversees process
Systematic review on amount of sugars and risk of tooth decay

- 42 (of 50) studies identified in children reported a positive association between sugars intake and tooth decay-this covered high, middle and low income countries
- ‘Moderate’ quality evidence that increasing intake of free sugars increased risk of tooth decay
- Moderate quality evidence that limiting free sugars to <10% energy reduced risk of tooth decay
- Very low quality evidence that restricting free sugars to <5% energy conveyed even further benefit
How do current intakes of sugars compare with the WHO recommendations?
Data on sugars intake

• 5% of energy is approximately 10kg/person per year

• Total global consumption of sucrose alone averages 24 kg/person/year

• Excludes many free sugars such as honey, corn syrups, fruit juices etc.
Free sugars intake UK (% energy)

Data from NDNS Bates et al 2014

WHO Collaborating Centre for Nutrition & Oral Health
Limited data on free sugars intake from LMIC

- Thai people consume 30kg sugars/person/year – equivalent to 82g per day or ~16% of energy
- FAO data indicate that sugars consumption in Malaysia averages over 5 times WHO recommendations
- In India, average sugar, Jaggery and sugar from sugar sweetened beverages consumption is approximately 25kg/person/year (68g/day or ~14% energy) (Gulati & Misra: *Nutrients* 2014, 6, 5955-5974)
- In Iran, per capita sugar consumption exceeds 30kg/year (82g/d, 16% energy)
- In Kuwait sucrose and sweeteners contribute 100g of sugars/person/day - approximately 20% of energy (Abdulrahaman O Musaiger (2011))
- Based on WHO figures for energy requirements, 5% of energy is equivalent to 19g for a 6 year old and 25g for a 10 year old child (approximately)
Sources of free sugars in the diets of children

- Sugars sweetened beverages (fruit based, carbonated and still and sweetened milk)
- Fruit juices (including 100% juices)
- Confectionery – sweets, candies, chocolate
- Biscuits and cakes
- Manufactured breakfast cereals
- Sweetened desserts e.g. yoghurts
- Many savoury sauces
Free sugars content of common dietary sources

<table>
<thead>
<tr>
<th>Dietary item</th>
<th>Standard portion</th>
<th>Free sugars content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table sugar</td>
<td>5g rounded teaspoon</td>
<td>5g</td>
</tr>
<tr>
<td>Honey</td>
<td>Heaped teaspoon 17g</td>
<td>13g</td>
</tr>
<tr>
<td>Maple syrup</td>
<td>55g serving (amount to top waffles or pancakes)</td>
<td>33g</td>
</tr>
<tr>
<td>Cola drink</td>
<td>Average ‘small’ serving at food outlet 470ml</td>
<td>49g</td>
</tr>
<tr>
<td>Chocolate milk</td>
<td>300ml mug</td>
<td>32g</td>
</tr>
<tr>
<td>Lemonade</td>
<td>Average ‘small’ serving at food outlet 470ml</td>
<td>23g</td>
</tr>
<tr>
<td>Orange Juice</td>
<td>200ml individual carton</td>
<td>20g</td>
</tr>
<tr>
<td>Condensed milk</td>
<td>25g (average serving added to coffee)</td>
<td>15g</td>
</tr>
<tr>
<td>Muffin cake</td>
<td>75g</td>
<td>24g</td>
</tr>
</tbody>
</table>

approximate as sugars content will vary brand to brand.
## Free sugars content of common dietary sources

<table>
<thead>
<tr>
<th>Dietary item</th>
<th>Standard portion</th>
<th>Free sugars content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sweet biscuit</td>
<td>14g one biscuit</td>
<td>5g</td>
</tr>
<tr>
<td>Plain ring doughnut</td>
<td>60g</td>
<td>11</td>
</tr>
<tr>
<td>Plan chocolate bar</td>
<td>54g small bar</td>
<td>15g</td>
</tr>
<tr>
<td>Ice cream</td>
<td>75g average serving</td>
<td>15g</td>
</tr>
<tr>
<td>Fruit flavoured yogurt</td>
<td>150g small pot</td>
<td>13g</td>
</tr>
<tr>
<td>Granola bar</td>
<td>One average</td>
<td>14g</td>
</tr>
<tr>
<td>Sweet chilli sauce</td>
<td>15g tablespoon</td>
<td>10g</td>
</tr>
<tr>
<td>Salad dressing</td>
<td>15g tablespoon</td>
<td>6g</td>
</tr>
<tr>
<td>Tomato Ketchup</td>
<td>1 portion pack 20g</td>
<td>5g</td>
</tr>
</tbody>
</table>

Based on the methods of Kelly et al 2003. All values are approximate as sugars content will vary brand to brand.
Strategies to reduce sugars intake

- Produce and import less
- Use less
- Sell less
- Market less
- Advise to eat less
- Eat less

Upstream to Downstream

Slide courtesy of UK Health Forum
Actions to reduce free sugars intake

- National food policies - in line with ‘WHO Guideline on Sugars Intake for Adults and Children’
- Use of nutrient profiling to define what is ‘high’ free sugars
- Fiscal pricing policies, targeting foods that are high in free sugars
- Reformulation and reduction in portion size for items high in free sugars
- Regulation of advertising and marketing of food and non-alcoholic beverages that are high in free sugars
- Education and training – consumer and professionals
- Health marketing – national campaigns to disseminate nutrition health education
- Schools based approaches
Fiscal pricing policies

• “There is reasonable and increasing evidence that appropriately designed taxes on sugar sweetened beverages would result in proportional reductions in consumption, especially if aimed at raising the retail price by 20% or more”


• Imposing a tax on a high sugars product sends a health message out to consumers

• Imposing a tax on high sugars products is a means of generating income to fund health interventions
WHO Nutrient profile model

• Enables classification of foods as ‘unhealthy’ or ‘healthy’—based cut off values for saturated fat, trans fatty acids, sodium and sugars

• Used for
  – Defining prohibitions on marketing to children
  – Making health claims
  – Product labelling
  – Information and education
  – Provision of foods in public institution such as schools
  – Targeting foods/drinks for taxing

http://iris.wpro.who.int/bitstream/handle/10665.1/13525/9789290617853-eng.pdf?ua=1
Nutrient profile model for the Western Pacific Region

<table>
<thead>
<tr>
<th>Marketing of these items is prohibited</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chocolate and sugar confectionery</td>
</tr>
<tr>
<td>Energy bars</td>
</tr>
<tr>
<td>Sweet toppings and desserts</td>
</tr>
<tr>
<td>Cakes</td>
</tr>
<tr>
<td>Sweet biscuits and pastries</td>
</tr>
<tr>
<td>Energy drinks</td>
</tr>
<tr>
<td>Instant and pre-mixed tea and coffee</td>
</tr>
</tbody>
</table>

Marketing of fresh and frozen fruit, vegetables and legumes is always permitted
## Nutrient profile model for the Western Pacific Region

<table>
<thead>
<tr>
<th>Food category</th>
<th>Marketing prohibited if exceeds / 100g</th>
</tr>
</thead>
<tbody>
<tr>
<td>Savoury snacks (e.g. nut mixes, potato crisps)</td>
<td>Added sugars 0g</td>
</tr>
<tr>
<td>Juices (100% juices, smoothies, cane, unsweetened coconut juice)</td>
<td>Total sugars 5g</td>
</tr>
<tr>
<td>Milk drinks</td>
<td>Added sugars 0g</td>
</tr>
<tr>
<td>Other beverages</td>
<td>Added sugars 0g</td>
</tr>
<tr>
<td>Breakfast cereals (e.g. oat meal, muesli)</td>
<td>Total sugars 10g</td>
</tr>
<tr>
<td>Yogurts, sour milk or similar</td>
<td>Total sugars 10g</td>
</tr>
<tr>
<td>Ready made meals (composite convenience dishes)</td>
<td>Total sugars 10g</td>
</tr>
<tr>
<td>Sauces, dips and dressings</td>
<td>Added sugars 0g</td>
</tr>
<tr>
<td>Processed fruit and veg (e.g. dried coconut, jam, fermented vegetables)</td>
<td>Added sugars 0g</td>
</tr>
</tbody>
</table>
Many children are growing up in an obesogenic and cariogenic environment – the school should not be such an environment!

SCHOOLS BASED APPROACHES
Integrate oral health promotion with other schools initiatives

IMPLEMENT COMPREHENSIVE PROGRAMMES THAT PROMOTE HEALTHY SCHOOL ENVIRONMENTS, HEALTH AND NUTRITION LITERACY AND PHYSICAL ACTIVITY AMONG SCHOOL-AGE CHILDREN AND ADOLESCENTS.

5.1 Establish standards for meals provided in schools, or foods and beverages sold in schools, that meet healthy nutrition guidelines.

5.2 Eliminate the provision or sale of unhealthy foods, such as sugar-sweetened beverages and energy-dense, nutrient-poor foods, in the school environment.

5.3 Ensure access to potable water in schools and sports facilities.

5.4 Require inclusion of nutrition and health education within the core curriculum of schools.

5.5 Improve the nutrition literacy and skills of parents and caregivers.

5.6 Make food preparation classes available to children, their parents and caregivers.

5.7 Include Quality Physical Education in the school curriculum and provide adequate and appropriate staffing and facilities to support this.
School based approaches to oral health promotion through sugars reduction

- Governments and policy
- School environment
- School curriculum
- Training and support

Photo courtesy of Trinity Care Foundation Oral Health Programs (Public Health Dentistry) in India
Governments: actions to support reduction of sugars in schools

- Define national **nutrition guidelines** to inform school food policy
- Set national standards for food in schools (**school food policy**)
- **Cross ministerial task force**— education, health, agriculture - all contribute to national policy development and implementation
- Provide national guidance on **nutrient profiles** – to identify unhealthy foods and beverages and use to set standards for school food i.e. what is ‘low’ free sugars?
- Implement WHO recommendations on the marketing of foods and SSB to children - to ultimately reduce exposure of children to such marketing
- **Resource provision** for policy implementation, capacity building, and to support research into effective means of intervention to reduce sugars intake in the school setting especially in low resources settings where multiple nutritional problems coexist
- **Support fluoridation schemes** where appropriate – e.g. milk fluoride programmes have been implemented in Thailand, organised by the Ministry of Health
- Set **national targets** for time bound reductions in childhood obesity and tooth decay
School environment actions to support sugars reduction and oral health promotion

- Standards for school means including free sugars thresholds for food provided
- Restrictions on free sugars content of foods sold in schools
- Restrictions of free sugars content foods and drinks brought into schools from home
- Provision of affordable healthy choices low in free sugars
- Ban on sale of FOODS and drinks high in free sugars in schools
- Make safe water available as a priority and promote consumption of drinking water
- Fluoridated milk programmes where exposure to fluoride through drinking water is lacking
- Tooth brushing opportunities
Marketing sugars to school children

• Settings where children gather should be free from all forms of marketing of foods high in free sugars

• Governments should implement a regulatory mechanism to avoid sponsorship, advertisement and marketing of foods and beverages not consistent with healthy dietary practices

• Online advertising has risen and media use by children is increasing

• Sponsored materials, equipment and events in schools should be avoided

Social media
Text books
Year books and newsletters
School supplies
Sports equipment
Sponsored event

WHO Collaborating Centre for Nutrition & Oral Health
School curriculum: actions to support sugars reduction and oral health promotion

• Education on sugars and health, including oral health, to be included in the core curriculum
  – How sugars cause tooth decay
  – How sugars cause obesity
  – Different types of sugars – free sugars
  – Sugars content of different foods and drinks
  – Maximum levels of sugars intake for health
  – How to read nutrition labels

• Food preparation classes (of foods low in free sugars) should be made available to pupils

• Including lessons on good hygiene, including tooth brushing sessions into the school day

• Education should be age specific and skills based
Capacity Building

• Capacity building to support sugars reduction and oral health promotion in schools is essential

• Training for teachers and school staff
  – on diet and health including information on sugars and oral health
  – on oral health, including oral hygiene

• Building capacity
  – Include information on sugars and oral health in the curriculum of training courses for teachers, cooks
Developing a “sugar smart” school

- School based interventions that address both behavioural and environmental factors and are transferable, scalable and sustainable are needed
- Intervention modalities that are effective, culturally appropriate and cost effective need to be identified
- All stakeholders need to be engaged
Conclusions

Tooth decay is the most prevalent NCD and is increasing in many LMIC. The WHO Oral Health Strategy is to integrate oral health promotion with strategies to reduce other NCDs through the common risk factor approach. Free sugars is a common risk factor for both tooth decay and obesity. WHO recommends limiting free sugars to <10% and preferably <5% of energy intake. Current free sugars intake by children in many countries exceed recommendations. School based approaches to sugars reduction should be government driven - guidance, support, resources and capacity and skills to deliver. School based approaches to sugars reduction and oral health promotion should:

• Consider both the school environment and the core curriculum
• Involve all stakeholders – parents, pupils, teachers, cooks, food vendors
• Enable and promoting the consumption of safe drinking water
• Include oral health education and oral hygiene skills

Oral health should be included and integrated into health initiatives in schools.