

Need for Policy to Reduce Sugar Consumption in Trinidad and Tobago?

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ABSTRACT

In a recent recommendation The World Health Organization (WHO) advises that adults and children reduce free sugars to less than 10% of total daily energy intake. This guidance is based on research evidence for the relationship between sugar and chronic non-communicable diseases, specifically obesity, type 2 diabetes mellitus (T2D), cardiovascular disease as well as dental caries. Overconsumption of free sugars has been attributed largely to the availability and popularity of sugar sweetened beverages (SSBs). Recent data have shown that the Caribbean region as a whole has high consumption of SSBs and Trinidad and Tobago has been singled out for having the highest daily intake in the world. The need to implement the new WHO guidance on sugar consumption is urgent given the high and apparently increasing prevalence of obesity, T2D and dental caries particularly among the nation's children. This paper recommends that national policy for Trinidad and Tobago aimed at reducing sugar consumption, should be developed and implemented and that such policy should be based on strategies that have been shown to be effective internationally and regionally but leave ample room for locally relevant, culturally sensitive and socially acceptable innovative models of intervention.

Keywords: Caribbean, dental caries, obesity, policy, sugar

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Sugar and chronic non -communicable diseases (NCDs)

Sugar is a sweet crystalline substance obtained from several plants, mainly sugar cane and sugar beet and consisting essentially of sucrose (1). Pure and refined forms of sugar are a readily available commodity in the global wholesale and retail market and used extensively worldwide in processed foods, confectionery and soft drinks.

Importantly, intrinsic sugars (i.e. sugar within the structure of intact fruit and vegetables and in milk), have not been shown to have adverse health effects. However recent research evidence has shown that high consumption of extrinsic ‘free’ sugars (i.e. sugars in foods and drinks added during manufacturing, cooking or by consumption from honey, syrups and fruit juices), have been linked to the chronic non-communicable diseases (NCDs) such as type 2 diabetes (T2D), cardiovascular diseases (CVD) and oral disease. Specifically these free sugars can result in increased risk for overweight/obesity which in turn predisposes to T2D and CVD as well as dental caries (tooth decay) in children and adults (2, 3).

In response to the global public health problem posed by NCDs and the documented relationship of sugar with obesity and dental caries, The World Health Organization (WHO), has recently published new guidelines for sugar intake in children and adults, focusing on reducing free sugars in the context of daily total energy intake (4). The report states that consumption of free sugars, particularly those in sugar-sweetened beverages (SSBs) increase overall energy intake and leads to weight-gain and increased risk of tooth decay. The WHO therefore recommend that adults and children reduce their daily intake of free sugars to less than 10% of total energy with a goal of further reduction to below 5% that is approximately 25 grams or 6 teaspoons of sugar per day (4).

NCDSs in Trinidad and Tobago

Trinidad and Tobago is a twin-island nation located near to the north-east coast of Venezuela and the most southerly of the Caribbean chain of islands. Trinidad is the larger island (1,864 square miles) compared to Tobago (116 square miles). This English-speaking Caribbean country is an independent Republic within the British Commonwealth. At the last census the total population of Trinidad and Tobago was 1.3 million with 20% of people under the age of 15 (5) and 40 % less than 40 years of age. (6). The population is multi-ethnic comprising two major groups viz., descendants of Indian and African migrants whose role ironically was as manual labourers in the British Colonial sugar industry two centuries ago, but a burgeoning group is inevitably arising from ethnic admixture.

Trinidad and Tobago has the highest prevalence and high morbidity and mortality rates for NCDs in the Caribbean if not the Hemisphere and the secular trend shows an alarming increase such that NCDs now account for over 60% of premature loss of life defined as death before 70 years (7). In addition, prevalence of self-reported diabetes, hypertension and heart disease was 19.5%, 30%, and 8.2% respectively among a sample of 14,793 adults from a recent study (8).

Obesity

The Trinidad and Tobago Chronic Non Communicable Disease Risk Factor Survey reported a high level of overweight and obesity among all age-groups between 15-64 years with a combined prevalence of 56 % in both sexes (7) and overweight/obesity as defined by the standards for 2012 using Body Mass Index BMI values for overweight ($BMI > 25\text{kg/m}^2$) and obese ($BMI > 30\text{kg/m}^2$), was 34 %, 52%, and more than 65% among those 15-24 years, 25-34 years and above 35 years respectively. These figures, as alarming as they are, may indeed be underestimates because recent

WHO guidelines on the diagnosis of obesity in non-white / ethnically diverse populations like that of Trinidad and Tobago have lowered the threshold for obesity from BMI of 30 kg/m² to 27.5kg/m² (9,10).

Of even greater concern is the exponential increasing rate of overweight/obesity among school children where within the last decade overweight has tripled and obesity has increased six-fold (11). The secular trends also indicate that every successive generation of children of school age is becoming more overweight or obese such that primary school children have a greater prevalence of overweight and obesity than their peers in secondary schools. In the wake of this phenomenon, Batson *et al* have reported a high rate of silent type 2 diabetes among school children all of whom were overweight/obese and bore the hallmark clinical feature of insulin resistance by exhibiting acanthosis nigricans at the neck (12). Routine screening identified these children with silent T2D which could have gone unnoticed for many years waiting to come to attention when the disease was seriously advanced.

Dental caries and oral health

Dental caries or tooth decay is the destruction of tooth tissue by acids in the oral biofilm (dental plaque) produced by fermentation of sugars that remain in the mouth after meals. The last national dental survey in Trinidad and Tobago was conducted a decade ago and showed that levels of untreated dental caries among 6 to 8 year-olds was high with 62% having had some degree of tooth decay (13).

The problem of dental caries in young children was further highlighted by a more recent but local study involving n = 251 preschool children aged 3 to 5 years-old in central Trinidad (14). In this sample the prevalence of early childhood caries (ECC) was 29% with 12% in need of urgent

care or referral due to acute problems with decayed teeth such as dental abscesses. Not surprisingly, in that study regression analyses showed a significantly higher rate of dental caries in children who frequently consumed sweetened snacks, this was consistent with the WHO report (4).

The association between oral health and systemic diseases particularly the NCDs is more than casual. Thus in addition to sharing common antecedents viz., high calorie, high sugar intake those with diabetes have been shown to exhibit a higher prevalence of oral diseases particularly periodontal disease (15). The link has been shown to be due to local inflammatory reactions and establishment of a two-way link between the diseases (16). Consistent with this, diabetic patients in Trinidad were shown to have a high prevalence and severity of periodontal disease (17). Thus the higher burden of inflammation detected in blood markers of systemic inflammation establishes an intimate link between oral-systemic inflammation, an important common pathogenetic mechanism between atherosclerosis and oral disease.

Sociocultural factors and sugar

During its early colonial history particularly as a nation in the British Empire, Trinidad and Tobago developed a strong plantation economy, based around the production of sugar cane and cocoa. From the 18th century sugar production in the Caribbean catered to the popularity of sweetened foods and beverages in the UK and other European countries aided and abetted by the growth in tea imports from the India and the Far-East.

Over the years sugar production declined in part due to falling world prices as a result of competition from European beet sugar as well as a host of local factors eventually leading to collapse of the industry in 2003 but imports took the place of local production. Sugar as a consumer

product has remained very popular in Trinidad and Tobago and the Caribbean and the soft drink industry in particular has been flourishing. A wide array is manufactured locally but in addition there is also easy availability of international brands. Many of these products target children and young adults through aggressive, well-researched and well-funded advertising campaigns, not equivalently countered by the public health sector.

There are also local cultural beliefs that minimize the threats posed by sugar over-consumption and overweight and obesity in T&T: Children will grow out of it; fat and nice is healthy; we need sugar for energy; sugar is a natural substance; if it is so bad for us why would it be available as it is?; is good for us and helps to make things better: “a spoonful of sugar helps the medicine go down.”

Food, cooking, customs and eating habits are inextricably linked to culture. The preparation of food and eating socially is usually more associated with communication and relationships and less so with the nutritional value. Eating and sharing food is a central part of many cultural celebrations and special occasions where sweets, sugary foods and SSBs are often used as rewards, gifts and tokens during these social events.

The growing fast food culture promotes eating quick, readily available and mostly processed foods high in sugar and fats, often these are sold with SSBs as “affordable meal deals”. As the popularity of the fast food culture increases in Trinidad and Tobago and across the Caribbean, often reinforced by commercials, invariably the consumption of sugar will continue to be popular and in high demand.

Sugar sweetened beverage consumption

A recent study reported on consumption of sugar sweetened beverages (SSBs) through analyses of data from 187 countries (18). The analyses used data on individual level beverage intake and food balance data from the United Nations Food and Agriculture Organization (FAO) using hierarchical Bayesian statistical modeling. This approach combined and harmonized nationally representative dietary survey data and food and beverage availability data and thereby provided an estimate individual daily intake of SSBs for each of the 187 countries. Average global daily intake for adults over age 20 years were 0.58 of 8oz serving per day for SSBs. There was large variation by geographic region with the lowest consumption of SSBs in East Asia (0.2 servings/day) and the highest in the Caribbean of 1.9 servings/day (18).

Of particular concern was that among countries in the Caribbean region, the highest intake was in Trinidad and Tobago (2.5 serving/day i.e. 20 ounces per day), making Trinidad and Tobago the nation with the highest average daily intake of SSBs in the world. The only other countries where people drank more than 16 ounces per day were Barbados, Cuba, St Vincent and the Grenadines, The Dominican Republic and Grenada (18), worryingly are all countries in the Caribbean region.

In Trinidad and Tobago some local SSBs brands are specifically designed and marketed to children being frequently available in school cafeterias. The provision of SSBs with the free school meals from the School Feeding Program further highlights the lack of a schools nutrition policy to guide and regulate the content and provision of school meals. Socio-cultural events such as sports and family days are often sponsored by SSBs companies. There are no current policies on the sale, advertising and marketing of such products in schools in Trinidad and Tobago MoH are currently undertaking consultations for Interim Guidelines for Foods Bought and Sold in Schools.

Sugar policy (international and regional perspectives)

The UK-based Scientific Advisory Committee on Nutrition (SACN) endorses the WHO position on sugar and that ingesting free sugars in SSBs increase BMI and risk of obesity, diabetes and tooth decay, in children and adults (19). Free sugars should therefore not amount to more than 5% of daily energy which means 19g (5 sugar cubes equivalent) for children aged 4 to 5 years of age, 24g (6 sugar cube equivalent) for children aged 7 to 10 years of age and 30g (7 sugar cube equivalent) for anyone over 11 years of age and consumption of SSBs should be minimal (19).

Some countries have begun to address the issue of obesity and NCD's through the implementation of policy to reduce sugar consumption. In a bold move to address their public health problem of obesity, Mexico in 2014 introduced a national 'sugar tax' to discourage SSB consumption. This tax was \$0.07 USD per liter amounting to 10% increase in the retail price. Preliminary research to evaluate the impact of this initiative reported an average 12% reduction in the purchase of SSBs during 2014 and in households from the lowest socioeconomic groups in whom there is greater risk of NCDs, this reduction was 17% (20).

An Irish modeling study demonstrated the potential impact on obesity of a 10% tax on SSBs and similar can be applied locally. It supports the implementation of a SSB tax despite the effect may be small, as in their case, whilst taxation affects the entire population (21). This is because the increased price will mostly impact the young adults who are the main consumers of these products and for whom the health benefits would be greatest.

In a landmark report the British Medical Association (BMA) have highlighted that the UK National Health Service (NHS) spends £6 billion a year due to obesity and other health concerns resulting from poor diets and recommend that a 20% tax be placed on SSBs sold in the UK ('fizzy

drinks' and heavily sweetened juices), which would mean raising the price of a 1 liter drink from £1.50 (USD \$2.31) to £1 .80 (USD \$2.77) (22).

Interestingly, in the English-speaking Caribbean, the Government of Barbados has recently announced the introduction of excise tax on SSBs which is consistent with recommendations from the Yale Rudd Centre for Food Policy on Obesity (23) The report states: 'taxes on SSBs can be conceived with two goals: raising revenue and changing consumption'. Such policy can: (a) Raise significant funds to be earmarked for nutrition initiatives such as subsidies for healthy foods or programs in schools, (b) Raise the relative price of unhealthy beverages, thereby discouraging consumption, (c) Decrease sales of unhealthy beverages, and influence demand for healthier alternatives, which may encourage beverage manufacturers to reformulate their products and (d) Convey the message that government and policymakers are concerned about nutrition and the public's health (23). Importantly the US Food and Drug Administration (FDA) has proposed that nutrition labels on food and beverages should cite the amount of added sugars as a percentage of the recommended daily calorie intake. This should help consumers to make informed choices (24).

A sugar policy for Trinidad and Tobago - long overdue

The WHO guideline states inter alia that their report on sugar should be "used to develop strategy to reformulate food products, in particular processed foods that are high in free sugars and be translated at the country level into culturally and contextually specific food-based dietary guidelines that take account locally available food and dietary customs" (4).

International guidelines and national implications

In Trinidad and Tobago some sectors of society have already made the call to address sugars consumption. Thus, in 2013 a report from the Ministry of Health Joint Select Committee stated that the Ministries of Health and Education should work strategically to remove ‘sweet drinks’ and carbonated beverages from government schools and to continually monitor food and drinks sold by private concessionaries around the school environment. (25).

The Ministry of Health, GORTT has also been attempting to raise public awareness of food content and labelling in their “Read it before you eat it” campaign, which advises consumers to look at the nutrition facts table on food packing before purchasing and specifically: ‘check serving size’, ‘consider the calories’ and ‘calculate percent daily value’. This is in addition to ongoing health promotion initiatives in schools and community-based health fairs that attempt to highlight the adoption of healthy lifestyles through education and making healthy choices the easier choices. However in light of the worrying statistics on the prevalence of obesity, diabetes and dental caries a more radical approach appears to be indicated which may need to follow the sugar policy implemented in Mexico and that being considered for the UK. This is likely to meet significant resistance, particularly from food and drink manufactures and retailers of SSBs and will require strong political lobbying based on empirical data and positive endorsement from respect local health bodies such as the Trinidad and Tobago Medical Association (TTMA) and the Dental Association of Trinidad and Tobago (DATT), The University of the West Indies and the Caribbean Public Health Agency (CARPHA).

In anticipation of this resistance, innovate approaches to develop collaboration and inter-sectoral working among key stakeholders must be considered. A good example of this approach can be seen in the ‘Less salt more life’ initiative in Argentina, where the government has been able

to influence a significant reduction in the nation's salt consumption through comprehensive legislation that encourages public-private sector partnership (26).

CONCLUSION

Health promotion strategies that aim to positively influence socio-behavioral and socio-environmental factors need to be underpinned by clear health policy. Effective policy to reduce sugar consumption in Trinidad and Tobago is therefore vital for the public health agenda to combat the NCDs. We here propose that a policy to reduce sugar consumption in Trinidad and Tobago should at least include the following: sales taxes, moral suasion among manufacturers producing SSBs and public engagement and education. In particular by targeting the school population (with its benefits on staff and student populations as well as their families) through formal engagement with desirable and sustainable health promotion activities that can be maintained both in and out of the school setting, utilizing innovative educational tools within the school curriculum to bolster this process.

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