Philippine Center for Diabetes Education Foundation, Inc.
(DIABETES CENTER PHILIPPINES)

POSITION STATEMENT ON SUGAR-SWEETENED BEVERAGES

Executive summary

Sugar-sweetened beverages have been implicated in the development of many diseases including diabetes, obesity, heart disease, gout, abnormal cholesterol levels, dental caries and osteoporosis.

The Philippine Center for Diabetes Education Foundation supports the passage of taxes on sugar-sweetened beverages (SSBs) such as soda or soft drinks especially those sweetened with high fructose corn syrup.

However, this tax scheme should be part of a more comprehensive program against non-communicable diseases such as diabetes and obesity or it is bound to fail.

The program should include education regarding proper nutrition and a healthy lifestyle, clearer food labeling, reducing cost and increasing availability and accessibility of healthy food such as fruits and vegetables, as well as potable water and limiting availability of SSBs in our school systems.

Background

Diabetes ranks eighth among the leading causes of death in the Philippines.[1] In 2015, there were over 3.5 million Filipino adults diagnosed with diabetes[2] and about an equal number who remain undiagnosed. And its prevalence keeps rising, having increased by 60% from 2003 to 2013.[3]

Parallel to soaring rates of diabetes are those of overweight and obesity.[3] Three out of 10 adults are overweight and obese, outnumbering the undernourished (one of every 10 adults).

The price of sweetened drinks could more than double if the senate concurs with the House of Representatives. This could serve as a deterrent for many to purchase sugary drinks.

Part of House Bill 5636 seeks to impose an excise tax of PhP10 per liter of sugar-sweetened beverages, specifically, non-alcoholic drinks with added sugar or artificial sweetener such as soft drinks, soda, fruit drinks, sports drinks, sweetened tea or coffee and energy drinks.

Excluded from the proposed tax are 100% natural fruit juice, 100% vegetable juice, yogurt, milk, meal replacements, weight loss and oral nutrition therapy products.

Why single out sugar-sweetened beverages?

The World Health Organization (WHO) advocates for a tax on sugary drinks[4] for a number of reasons. Sugar over-consumption is a key contributor to obesity, diabetes and tooth decay. SSBs are major sources of dietary sugar and are gulped down increasingly in many countries especially by children.

Sugary drinks make it very easy to ingest excess sugar. On average, one can of soft drink contains about 40 grams or 10 teaspoons of sugar.

To prevent obesity and tooth decay, WHO guidelines[5] recommend limiting free sugars to less than 10% of one's total daily calorie intake (amounting to around 12 teaspoons of sugar a day for adults). For added health benefits, the WHO suggests cutting sugar further to below 5% of daily energy intake (about 6 teaspoons of sugar for adults).

Free sugars are those added to foods and drinks by the manufacturer, cook or consumer such as glucose, fructose and sucrose or table sugar and sugars naturally present in honey, syrups, fruit juices and fruit juice concentrates.
Many SSBs are sweetened with **high-fructose corn syrup** which has been shown in excess to be harmful to cells resulting in increased uric acid production, blood vessel injury, fat cell expansion and deposition leading to impairment of insulin action and its consequences such as high blood pressure and diabetes.[6]

Do sugary drinks cause diabetes?

Critics of the SSB tax claim there is no direct link between SSBs and diabetes. Studies, they say, only prove correlation but not causation.

Harvard School of Public Health Professors Malik and Hu have established that evidence for sugary beverage consumption and diabetes risk have already fulfilled the Bradford Hill criteria for causality[7] as follows:

1) **Strength of association** – Strong evidence from studies involving 310,819 participants showed 26% greater risk of diabetes for those taking 1 to 2 SSB servings a day compared to those who drank none to less than 1 serving per month.[8]

2) **Consistency** – The Nurses' Health Study followed over 90,000 women for eight years and found that those who had 1 or more SSB servings a day were twice as likely to have developed diabetes than those who rarely drank SSBs.[9] Several other large studies have come to a similar conclusion.

3) **Specificity** – Besides raising blood sugars, SSBs have also been found to raise the risk for diabetes-related conditions such as high blood pressure, abnormal blood cholesterol levels, lower bone mass, bulging waistlines, high uric acid levels, inflammation and heart disease.

4) **Temporality** – Prospective studies like the Health Professionals Follow-up Study that tracked 40,000 men over 20 years have found a 24% higher risk of diabetes with higher SSB intake.[10]

5) **Dose-response** – Each SSB serving per day is tied to a 15% greater risk of diabetes.[7]

6) **Biological plausibility** – Liquid calories generally don't curb hunger as well as solid foods. Liquid sugars are also rapidly absorbed and acutely cause spikes in blood sugar. Excess sugar, particularly fructose, has the propensity to turn into fat and get deposited in various organs in the body, leading to poor insulin action and heart disease risk.

7) **Experimental evidence** – Randomized controlled trials are logistically challenging to do but evidence looking at biomarkers for diabetes and heart disease risk reinforce the SSB-diabetes link.

Have soda taxes worked?

The tax on sugary drinks passed in Mexico generated $1.4 billion in its first year; in Denmark, their saturated sugar tax raised €134 million from November 2011 to August 2012.[11]

Tax revenues could be used to fund programs to promote health and education, as well as availability and accessibility of potable water and nutritious food like fruits and vegetables.

One year after the tax was imposed on SSBs in Mexico, the lowest income households slashed their sugary drink purchases by 17%, while the general population cut theirs by 12%.

Would that make the SSB tax anti-poor?

On the contrary, the tax may actually be pro-poor. The economically disadvantaged would be most vulnerable to the health threats of SSBs like diabetes since they would have the least resources to afford or access care.

The Harvard School of Public Health researchers project that SSB taxes will prevent 115,000 cases of obesity in 15 U.S. cities by the year 2025, avert new cases of diabetes, increase healthy life years and save on future health care costs.[12]

As for the tax structure, slapping a tax on all sweetened drinks without regard for sugar content may be unfair as it would penalize those with lower and higher sugar content equally. A tiered scheme may encourage manufacturers to lower the sugar content of their drinks and consumers to choose drinks with less sugar.

Even before the sugar sweetened beverage levy has been implemented in the U.K., manufacturers have already vowed to reformulate sugar out of their drinks.[13]

We propose that a lower tax be imposed on drinks with sugar content of <5 g/100 mL, a moderate tax on drinks with sugar content of 5 to 8 g/ 100 mL and a higher tax on drinks >8 g/100 mL.

Cancer in a can?

Most sugary drinks are nothing more than empty calories. They are usually devoid of nutrients like vitamins, minerals, fiber, antioxidants or other ingredients of health value. Some may even contain chemicals implicated to cause cancer.

The caramel color used in cola soft drinks may contain harmful chemicals such as 4-methylimidazole (4-MEI) and advanced glycation-end products (AGEs). 4-MEI has been found to cause cancer in animal studies and is connected with excess cancer risk in humans.[14]

Furthermore, AGEs interfere with many cell functions leading to damage of various organs like the brain, liver, heart and skeletal muscle.[15]

Think before you drink.

What about drinks artificially sweetened with non-caloric sweeteners like aspartame, sucralose and stevia? Research findings have been inconsistent.

Because artificially sweetened beverages (ASBs) like diet sodas contain little to no calories, they have been found in short-term studies to aid weight loss when substituted for SSBs.[16, 17,18]

However, a recent pooled analysis of studies of almost 13,000 patients saw a 1.59-fold higher risk of overweight and obesity in those who drank artificially sweetened soda compared to those who did not.[19]

Many posit that the reason why ASBs are tied to weight gain and diabetes risk is due to reverse causation -- overweight people who are already at higher risk for obesity and diabetes are just more likely to turn to diet soda than normal-weight ones.

On the contrary, some evidence suggests the intense sweetness of artificial sweeteners may boost craving for sweets and enhance appetite.[20]

So, what makes for a healthy drink?

The best thirst quencher would still be clean water. You can also try infusing your water with slices of citrus fruit, cucumber, crushed berries and mint for a little flavor.

Other healthier alternatives to SSBs include unsweetened tea or coffee and unflavored low-fat or skim milk.

Furthermore, we agree with the **exemption** of milk and milk products, cereal and yogurt drinks as some data suggest that dairy consumption may even reduce the risk for type 2 diabetes,[21, 22] high blood pressure[23] and heart disease[24] especially low-fat dairy products.

Milk, cereal and yogurt drinks may also contain other nutrients like calcium, vitamin D, fiber and protein, and thus, can form part of a healthy meal plan. However, people must still pay attention to the sugar content in these drinks and try to keep within the recommended limits.

Philippine Center for Diabetes Education Foundation, Inc.
(DIABETES CENTER PHILIPPINES)

The SSB tax is not a panacea.

Done in isolation, imposing tax on sugary drinks to reduce diabetes and obesity rates is bound to fail.

The SSB tax needs to be part of a comprehensive program to promote health.

Alongside the tax must be initiatives to educate the masses about healthy lifestyle habits; improve food labeling; increase access to healthy food and drinks while limiting access to SSBs in schools and workplaces; add warning labels on the health effects of SSBs; and restrict marketing of SSBs to children.

A tax on liquid candy may be bitter for business but certainly sweet for our nation's health. So, let's pass the SSB tax today for a healthier Philippines tomorrow.

After all, soda is sweet, but diabetes isn't.

For the Philippine Center for Diabetes Education Foundation, Inc. or Diabetes Center (September 6, 2017)

Augusto D. Litonjua, MD
President

Joy Arabelle C. Fontanilla, MD
Chair, National Assembly of Diabetes Educators

References:

1. Department of Health. http://www.doh.gov.ph/node/1058. (Accessed Sept. 3, 2017.)

2. International Diabetes Federation. https://www.idf.org/our-network/regions-members/western-pacific/members/116-the-philippines.html. (Accessed Sept. 3, 2017)

3. Food and Nutrition Research Institute, Department of Science and Technology. 8th National Nutrition Survey. 2013.

4. World Health Organization 2016. Taxes on sugary drinks: Why do it?

5. Guideline: Sugars intake for adults and children. Geneva: World Health Organization; 2015 (http://apps.who.int/iris/ bitstream/10665/149782/1/9789241549028_eng.pdf).

6. Khitan Z and Kim DH. Fructose: A Key Factor in the Development of Metabolic Syndrome and Hypertension. Journal of Nutrition and Metabolism 2013.

7. Malik VS & Hu FB. Sweeteners and Risk of Obesity and Type 2 Diabetes: The Role of Sugar-Sweetened Beverages. Curr Diab Rep (2012) 12:195–203.

8. Malik VS, Popkin BM, Bray GA, Despres JP, Willett WC, Hu FB. Sugar-sweetened beverages and risk of metabolic syndrome and type 2 diabetes: a meta-analysis. Diabetes Care. 2010;33 (11):2477–83.

9. Schulze MB, Manson JE, Ludwig DS, et al. Sugar-sweetened beverages, weight gain, and incidence of type 2 diabetes in young and middle-aged women. Journal of the American Medical Association. 2004;292:927-34.

10. De Koning L, Malik VS, Rimm EB, Willett WC, Hu FB. Sugar sweetened and artificially sweetened beverage consumption and risk of type 2 diabetes in men. Am J Clin Nutr. 2011;93(6):1321–7.

11. Oxford Economics and International Tax and Investment Center. The Impact of Selective Food and Non-Alcoholic Beverage Taxes. Issues Paper. June 2016.

12. Gortmaker SL, Long MW, Ward ZJ, Giles CM, Barrett JL, Resch SC, Tao H, Cradock AL. Brief: Cost-effectiveness of sugar sweetened beverage excise tax in the 15 largest cities with the authority implement such a tax [the CHOICES (Childhood Obesity Intervention Cost Effectiveness Study) project at the Harvard T.H. Chan School of Public Health]. www.choicesproject.org/research/community-and-government/. Accessed September 3, 2017.

13. Ivana Kottasova. Soda wars: The UK's tax on sugary drinks is working. www.money.CNN.com/2017/03/09/news/economy/soda-tax-uk-sugar-revenue/index.html.

14. Smith TJS, Wolfson JA, Jiao D, Crupain MJ, Rangan U, Sapkota A, et al. (2015) Caramel

Color in Soft Drinks and Exposure to 4-Methylimidazole: A Quantitative Risk Assessment. PLoS ONE 10(2): e0118138. doi:10.1371/journal. pone.0118138

15. Aragno M and Mastrocola R. Dietary Sugars and Endogenous Formation of Advanced Glycation Endproducts: Emerging Mechanisms of Disease. Nutrients 2017; 9: 385.

16. Ebbeling CB, Feldman HA, Chomitz VR, Antonelli TA, Gortmaker SL, Osganian SK, et al. A randomized trial of sugar-sweetened beverages and adolescent body weight. N Engl J Med. 2012; 367(15):1407±16.

17. Mozaffarian D, Hao T, Rimm EB, Willett WC, Hu FB. Changes in diet and lifestyle and long-term weight gain in women and men. N Engl J Med. 2011;364(25):2392–404.

18. Miller PE, Perez V. Low-calorie sweeteners and body weight and composition: a meta-analysis of randomized controlled trials and prospective cohort studies. Am J Clin Nutr. 2014; 100(3):765±77.

19. D. Ruanpeng, C. Thongprayoon,W. Cheungpasitporn and T. Harindhanavudhi. Sugar and artificially sweetened beverages linked to obesity: a systematic review and meta-analysis. QJM: An International Journal of Medicine, 2017, 513–520.

20. Mattes RD, Popkin BM. Nonnutritive sweetener consumption in humans: effects on appetite and food intake and their putative mechanisms. Am J Clin Nutr. 2009; 89(1):1±14.

21. Malik VS, Sun Q, van Dam RM, et al. Adolescent dairy product consumption and risk of type 2 diabetes in middle-aged women. Am J Clin Nutr. 2011;94(3):854–61.

22. Choi HK, Willett WC, Stampfer MJ, Rimm E, Hu FB. Dairy consumption and risk of type 2 diabetes mellitus in men: a prospective study. Arch Intern Med. 2005;165(9):997–1003.

23. Wang L, Manson JE, Buring JE, Lee IM, Sesso HD. Dietary intake of dairy products, calcium, and vitamin D and the risk of hypertension in middle-aged and older women. Hypertension. 2008;51(4):1073–9.

24. Soedamah-Muthu SS, Ding EL, Al-Delaimy WK, et al. Milk and dairy consumption and incidence of cardiovascular diseases and all-cause mortality: dose–response meta-analysis of prospective cohort studies. Am J Clin Nutr. 2011;93(1):158–71.