

The Health Hazards of Sugar Sweetened Beverages

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Outline

- Sugar
- Sugar sweetened beverages
- Why we are concerned
- Health implications
- Way forward
- Take home messages



What is sugar?

- A sweet crystalline substance obtained from various plants, especially sugar cane and sugar beet, consisting essentially of sucrose (glucose and fructose)
- Types brown sugar, corn sweetener, corn syrup, dextrose, fructose, glucose, high-fructose corn syrup, honey, lactose, malt syrup, maltose, molasses, raw sugar, and sucrose.
- Purposes sweeten, sprinkle, or coat





What are sugar sweetened beverages

- Sugar-sweetened beverages (SSBs) are any liquids that are sweetened with various forms of added sugars
- Examples of SSBs: regular soda (not sugar-free), fruit drinks, sports drinks, energy drinks, sweetened waters, and coffee and tea beverages with added sugars.



Sugar versus SSBs

- Sugars are added to SSBs
- Liquid sugar is particularly harmful
- Liquid sugar is absorbed in 30 minutes causing a spike in blood sugar
 - ✓ These spikes lead to sugar changing into fat in the liver and contributing to the development of diabetes and heart disease
- SSBs add to calories consumed
- Calories from SSBs do not leave one feeling full unlike calories from food or milk
- SSBs have no nutritional value



Any benefits of SSBs???

Empty calories!

Why the "drumming" about SSBs?

- Unhealthy diets are leading cause of malnutrition
 - ✓ High rate of consumption of SSBs
 - ✓ Malnutrition is a global problem
 Bad nutrition
 - Overnutrition 1.9b/650m adults are overweight/obese
 Undernutrition
- Adverse health effects



Dangers of SSBs

- Many SSBs are made with large amounts of high fructose corn syrup
 - \checkmark Fructose is metabolized differently than glucose
 - ✓ May be a factor in some of the disease risk associated with high SSB consumption
 - ✓ Excessive consumption of fructose has been shown to increase risk for dyslipidemia, non-alcoholic fatty liver disease, increased abdominal fat and decreased insulin sensitivity.
 - ✓ These factors can increase the risk for heart disease and diabetes.
- Short term studies have observed similar levels of triglycerides in the blood after consuming pure glucose.
 - ✓ Evidence suggests that similar effects may be observed in cases of regular consumption of glucose-sweetened beverages as well
 - ✓ Indicating the negative effects may not be limited to just high fructose corn syrup consumption.



SSBs versus 100% fruit juices

- Fruit juices are similar in sugar content (~4% added sugar) as SSBs.
- Similar concerns exist regarding excessive juice consumption and chronic disease risk.
- While 100% fruit juice counts as a serving of fruit, eating whole fruit is the preferred method of consuming these nutrients
 - \checkmark Juice is a more concentrated source of sugar
 - \checkmark Does not contain fiber typically found in fruit.
- It should also be noted that fruit drinks are not the same as 100% fruit juice.
 - ✓ Fruit drink products often contain added sugar
 - ✓ Contain a smaller percentage of fruit juice (5%)
 - \checkmark Offering less of the benefits that can be attributed to a 100% juice product.
- Important to note that 100% fruit juice is a source of vitamins and minerals, typically absent from SSBs.



SSBs versus artificial sweeteners

- Observational studies relationship between the consumption of beverages made with artificial sweeteners and lower overweight/obesity.
 - ✓ May be due to the fact that that consumption of these beverages is more common among people who are concerned about their weight.
 - ✓ There is some evidence that artificially sweetened beverages may decrease weight gain, but only when used as a substitution for existing SSB consumption.
- Additionally, higher rates of type II diabetes have been associated with higher consumption of artificial sweeteners
 - ✓ Association is largely explained by other variables, such as health status, diet, and BMI.



Reality check

- Sub-Saharan Africa (SSA) is an attractive market for beverage companies:
 - ✓ Rapid economic growth,
 - ✓ Growing middle class,
 - ✓ Youthful population.
- Healthcare systems across SSA are illprepared to cope with epidemic proportions of non communicable diseases ⁽²⁾



• Sugar:

✓ Cheap, tastes good and sells; companies have little incentive to change.

- Every country that has adopted the Western diet:
 ✓ One dominated by "low-cost" highly processed food,
 ✓ Witnessed rising rates of obesity and related diseases.
- Facts:
 - ✓ Economic development means that the populations of low- and middle- income countries are living longer.
 - ✓ There are now 36-41% more people who are obese than who are undernourished.
 - ✓ More susceptible to deaths (77%) from noncommunicable diseases.



How bad can SSBs be?

- Deadly effect
- Excessive consumption of fructose can cause many of the same health problems as alcohol
- Just like alcohol, chronic exposure....
 ✓ Obesity (excess body fat)
 ✓ Heart diseases
 ✓ Diabetes (insulin resistance)
 ✓ Hypertension
 ✓ Dyslipidemia (high cholesterol levels)
 ✓ Pancreatitis (hypertriglyceridemia)
 - ✓ Habituation/addiction



Consumption of SSBs among children



- SSBs are associated with increased childhood overweight/obesity
- Overweight in childhood has been linked to:
 - \checkmark Increased likelihood for overweight and obesity in adulthood.
 - ✓ Increased childhood incidence of type 2 diabetes (previously considered "adult-onset" diabetes).
- One study found that children between 2.5-4.5 years who regularly consumed SSBs were 2.4 times more likely to be overweight/obese than children who did not consume SSBs.
- Daily consumption of SSBs was shown to increase the risk of overweight/obesity by 4.8 times among adolescents.
- In a multi-ethnic study with children 8-15 years, SSB consumption was linked to higher triglyceride levels and decreased HDL levels.
- High fructose consumption in children has been linked to increased markers of inflammation and decreased LDL particle size.

SSBs and disease



- Excessive SSB consumption linked to several chronic diseases
- Relationship has been shown to exist independent of weight status or total caloric intake.
- Therefore, moderating SSB consumption can be important to overall health and wellbeing
- Obesity, metabolic syndrome, heart disease, diabetes, cancer, gout and kidney problems, osteoporosis.

SSBs, obesity and related diseases



- Excess sugar consumption is associated with weight gain
- Association independent of caloric intake
- Researchers followed participants for an average of 4 years
 - ✓ Daily consumption of SSBs was linked to a 37% increased risk for development of obesity.
- Obesity linked to an increased risk of developing many chronic diseases, including stroke, type 2 diabetes, osteoarthritis and gallstones
- Overweight and obesity prevalence is set to cost the global economy 3.3% of GDP by 2060

SSBs and the metabolic syndrome



- Metabolic syndrome is a cluster of risk factors that increase the risk for cardiovascular disease, diabetes and stroke.
- These risk factors include:
 - ✓ High blood pressure
 - ✓Abdominal adiposity
 - ✓ High fasting blood sugar
 - ✓ High triglyceride levels
 - ✓ Low HDL cholesterol levels
- Studies have found that greater SSB consumption has been linked to higher risk for metabolic syndrome

SSBs and heart disease



- Low to moderate consumption of SSBs (1-2 per day) has been shown to negatively impact the markers of cardiovascular disease, increasing the expression of atherogenic LDL particles, which promote the formation of arterial plaques.
- It also increases other markers of inflammation which plays a role in the development of atherosclerosis and further increases the risk for cardiovascular disease.
- Researchers SSB consumption raised fasting glucose levels, associated with insulin resistance and increased risk for heart disease.
- The effects of SSB consumption on heart disease has been observed independent of factors such as BMI, total energy intake, and incidence of diabetes.



SSBs and diabetes

- Consumption of SSBs increases the risk of developing type II diabetes mellitus
- According to data gathered during the Nurses' Health Study II, women who consumed one or more SSBs per day had an 83% higher relative risk of developing diabetes when compared to those who rarely consumed sweetened drinks.
- Other studies have supported the findings that SSB consumption increases risk for this chronic disease.

✓ These studies have demonstrated that BMI is a mitigating factor for the effect of SSBs

SSBs and cancer

- Currently, a direct relationship between SSB intake and cancer has not been observed.
- However, overweight and obesity have been associated with several forms of cancer, including cancers of the breast, colon, rectum, endometrium, esophagus, kidneys, and pancreas.
- Therefore, the strong link between obesity and SSBs may indicate an indirect link between consumption and cancer risk.



SSBs, gout and kidney problems

- SSB consumption has been linked to high levels of uric acid in the body (fructose raises uric acid levels).
- Heightened levels of uric acid has been known to cause gout and the formation of certain types of kidney stones.
- Additionally, SSB consumption has been linked to declining kidney function and higher incidence of chronic kidney disease.
- SSBs have also been linked to an increase in urine albumin, known as microalbuminuria, another risk factor for kidney disease:
 - ✓ Diabetes, hypertension, and kidney stones are additional known risk factors for kidney disease,
 - ✓ May further contribute to the association between SSBs and declining kidney function.





SSBs and osteoporosis

- Consumption of soda has been linked to decreasing bone density and increased risk for osteoporosis and fractures.
- Furthermore, SSBs can displace milk consumption, decreasing the intake of calcium and vitamin D, key nutrients in bone health.
- In the US, soda consumption is highest among adolescents and young adults
 - ✓ Period when calcium intake is crucial for bone deposition and when maximum bone density can be reached.
 - ✓ A diminished level of maximum bone density can lead to higher risk for hip fracture and osteoporosis later in life.



Way forward Alternatives to SSBs

- Reducing consumption of SSBs is a good way to improve health and decrease caloric intake.
- Below are alternatives to drinking an SSB:
 - ✓ Water infused with fresh fruit, mint, or cucumber instead of a sugary fruit drink
 - \checkmark Unsweetened herbal iced tea instead of sweetened iced tea
 - \checkmark Soda water with a squeeze of citrus instead of soda
 - ✓ A low-fat plain latte instead of a sugary coffee drink or energy drink
 - ✓ Chocolate flavoured tea instead of hot chocolate with added sugar
 - ✓ A fruit smoothie with low-fat yogurt instead of a milkshake
- If substitutes won't do, try a diet variety or decrease the volume and frequency of SSB consumption



Way forward How can we consume less of SSBs?

- Create awareness
- Call stakeholders to action
- Be an example
 - ✓ Stay hydrated with water
 - ✓ Flavourize your water if necessary
 - ✓ Replace SSBs with healthier alternatives like fresh fruits/100% fruit juice
 - ✓ Juice-prep: freeze
 - \circ Sample
 - 1cup chopped pineapple
 - I finger banana
 - 250ml water
 - Tsp of ground ginger



A quick estimation

- For example, a moderately active, middle-aged woman who is 1.68m and weighs 61kg needs ~1800 calories a day.
- This means that she should consume no more than 180 calories (10% of total calories from added sugar), or 45 grams, per day from added sugars.
- This is the amount of added sugar found in a single 59ml can of root beer.
- Are we safe?



How much sugar is in your drink?



Call to action!

- Commitment from stakeholders in our country and on the continent – High taxation/ban/reduce importation of SSBs???
- Engage groups, communities, governments and other stakeholders???
- Media space intervention???
- Advocacy and awareness creation by health care professionals???



Take home messages!



- Avoid SSBs
- Pay attention to what you are drinking
- Check labels for nutritional profile
 - \checkmark Some drinks may claim to be packed with vitamins, antioxidants and other healthful ingredients but they are often loaded with sugar.
- Choose healthy and tasty alternatives to SSBs
 - ✓ Water
 - \checkmark Add slices of orange, lemon, lime, cucumber, or watermelon to water
 - ✓ Make your own unsweetened beverage
- Maintain a healthy weight
- Tell and live it



-thank you

