Title: Sweet Poison: The Bitter Dangers of Added Sugars

By: Billy Bailey, CPT, Nutritionist, Certified Running Coach

Introduction:

Sugar is literally everywhere in our diets, adding sweetness to our favorite treats and beverages. Sugar is also found in surprising places. Nearly all processed foods, even those that are not sweet, have tons of added sugar. However, the overconsumption of sugar, particularly in the form of added sugars, has become a significant concern for public health. This article explores the impact of added sugars on health, including its contribution to various chronic diseases and the recommendations for reducing sugar intake.

The Difference Between Natural and Added Sugars:

Before delving into the health effects, it's essential to distinguish between natural sugars and added sugars. Natural sugars are inherently present in foods such as fruits, which contain fructose, and dairy products that provide lactose. These sugars come with a package of beneficial nutrients, including fiber, vitamins, and minerals, which can have positive health benefits when consumed as part of a balanced diet.

Natural Sugars

- **Fructose:** Found naturally in whole fruits, fructose is often accompanied by fiber, which slows its absorption and provides sustained energy. Fiber is absent in fruit juices, so they are not the healthy choice that we have been led to believe.
- **Glucose:** This sugar is present in a wide array of fruits and vegetables. As a key energy source for the body, glucose in its natural form is essential for cellular functions and overall health.
- **Sucrose:** Occurring naturally in plants like sugar cane and sugar beets, sucrose is composed of glucose and fructose. In whole foods, it's part of a nutrient-dense package, but as isolated table sugar, it's a common added sweetener.
- **Maltose:** Found in grains, maltose arises during the fermentation process and grain sprouting. It's less sweet than other sugars and provides energy primarily in the context of whole grains.
- **Lactose:** Present in milk, yogurt, cheese, and other dairy products, lactose aids in the absorption of essential nutrients like calcium and protein, crucial for bone and muscle health. Dairy products often contain probiotics that support digestive health.

It's worth noting that while dextrose and sucrose are naturally occurring sugars, they are usually discussed in the context of added sugars due to their common use as sweeteners. Dextrose is a simple sugar derived from corn, while sucrose, commonly known as table sugar, consists of equal parts glucose and fructose. When used as sweeteners, they are typically categorized as added sugars and are often found in processed and sugary foods and beverages.

Added Sugars

In contrast, 'added sugars' refers to sugars and syrups incorporated into foods and beverages during processing or preparation. Contrary to the oft-claimed mantra that all calories are created equal, these added sugars provide no nutritional value beyond empty calories. Moreover, they are often found in large quantities in sugary drinks, candies, baked goods, and processed foods. Emerging research, including studies conducted by Dr. Robert Lustig, suggests that the effects of added sugars, especially in their most common form, High Fructose Corn Syrup (HFCS), extend to cellular and metabolic processes, notably impacting mitochondrial health.[5] This intricate relationship between added sugars and cellular biology underscores the nature of sugar's impact on our overall health. Furthermore, it highlights the importance of consuming whole fruits, which contain fiber that slows the absorption of natural sugars like fructose, providing a healthier alternative to fruit juices where the fiber is often removed.

The Impact of Added Sugars on Health:

1. Weight Gain and Obesity:

- High sugar intake can lead to weight gain and obesity due to the excess calories provided by added sugars.
- Sugar-sweetened beverages, particularly those containing High Fructose Corn Syrup (HCFS), have been strongly linked to weight gain in numerous studies.[1, 2]
    - In addition to weight gain and obesity, the consumption of beverages sweetened with HFCS has been associated with various adverse health outcomes, including metabolic syndrome, increases in visceral fat, and non-alcoholic fatty liver disease. Their high added sugar content leads to increased caloric intake without providing the feeling of fullness or satiation that solid foods do.

2. Type 2 Diabetes:

- Excessive sugar consumption is a risk factor for the development of type 2 diabetes.[1]
- Sugar can lead to insulin resistance, making it difficult for cells to take in glucose, contributing to elevated blood sugar levels.

3. Cortisol and Stress-Related Weight Gain:

- Chronic stress can lead to increased cortisol levels, which may contribute to weight gain and obesity.
- Elevated cortisol levels can promote the storage of abdominal fat, often referred to as visceral fat.
- While added sugars themselves don't directly increase cortisol, their potential to induce rapid blood sugar fluctuations, inflammation, and obesity can contribute to stress and the associated cortisol response.

4. Heart Disease:

- Diets high in added sugars have been associated with an increased risk of heart disease.[3]
- High sugar consumption can lead to elevated triglycerides, reduced "good" HDL cholesterol, and increased inflammation in the body, all of which are risk factors for heart disease.

5. Dental Problems:

- Added sugars are a primary contributor to tooth decay and dental cavities.
- Bacteria in the mouth feed on sugar, producing acids that erode tooth enamel.

6. Non-Alcoholic Fatty Liver Disease (NAFLD):

- Excessive fructose consumption, often from added sugars, can lead to the accumulation of fat in the liver, contributing to NAFLD.[4]
- An interesting footnote is that both alcohol and fructose are metabolized similarly by the liver and, when consumed in excess, can contribute to fat accumulation, leading to conditions such as Fatty Liver Disease. Some studies suggest that the introduction of high fructose corn syrup (HFCS) in many processed foods has been associated with a steady rise in the Non-Alcoholic Fatty Liver Disease (NAFLD)

7. Mental Health and Cognitive Impact:

- Research suggests a potential link between high sugar intake and conditions like depression and impaired cognitive function.[6] Additionally, emerging evidence links excessive sugar consumption to strokes and dementia. These findings highlight the far-reaching impact of sugar on both mental and cognitive health.

Recommendations for Reducing Added Sugar Intake:

1. Read Labels: Check food labels for added sugars, which can appear under various names (at least 61, in fact), including sucrose, maple syrup, high-fructose corn syrup, agave nectar, and honey. While some of these might sound more "natural" or "healthy" than others (like honey or maple syrup), from a nutritional standpoint, they all contribute added sugars and should be consumed in moderation. Recommended daily sugar intake is around 25 grams for women and 37 grams for men. To help stay within this range, aim for foods and beverages with 5 grams or fewer of added sugars per serving on the nutrition facts label.

2. Limit Sugary Drinks: Reduce or eliminate the consumption of sugary beverages like soft drinks, fruit drinks, and energy drinks. Remember the principle that 'the dose is the poison' – even moderate consumption can significantly increase overall sugar intake, and small amounts add up to create a profound impact on health. To put things in perspective, remember that recommended daily limit of 25 grams (6.25 teaspoons) for women and 37 grams (9.25 teaspoons) for men above? A 12 oz can of Coca-Cola contains 39 grams of sugar, which exceeds that daily limit for both.

3. Choose Whole Foods: Whenever possible, opt for whole, unprocessed foods, which are naturally low in added sugars. Keep in mind that any food with a nutrition facts label has undergone some degree of processing and as such may not be whole food. Foods marketed as ‘whole grain’ are only whole if they retain their natural husks. The words 'refined' or 'dehulled' in the ingredients nullify the whole claim.

4. Moderation: Enjoy sugary treats in moderation and as occasional indulgences rather than daily dietary staples or foods for hunger satiation. It helps to view all snacks as luxuries and not as real foods in order to curtail their intake. Adopting this mindset can help in controlling overall caloric intake and maintaining a balanced, more healthful diet.

5. Avoid Processed Foods: The mere presence of a nutrition facts label means that the food has undergone some degree or other of processing. Read the ingredients list on the nutrition facts label. The longer the list and the more unfamiliar or unpronounceable the ingredients, the more likely that it has been heavily processed and contains added sugars.

6. Cook at Home: Preparing meals at home gives you more control over the ingredients and helps reduce added sugars in your diet. Breakfast cereals are notoriously high in sugar, despite the clever inclusion of words like ‘fortified’, ‘organic’, or ‘natural’. These words don’t necessarily equate to healthfulness, particularly when chock full of added sugars.

Preparing meals at home gives you more control over the ingredients and helps reduce added sugars in your diet. Breakfast cereals, for instance, are notoriously high in sugar, despite often being labeled with appealing terms like 'fortified', 'organic', or 'natural'. However, these words don’t necessarily equate to healthfulness, particularly when added sugars are present.

Conclusion:

The impact of added sugars on health is significant, with strong links to obesity, diabetes, heart disease, and other chronic conditions. Reducing sugar intake is a critical step towards improving overall health and well-being. By reading nutrition facts labels, being mindful of added sugars in our diets, making informed food choices, and cooking at home, we can work towards a healthier future. Avoid heavily processed foods. Foods should be processed in your body, not in a factory.

References:

1. Malik, V. S., Schulze, M. B., & Hu, F. B. (2006). Intake of sugar-sweetened beverages and weight gain: a systematic review. The American Journal of Clinical Nutrition, 84(2), 274-288. doi: 10.1093/ajcn/84.1.274.

2. Hu, F. B. (2013). Resolved: there is sufficient scientific evidence that decreasing sugar-sweetened beverage consumption will reduce the prevalence of obesity and obesity-related diseases. Obesity Reviews, 14(8), 606-619. doi: 10.1111/obr.12040.

3. Johnson, R. K., Appel, L. J., Brands, M., Howard, B. V., Lefevre, M., Lustig, R. H., ... & Wylie-Rosett, J. (2009). Dietary sugars intake and cardiovascular health: a scientific statement from the American Heart Association. Circulation, 120(11), 1011-1020. doi: 10.1161/CIRCULATIONAHA.109.192627.

4. Stanhope, K. L., Schwarz, J. M., Keim, N. L., Griffen, S. C., Bremer, A. A., Graham, J. L., ... & Havel, P. J. (2009). Consuming fructose-sweetened, not glucose-sweetened, beverages increases visceral adiposity and lipids and decreases insulin sensitivity in overweight/obese humans. The Journal of Clinical Investigation, 119(5), 1322-1334. doi: 10.1172/JCI37385.

5. Lustig, R., Schmidt, L., & Brindis, C. (2012). The toxic truth about sugar. Nature, 482, 27-29. doi: 10.1038/482027a.

6. Pase, M. P., Himali, J. J., Beiser, A. S., Aparicio, H. J., Satizabal, C. L., Vasan, R. S., et al. (2017). Sugar- and Artificially Sweetened Beverages and the Risks of Incident Stroke and Dementia: A Prospective Cohort Study. Stroke, 48(5), 1139-1146. doi: 10.1161/STROKEAHA.116.016027