

## **0 Sugary Beverages Lesson Plan**

***Objective: Students will be able to discuss how sugar affects our bodies and why it is important to reduce sugary beverage consumption. Students will know how much sugar is recommended for their diets.***

CA CC Standards: SL 4-6. 1a-d, SL 4-6.3, SL 4-6.4, SL 4-6.6, L 6.4a, L6.6

- **How does sugar affect your body**
  - When you consume sugar, your body releases serotonin, a neurotransmitter responsible for helping you feel happy/good.
  - The serotonin released convinces you to drink more so that you get more serotonin released (along with drinking it because it just tastes good)
  - The body releases insulin to try to manage the sugar levels, oftentimes they body struggles to balance sugar levels because your brain is still trying to convince you to drink more because of the serotonin
  - Over a long period of time the insulin spikes and crashes and the increased sugar consumption result in the insulin not being able to bring down sugar levels like they used to, this is a simplified explanation of type 2 diabetes.
- **The Affects of Soda:**
  - Show a 12oz soda
  - Q: “How much soda would a person drink if they drank two 12oz sodas everyday for 1 month?”
  - Q: “How many calories do you think would be in that amount of soda?”
  - Show the **Big Soda Can**—holds **720oz (5.6 gallons)** of soda in 1 month
  - 720oz of soda has **8,400 calories**
  - Need to **walk about 100 miles** to burn that many calories
  - Calories in soda come from sugar
    - **39g** of sugar in 12oz soda (almost **10 cubes of sugar**)
    - **2 sodas a day will result in drinking 5lbs of sugar in 1 month**
    - Q: “How many chocolate chip cookies do you think you’d have to eat to get the same amount of sugar you get in 1 soda?”
    - A: **8 COOKIES (40g)**
  - The **body stores unused calories**
  - even though a soda has 0 grams of fat, it can still cause a person to gain weight because of the calories it contains
  - **Calculate amount of weight a person can gain from drinking two 12oz sodas everyday for 1 month**
    - 3,500 calories = 1lb of fat
    - 60 cans of soda (2x30days) has 8,400 calories

- Divide 8,400/3,500 to determine how many pounds of fat equals 8,400 calories. **A: 2.4lbs; more than 2lbs of fat!!**
    - Show the fat demonstration
  - Even though soda has a lot of calories, it has very few nutrients
  - To be healthy your body needs a good supply of nutrients such as vitamins, minerals, and protein
  - People cannot get these important nutrients from soda
  - Show them the Nutrition Facts on the Big Can Soda to explain where they can see the nutrients in their products
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- Show the sugar cubes in Arizona Tea, Slurpee, Coke, Gatorade
  - Talk about 4g of sugar in 1cm cube of sugar
  - Gatorade has **34g of sugar (8.5 cubes of sugar)**
  - 32oz 7-Eleven Slurpee has **91g of sugar (almost 23 cubes of sugar)**
  - 24oz can of Arizona had **72g of sugar (18 cubes of sugar)**
  - 8oz serving of Apple Juice has **26g of sugar (6.5 cubes of sugar)**
    - 16oz bottle has **52g of sugar (13 cubes of sugar)**
  - Capri Sun has **18g of sugar (4.5 cubes of sugar)**
  - Nesquik Chocolate Milk bottle has **58g of sugar (14.5 cubes of sugar)**
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- Q: What is a way you can reduce the sugar in beverages? A: add water!
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- **SODA FACTS**
    - **Soda is truly worthless to your body.** It has absolutely no nutritional value. Soda is filled with sugar and calories and nothing else. There aren't any vitamins or nutrients in the drink, so it's really empty calories you are consuming.
    - **Soda damages your teeth.** The sugar in soda coats your teeth, combining with bacteria in your mouth to form acid. Both regular and diet soda also contain carbonic acid through carbonation. These acids work to weaken tooth enamel, causing cavities and tooth decay.
    - **Drinking soda can weaken your bones.** Most sodas contain phosphorous and caffeine, agents that are believed to contribute to osteoporosis. Also if you're drinking soda, then you're probably not drinking milk or other healthy drinks, depriving the bones of calcium.
    - **Sugary sodas contribute to obesity and diabetes.** Soda is loaded with high-fructose corn syrup, a sweetener that has been linked to obesity.

Soda consumption also has been linked to the development of type 2 diabetes, both due to its sugar content and its effects on the body's hormones

- If you **consume excess sugar in the form of soda**, there's a high chance it will **lead to excess fat** on your body.
  - I'm talking about **visceral fat**. This is the kind that gathers around vital organs, such as the liver, kidneys, intestines and stomach, and has been closely linked with type 2 diabetes and other inflammatory diseases.
  - Show the fat model
  - **Soda doesn't make you feel full**
- **If someone asks about Diet Soda**
    - **Aspartame** (an artificial sweetener that's composed of aspartic acid, phenylalanine and a methyl ester) **is a chemical, not a naturally occurring compound.**
    - Aspartame exceeds table sugar sweetness by 200 times.
    - Since it still contains 4 calories per gram (as does table sugar), this intense sweetness allows much less of it to be used in diet sodas. (supposed to)
    - **The deceptively sweet artificial sweeteners in diet beverages trick the metabolism into thinking sugar is on its way, spikes insulin levels, and shifts the body from a fat-burning to a fat-storing state, according to a study.**
    - Research in animals provides evidence that aspartame has a strong cancer causing and brain damage potential.
    - (BUT... human research shows that consuming 2 to 100 mg/kg of aspartame doesn't influence cognition and behavior)
    - **Aspartame has 92 side effects listed by the FDA and use by pregnant women and young children is discouraged.**
    - Phosphoric acid-- it binds with magnesium and calcium in the digestive tract to form salts that aren't absorbed. This may lead to a decline in the materials needed for bone deposition. So as you might assume, studies have associated phosphoric acid consumption to a lower bone density.
  - **Diet Soda Argument:**
  - **If I told you to go to the store and pick out 3 of the healthiest beverages, would diet soda be one of them?**
  - **Instead of thinking about how much a food or drink can harm our health, I like to consider how much a food or drink could actually *improve* our health.**
  - **Now, while it hasn't been "proven" that diet soda is the final blow to someone's health status, we do know consuming diet soda regularly**

doesn't do much to improve health. From a health perspective, diet soda probably isn't the best idea.

- We don't get quality nutrition & we don't get calories.
  
- **DIABETES**
  - Diabetes is one of America's fastest growing diseases and one of the most costly.
  - Nationally, diabetes rates have tripled over the past thirty years.
  - In California, the rate has increased by 35 percent since 2001.
  
  - Diabetes is associated with dramatically increased risk of amputation, nerve damage, blindness, kidney disease, heart disease, hospitalization and premature death.
  
  - Open discussion with the class about type II diabetes.
  
- **WATER IS THE BEST THING TO DRINK & REHYDRATE YOU!!**