Sugarrich Diets and Oral Health

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Abstract

Sugar eating is highly prejudiced by several social cultures, activities, biological and ecological factors which results to be the leading risk factor for dental caries as well as other oral diseases. A diet has a complete consequence on the veracity of the oral cavity that includes oral mucosa, alveolar bone, teeth,and periodontal tissue. It is ahead of our debate that the sugar-rich foods consumed can result ina risk on the integrity of our teeth. There is a direct impact on oral health because of the consumption of sugar. There has to be a noteworthy impact on serving to restrain the global outbreak of dental caries if we can reduce the amount of sugar consumption that has been extensively ignored compared to other health issues and is a foremost global public health problem distressing individuals, health systems as well as economies. This review article discusses the consumption of sugars, various forms of sugary diets in our daily intake, and its effect on oral health.

Keywords: *Sugar rich foods, Oral Health, Dentist recommendations.*

Introduction

In the last 50 years, sugar consumption has increased drastically worldwide during all these years particularly in emerging economies. Sugar eating is highly prejudiced by several social cultures, activities, biological and ecological factors which results to be the leading risk factor for dental caries as well as other oral diseases. A diet has a complete consequence on the veracity of the oral cavity that includes oral mucosa, alveolar bone, teeth,and periodontal tissue. It is ahead of our debate that the sugar-rich foods consumed can result in a risk on the integrity of our teeth.[1] There is a direct impact on oral health because of the consumption of sugar. There has to be a noteworthy impact on serving to restrain the global outbreak of dental caries if we can reduce the amount of sugar consumption that has been extensively ignored compared to other health issues and is a foremost global public health problem distressing individuals, health systems as well as economies.[2] This review article discuss the consumption of sugars, various forms of sugary diets in our daily intake, and its effect on oral health.

Sugar can be described as a sweet crystalline-like material augmented from various plants, chiefly sugar cane as well as beet sugar that consists of essential sucrose, and it is used as an extra additive material as a sweetener in food and drink. Sugars can be classified into two types i.e.

1. **Intrinsic Sugars** (or natural Sugars) i.e. where the sugar particles are inside the cell structure of the food particles such as fresh fruits or sweet vegetables.

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2. **Extrinsic Sugars** i.e. where the sugar particles are there outside the cell structure of the food particles or considered supplementary as an extra substance to the food. Extrinsic sugars again subdivided into: a) Milk Sugars (or natural Sugars) i.e. lactose in milk products (e.g. cheese, plain yogurt), which are less cariogenic and are accompanied by significant amounts of essential nutrients. b) non-milk extrinsic Sugars, also called added sugars and free Sugars (or hidden sugars).[3]

Free sugars are a type of extrinsic sugars considered as the primary factor responsible for dental caries. They are added to foods and beverages. They considered to all: monosaccharides such as Glucose, Fructose, Galactose, and disaccharides such as Sucrose and Table sugar. It is advisable for primary children that free sugars consumption should be proportional to about 30 g per person per day. Because it is reported that consumption of free sugars more than 4 times a day or intake of above 60g per person per day can result in an increased risk of dental caries.[4]

Recommended dose of sugar: According to the WHO guideline recommendation: Free sugar consumption daily should be restricted to less than 10% (or 50 g = around 12 teaspoons) in both adults and children. Also an additional reduction to below 5% (or 25 g = around 6 teaspoons) of total energy intake will provide additional healthiness along with minimizing the risk of tooth decay all through the life route.[5]

Form and Frequency of Sugars Consumed: Sugars-containing food in sticky form if remains in the mouth for a longer duration then there will be drop-in pH for a longer duration inside the oral cavity. This may enhance the cariogenic activity, thus increasing the risk of tooth decay. A high rate of recurrence of intake of sugars causes an increase in exposure duration to the oral cavity that is open to the elements of sugars and has a high retention causing maximum exposure on tooth surfaces.[6]

Amount v/s Frequency: According to the Vipeholm study, the findings are significant to date while taking into consideration the amount versus frequency issue. The addition of 300g extra sugar during a meal has less risk than adding up sugary snacks between meals which causes a significant increase in the risk of dental caries.[6]

Sugar effects on oral health: During the intake of food, sugar itself never harms the teeth directly, but it enables the bacteria and acids to get activated and do the work. Plaque formation occurs as the bacteria feed on the sugary foods that are inside the oral cavity and they create a bacterial community and it remains on the teeth for a longer duration in the form of plaque till the bacteria make acids resulting in enamel wear and causing cavities. Gingivitis also occurs because of the bacteria present in the plaque. The sugary foods releasing the sweetness and allowing the bacteria to get metabolized and later they involved in dental biofilm formation which further generates acids by-products leading to demineralization of the tooth structure.[7]

Persons in the threat of Tooth Decay: Every individual having food is at risk of tooth decay but children and adolescents are at more risk of having dental caries. People having missing tooth have at a young age are at more risk of tooth decay. People who do not maintain proper oral hygiene or do not rinse mouth after every meal are at high risk of dental diseases because plaque formation occurs at the earliest only 20 minutes after we eat foods so if the mouth is not rinsed effectively, tooth decay starts. Consumption of sugar regularly always have a maximum threat of developing oral diseases, if the consumed food eaten is sticky or taken in between mealtimes. People involved in smoking and drinking alcohol are also at more risk.[8]

Are all beverages bad for teeth?: No, all the beverages are not bad for teeth as it relies on the type of sugar consumed as well as the acid production inside the oral cavity. There are some food products containing calcium and phosphate example:- milk and yogurt which are meant to protect teeth from the harmful effects of acid. Milk product foods and beverages helps in making the teeth stronger and aids in remineralization process, whereas calcium and phosphate in milk help to put off the bacteria from adhering to the tooth as well as budding into plaque. Thus, drinking some of the beverages may act as beneficial to our body.[2]

Health implications for people who go for high-sugar diets such as Unstable Blood Glucose, Obesity, Heart Disease, Cancer, and Diabetes, Immune Function, Chromium Deficiency, Aging Acceleration, Tooth Decay, Children's Behaviour and Cognition, Stress and Anxiety, Replacing Important Nutrients.[4,9]

High sugar-containing Foods and Drinks[10]:

1. **Low-Fat Yogurt:** 1 single cup of yogurt (12 teaspoons of sugar) = 24 grams sugar exceeds the

daily restriction of sugar intake for a human being. Therefore, natural, or full-fat yogurt without added sugar should always be chosen.[8]

2. **BBQ Sauce:** Almost 2 tablespoons of BBQ Sauce contains 14 grams of sugar in it. Therefore, daily intake of more than the normal range can cause harmful effects for our body.
3. **Ketchup:** 1 tablespoon ketchup = 1 teaspoon sugar.
4. **Fruit Juice:** Natural fruit juice contains more fibers than sugars in it. So, drinking one fruit juice will not hamper much to our health. Rather, drinking preserved fruit juices in which added sugars are in it can harm more to our health. Drinks like coke or any fruit juice contain more of added alcohol, sugars, and preservatives inside it.
6. **Sports Drinks:** One bottle (570 ml) of sports drink contains 32 grams of added sugar which gets quickly absorbed and provides instant energy with added 159 calories.
7. **Chocolate Milk:** A full glass of chocolate milk with added flavors of cocoa contains 2 teaspoons of added sugar.
8. **Flavored Coffees:** The hidden amount of sugars inside the coffee can be confounding. It is expected that a good chain of coffee can give 25 teaspoons of sugar = 100 grams of added sugar per serving.
9. **Iced Tea:** Commercially prepared chilled ice tea contains sweetened sugar or flavored with syrup of 33 grams of sugar per (340 ml) serving.[2]
10. **Protein Bars:** Protein bar with high sugar should be avoided as it contains around 30 grams of added sugar in it.[9]
11. **Vitamin water:** Some vitamin bottles come with added sugar in it which contains around 120 calories and 32 grams of sugar per bottle of 500 ml.[11]
12. **Pre-Made Soup:** Packed soup contains high amounts of sugars and preservatives inside it.
13. **Canned Baked Beans:** 1 cup (254 grams) of regular baked beans = 5 teaspoons of sugar.
14. **Bottled Smoothies:** Commercially prepared smoothies in bottle contains upto 96 grams = 24 teaspoons of sugar in a single serving.[12]
15. **Breakfast Cereal:** Some breakfast cereals have 12 grams = 3 spoonful of serving per 30 grams.[13]

The most excellent way to steer clear away the threat of added sugars in meals is to prepare them at home as it is known exactly what's in them.

Sugar Substitutes: Non-acidogenic sugar substitutes (sweeteners) do not cause pH falls in dental plaque. Various sugar replacementsare of two types: intense sweeteners (noncaloric) such as aspartame, saccharin, glycyrrhizin, sulfame and so forth and bulk sweeteners (caloric) such as sorbitol, mannitol, xylitol, and so on.[14]

Advisory from dental professionals[15]:

- It is advisable to brush teeth twice a day properly with fluoride-containing toothpaste as well as dental flossing to be done daily.
- Rinsing the mouth with water frequently after consuming sugary foods.
- Reduce consumption of sugar-sweetened beverages and snacks; that helps decrease the production of acid in the mouth.
- Eat sugary foods at mealtimes only
- Do not add any sugars to baby's foods and juice drinks.
- More amount of vegetables, fruits and breakfast having less sugar content should be consumed.
- Long-lasting sources of sugar consumption should be avoided (dried fruits, fruit leathers and hard or chewy sweets) close to bedtime.

Conclusion

Sugars and oral health have a dynamic relationship. Health care sector professionals, specifically the dental as well nutrition professionals should understand the relationship between diet and oral health and its effects on our body. There is a need for oral hygiene instructions and oral health education for the people and this awareness has to be done by dental health professionals to minimize the risk of oral diseases because of sugary foods. Future research is required in this field to establish method to decrease the threat caused due to sugars and other fermentable carbohydrates. Dietary guidelines for the prevention and management of oral diseases gives a structured format for consumers and health professionals to utilize the guidelines and understand the harmful effects of the intake of excess sugars in foods. Various modifications and behavioral interventions in research are needed to restrain the rate of recurrence of added

sugars as well as to amplify with the food reference intakes.

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