AGD POLICY STATEMENT ON THE CONSUMPTION OF SUGAR AND ITS HEALTH CARE CONSEQUENCES

In 2016, the American Heart Association published a scientific statement on the “Added Sugars and Cardiovascular Disease Risk in Children.” Evidence supports the correlation that the consumption of added sugars leads to a myriad of human health problems.

The term “sugar” refers to any number of carbohydrates with the general chemical formula of Cn(H2O)n. Sugars are categorized into monosaccharides (simple sugars) and disaccharides (a sugar formed by two monosaccharides or simple sugars). Scientific research indicates a preference for a sweet taste is evident in infants and childhood. Furthermore, sugar functions as a pain reliever in children and elicits an endogenous opioid release. Carbohydrates provide a ready source of energy for children and assist in their growth. From an evolutionary standpoint, there is a rationale for humans, particularly children’s affinity for sweet tasting substances. Notwithstanding, many communities worldwide find that the consumption of sugar has evolved into the over-consumption of sugar.

Knowledge and data acquired about the health consequences from sugar consumption continue to accumulate. The over ingestion of sugar has adverse effects on local and systemic anatomical structures in the human body.

The Academy of General Dentistry (AGD) has a vested interest in the health and well-being of children and adults. Sugar consumption is the most important contributing factor of caries, which is the most prevalent of worldwide diseases.

**Physiological Issues Resulting from Sugar Consumption**

**Caries**
Sugars in beverages and foods including breads and other carbohydrates act with bacteria in the mouth to form acid reactions. Over time, a lowered pH in the mouth creates an environment where bacteria infiltrate the enamel of the tooth and can cause decay. If left untreated, tooth decay, also known as cavities or caries, can lead to grave consequences including death.

**Obesity**
The inability to feel full contributes to excess eating and calories. High levels of fructose and other sugars in blood obscure leptin levels in the brain so that satiation is not achieved and consumption continues beyond normal. The most common causes of obesity are overeating and physical inactivity.

Consumption of too many sugary foods and beverages contribute to excess calories and may lead to an increase in weight. Furthermore, studies have confirmed a relationship between childhood and adult obesity and dental caries. Obesity is associated with heart disease, stroke, high blood pressure, diabetes, osteoarthritis, gout, select cancers, and sleep apnea.

**Diabetes**
A diet high in sugar can increase the likelihood of a diabetes diagnosis. Type 2 diabetes is linked to high levels of sugar in the blood; however, consuming sugar is only one risk factor in acquiring diabetes. Adding one serving of a sweetened beverage to a diet per day increases the risk of diabetes by 15 percent.

**Increased Cholesterol**
A high sugar diet is linked to unhealthy cholesterol and triglyceride levels. In one study, the cohort that ate the most sugar were more than three times likely to have low high density lipoprotein levels.

**Heart Disease**
A diet high in sugar may increase the risk of dying from heart disease absent an indication of being overweight. High insulin levels cause abnormal cell growth around artery walls resulting in blood vessel restriction, high blood pressure, heart attack, or stroke.

**Beverages and Food**

**Beverages**
Sugar sweetened beverages (SSB), or drinks with added sugars, are associated with weight gain, obesity, heart disease, type 2 diabetes, and tooth decay. High fructose corn syrup (HFCS) is one type of sugar in SSBs and consists of both glucose and fructose. It allows for rapid absorption in the blood stream, which leads to increased metabolic disturbances. Moreover, HFCS triggers an immune reaction leading to inflammation. HFCS consumption is associated with adult chronic bronchitis, childhood asthma, and other diseases. Public health officials recommend limiting the intake of SSBs, particularly for children. Limitations should be extended to the consumption of 100% fruit juice, as well.

**Foods**
While much public health focus is relegated to SSB consumption, the intake of sugary foods is equally problematic. Starchy foods in bread, beans, fruit, potatoes, and many others, act with bacteria in the mouth to form acids that can eat away at teeth enamel and lead to caries. Consumption of sugary foods should not be substituted for adherence to sugar-free beverage ingestion. A diet of nutrient rich foods is recommended with minimal intake of added sugars.

**Alternate sweeteners**
Consumers seeking to replace sugar in food and beverages may pursue sugar substitutes. Alternative sweetener options include sugar alcohols and high-intensity sweeteners. Sugar alcohols, not considered high intensity sweeteners, include sorbitol, xylitol, mannitol, and others, do not promote tooth decay or cause a precipitous increase in blood glucose. Primarily, this class of sweeteners are added to chewing gum, sugar-free candies, and other foods. Sugar alcohols are between 25%-100% as sweet as sugar.

High-intensity sweeteners are many times sweeter than sucrose (table sugar) therefore a smaller amount is needed to achieve the same level of sweetness as sugar. Stevia, monk fruit, saccharine, aspartame, and sucralose are some of the high-intensity sweeteners permitted for use in food and beverages by the U.S. Food and Drug Administration.

**Water**
An uncontaminated ready source of water must be available to all residents of cities and municipalities. Lead and copper contaminants must be kept out of the water supply and are particularly harmful to fetuses, infants, and young children due to their inherent physiology and size. When used appropriately, fluoride is safe and effective in preventing and controlling dental caries. Regular use throughout life may help protect teeth against decay.
Taxes

Public health advocates are nearly unanimous in support of the adoption of taxes on SSB. Taxes are proposed to effect changes in policies at local, state, and national levels. Further, taxes are advocated to decrease consumption of sugar sweetened beverages and to fund public health education efforts aimed at a change to healthy nutritional behaviors and choices.

Free market advocates contend that citizens in the U.S. are taxed sufficiently already. SSB taxes may disproportionally affect the poor and tax exemptions apply differently in each locale. For instance, the proposed Cook County, Illinois tax exempts individuals using federal food assistance programs such as the supplemental nutrition assistance program (SNAP).

Lawmakers and citizens should consider what is being attempted by imposing taxes on SSB. Potential reasons cited to adopt a SSB tax are to raise revenue, to change beverage consumption from unhealthy beverages to healthy beverages, decrease incidence of disease, to fund pre-kindergarten, or other rationales. Public policy should be well thought out and aim to address solutions that benefit citizens. Moreover, policy makers should discuss the effects of federal subsidies that have artificially inflated the price of sugars over the last 80 years.

Role of media in promoting poor nutrition

Marketing to children is one factor in the childhood obesity epidemic. Several national and international organizations have advocated for restrictions on marketing to children due to concerns about food and beverages and resulting adverse health consequences. Prior television exposure predicts unhealthy food preferences and diet, as well as parenting factors. Parents may want to set limits on childhood exposure to media in order to establish healthy eating habits for children.

School/Educational Issues

Food and beverage choices available to children should be of high nutritional value. Contractual arrangements, such as beverage pouring rights, that influence increased access to soft drinks for children should be kept out of schools. Parental and caretaker education is needed on what and how to feed children to optimize health and development.

Science evolves over time as more data is known. Health professionals are discovering that food and beverage nutritional content is necessary in order to make informed choices. Federal regulations have assisted in efforts of transparency on ingredient labels.

Education

As society considers the importance of the role of proper nutrition in human health, it is appropriate to consider educational improvement for health care professionals. Dentists and physicians receive limited education on nutrition during their training, and yet, proper nutrition is an essential component to prevent many diseases. Cultural differences also affect food choices therefore, cultural competency is needed to ensure that health professionals dispense the most appropriate advice to parents and children.

Screening for Obesity

Screening for obesity is unlike screening for other systemic diseases and can be accomplished easily by calculating a body mass index (BMI). While a BMI measurement has limitations, it provides an assessment of a standardized height/weight metric. If the patient’s BMI measurement is in the overweight or obese categories, dentists may choose to seek a referral to an appropriate health professional to assist in providing relevant nutritional information and advice.

References

AGD POLICY STATEMENTS AND RECOMMENDATIONS

1. Prevalence of and Connection between Sugar Consumption and Caries: The Academy of General Dentistry (AGD) has a vested interest in the health and well-being of children and adults. Sugar consumption is the most important contributing factor of caries, which is the most prevalent of worldwide diseases.

2. Levels of Sugar Consumption: AGD supports recommendations of sugar consumption for children not to exceed 6 teaspoons per day. However, consumption of less than 3 teaspoons of sugar per day is more optimal. Consumption of sugary foods should not be substituted for adherence to sugar-free beverage ingestion.

3. Diabetes Identification and Management: General dentists, as primary health care professionals, have an important role in the identification and management of diabetes. General dentists should be provided the ability, training, and resources to screen for diabetes, and to collaborate with the patient’s primary care physicians, as deemed appropriate, to identify and manage diabetes.

4. Screening for Obesity: General dentists, as primary health care professionals, have an important role in the prevention of childhood obesity. General dentists should be provided the ability, training, and resources to screen children for obesity using a BMI score and to refer children to pediatric primary care physicians or qualified nutritionists, where deemed appropriate by the dentist. While not a perfect measurement, BMI scores can be helpful in establishing a general assessment of a child’s propensity toward obesity.

5. Taxation and Subsidies: Lawmakers and citizens should consider all the objectives of taxation when considering imposing taxes on SSB. Potential reasons to adopt an SSB tax may include, but not necessarily be limited to, to raise revenue, change beverage consumption from unhealthy beverages to healthy beverages, decrease incidence of disease, or fund pre-kindergarten. Public policy should be well thought out and aim to address solutions that benefit the health of the U.S. population. Moreover, policy makers should discuss the effects of federal subsidies that have artificially inflated the price of sugars since the 1930s.

6. Nutrition Education and Training: Public health professionals should design a campaign for parents and caretakers to target what and how to feed children to optimize health and development. Given that proper nutrition is an essential component to prevent many diseases, resources should be directed to providing dentists and physicians with additional education and/or training on nutrition.