SUGAR-SWEETENED BEVERAGE POLICIES AND THE RISK OF NON-COMMUNICABLE DISEASES IN ADOLESCENTS

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The consumption of sugar-sweetened beverages (SSBs) has been identified as a significant contributor to the rising prevalence of non-communicable diseases (NCDs) among adolescents. These beverages, which include sodas, fruit drinks, energy drinks, and other sweetened beverages, are high in added sugars and calories, but low in essential nutrients. The excessive intake of SSBs is associated with various health issues, including obesity, type 2 diabetes, cardiovascular diseases, and poor oral health.

Health impact of SSB consumption

1. Obesity and weight gain

The high sugar content in these beverages leads to increased energy intake without providing satiety, resulting in excessive calorie consumption and weight gain. The decreased satiety and incomplete compensatory reduction in energy intake at meals following the ingestion of liquid calories are key mechanisms linking SSB intake to weight gain [1]. A recent study have shown that each serving per day increment in SSB consumption is associated with a weight gain of 0.12 kg in adults and an increase in BMI of 0.05 kg/m^2 in children over one year [2].

2. Cardiometabolic risks

SSB consumption is linked to an increased risk of cardiometabolic diseases. Habitual intake of SSBs is associated with a higher risk of type 2 diabetes mellitus (T2DM), cardiovascular diseases (CVD), and some cancers [2]. For instance, an increase in SSB intake of one serving per day is associated with an 18% higher risk of T2DM and a 9% higher risk of CVD [2]. The adverse glycaemic effects and hepatic metabolism of excess fructose from SSBs contribute to these risks [2].

3. Oral health

SSBs are also detrimental to oral health, contributing to dental caries and other oral health issues. The high sugar content in these beverages provides a substrate for oral bacteria, leading to the production of acids that erode tooth enamel and cause cavities. A study investigating the impact of an SSB tax on school absenteeism due to improved dental health found that introducing a 20% sales tax on SSBs would result in a significant reduction in school absences attributable to dental health reasons [3]. This highlights the broader health benefits of reducing SSB consumption beyond weight management and metabolic health.

Economic burden

The economic burden of diseases attributable to SSB consumption is substantial. In four Latin American and Caribbean countries, SSB consumption was associated with 18,000 deaths, seven million disease events, and US$2 billion in direct medical costs in one year [4]. This includes significant cases of overweight and obesity in both children and adults, as well as cases of T2DM, heart disease, strokes, and other conditions [4].

Policy interventions to reduce SSB consumption

1. Taxation of SSB

One of the most widely implemented policy interventions to reduce SSB consumption is the taxation of these beverages. The rationale behind SSB taxes is to increase the price of sugary drinks, thereby reducing their affordability and consumption. For instance, a study comparing the nationwide effectiveness of the National Diabetes Prevention Program (DPP) and the Penny-per-Ounce Excise (POE) tax policy on SSBs in the United States found that the POE tax would produce the most cost savings and have a greater impact on reducing new cases of diabetes [5]. Similarly, a modelling study in Brazil estimated that specific taxation of SSBs would lead to a significant reduction in the prevalence of overweight and obesity in the population [6].

However, the effectiveness of SSB taxes can be influenced by various factors, including the price elasticity of demand, consumer behavior, and industry responses. A systematic review of food and beverage taxes and subsidies found that the price elasticity of demand for SSBs was relatively high, indicating that consumers are likely to reduce their consumption in response to price

increases [7]. Nonetheless, the review also noted that existing state-level sales taxes on soda had minimal impacts on weight outcomes, suggesting that higher tax rates may be necessary to achieve significant health benefits.

2. Regulation of food advertising

Regulating the advertising of SSBs, particularly to children and adolescents, is another important policy intervention. Adolescents are highly receptive to beverage marketing, which influences their perceptions of SSBs and their consumption behaviors. A study evaluating the associations of adolescents' beverage marketing receptivity with SSB perceived harm and intake found that greater advertisement receptivity was independently associated with higher SSB intake and lower perceived harm [8].

3. School-based interventions

Implementing school-based interventions to reduce SSB consumption can have a significant impact on adolescent health. These interventions may include educational programs, restrictions on the sale of SSBs in school premises, and the promotion of healthier beverage alternatives. A scoping review of educational interventions to reduce SSB consumption in children and adolescents found that school-based programs that involved interactive learning processes, psychosocial theories, and the involvement of parents or caregivers were effective in reducing SSB intake [9].

4. Comprehensive multicomponent interventions

Given the multifaceted nature of SSB consumption and its health impacts, comprehensive multicomponent interventions that combine various policy measures are likely to be the most effective. A policy brief focusing on reducing the consumption of SSBs in Estonia recommended a combination of four policy options: regulation of food advertising, improving food and beverage labelling to boost consumer awareness about their health effects, school interventions and nutrition policies, and imposing taxes on SSBs while subsidizing other food groups or substituting alternative beverages [10].

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