

## EDITORIAL

## Daily Consumption of Soft Drinks and Cardiovascular Risk in Adolescents

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**Editorial referring to the article: Association between Cardiovascular Risk in Adolescents and Daily Consumption of Soft Drinks: a Brazilian National Study**

Cardiovascular disease (CVD) includes a group of diseases that affect the heart. These are considered a major public health problem and remain one of the main diseases of the 21st century due to their high morbidity and mortality. CVDs have also been appearing themselves more often even in childhood and adolescence.<sup>1</sup>

Among the factors associated with the increase in the prevalence of CVD are the increase in physical inactivity and reduced physical activity, as well as inadequate eating habits, such as a high intake of ultraprocessed foods, long intervals between meals, and a low consumption of fruits and vegetables, common especially among adolescents.<sup>2</sup> The short and long-term effects of such behaviors are worrisome, as they contribute to fat mass gain, risk factors for Chronic Noncommunicable Diseases (NCDs), responsible for 70% of annual deaths, representing an important cause of morbidity during adolescence.<sup>3</sup>

One of the most common unhealthy practices among teenagers is the regular consumption of sugar-sweetened beverages (SSB), including soft drinks. Data from a representative sample of the Brazilian population based on the National School Health Survey (PeNSE, 2016), showed that regular consumption (greater than 5 days a week) of soft drinks among adolescents was 19.1%, with the highest prevalence in the Midwest region with 21.7%. The consumption of SSB has been considered a factor that promotes obesity, and reducing its consumption has been identified as an important measure in the

control of weight gain in children and adolescents. Moreover, a diet rich in fruits and vegetables, and with a minimal amount of SSB, shows a cardioprotective effect in adolescents.<sup>4</sup>

Neves and colleagues,<sup>5</sup> in their article published in the current issue, investigate the association between cardiovascular risk factors and the daily consumption of soft drinks in Brazilian adolescents. It was demonstrated that the daily consumption of soft drinks was common among adolescents; the median consumption was 450 ml for soft drinks, 300 ml for industrialized juices and fruit juices, and 240 ml for flavored dairy drinks, soy-based drinks, and diet sodas. A daily serving  $\geq 450$  mL was significantly associated with overweight, obesity, and hypertension ( $p < 0.05$ ). In this sense, the consumption of diet soft drinks in adolescence should be considered a cardiovascular risk factor.

Chan et al.,<sup>6</sup> aiming to examine the gender-specific association of SSB with metabolic syndrome (MS) and its components among adolescents in Taiwan, carried out a cross-sectional study of 2,727 adolescents, aged 12 to 17 years. Demographic, dietary, physical, anthropometric, and blood parameters were evaluated. The presence of MS was determined according to the recommendations of the International Diabetes Federation (IDF). A higher intake of SSB was associated with greater waist circumference in both sexes and systolic blood pressure in boys ( $p \leq 0.043$ ). Boys who consumed  $>500$  mL/day of sugary drinks had a 10.3-fold (95% CI: 1.2-90.2) and 5.1-fold (95% CI: 1.01-25.5) risk of developing MS, as compared to an insignificant result in girls. Therefore, the results of this study show that sugary beverage intake is associated with MS in adolescence among boys, but not among girls in Taiwan.

### Keywords

Adolescent; Sugar-Sweetened Beverages; Heart Disease Risk Factors; Cardiovascular Diseases.

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Similar results were found by Hur et al.,<sup>7</sup> in their study carried out in Korea with the aim of identifying associations between total sugar intake and sugar intake from SSB, together with adiposity and ongoing metabolic syndrome (cMetS) scores among Korean children and adolescents, using cohort data with 770 participants. cMetS was calculated based on waist circumference, serum triglycerides, serum high-density lipoprotein (HDL) cholesterol, fasting glucose (blood sugar), and blood pressure. The results showed that there was a significant positive relationship between the consumption of SSB and cMetS at baseline ( $\beta = 0.04$ ,  $p = 0.02$ ), showing that this consumption may play an important role in the risk of adiposity and metabolic disease in children and adolescents.

Herran et al.<sup>8</sup> developed a representative study of the Colombian population, which involved the participation of 50,670 families with children (3,842) and adolescents (6,345), aged 5 to 17 years. To assess the consumption of SSB, a food frequency questionnaire (FFQ) was used, which evaluated the frequency of consumption of 30 foods or food groups in the 30 days prior to the survey. Anthropometric measurements and socioeconomic information were also obtained from the studied population.

It was observed that the prevalence of consumption of SSB in adolescents (aged 11 and 17 years) was 87.4%, and their average frequency of consumption was 0.77 times/day (95% CI, 0.74 to 0.80), with the highest consumption occurring among 16-year-old adolescents, with a prevalence of 90.4% and an average frequency of 0.83 times/day. All variables representing socioeconomic status were differently associated with consumption; however, being overweight was not associated with

the consumption of SSB ( $p > 0.05$ ). Adolescents consume sugary drinks regardless of gender, but with a higher prevalence among older adults and people who live in urban areas. Furthermore, this study also observed that food security, family education, and the financial condition index were directly linked to the consumption of sugary drinks.<sup>8</sup>

Data from a meta-analysis performed by Farhangi et al. in 2020,<sup>9</sup> aimed at evaluating the effects of SSB intake on blood pressure in children and adolescents, revealed that a high consumption of SSB was associated with an increase of 1.67 mmHg in SSB in children and adolescents (WMD: 1.67;  $p < 0.001$ ). Children and adolescents who consumed high doses (above the recommendation) of these beverages were 1.36 times more likely to develop hypertension, when compared to those who consumed small amounts (OR: 1.365;  $p = 0.001$ ), which leads us to believe that a high consumption of sugary drinks increases SSB and hypertension in children and adolescents.

The results of the studies show a high prevalence of the consumption of SSB, including soft drinks, by adolescents, which is highly associated with being overweight, metabolic syndrome, diabetes, dyslipidemia, and hypertension. The results of a meta-analysis that evaluated the effectiveness of 16 behavioral nutritional interventions show that it as an effective strategy to reduce the consumption of SSB by adolescents.<sup>10</sup> In this sense, it is necessary to implement educational programs in order to raise awareness among students, parents, and families, in addition to improving the school environment, concerning the need to reduce the consumption of this type of food.

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