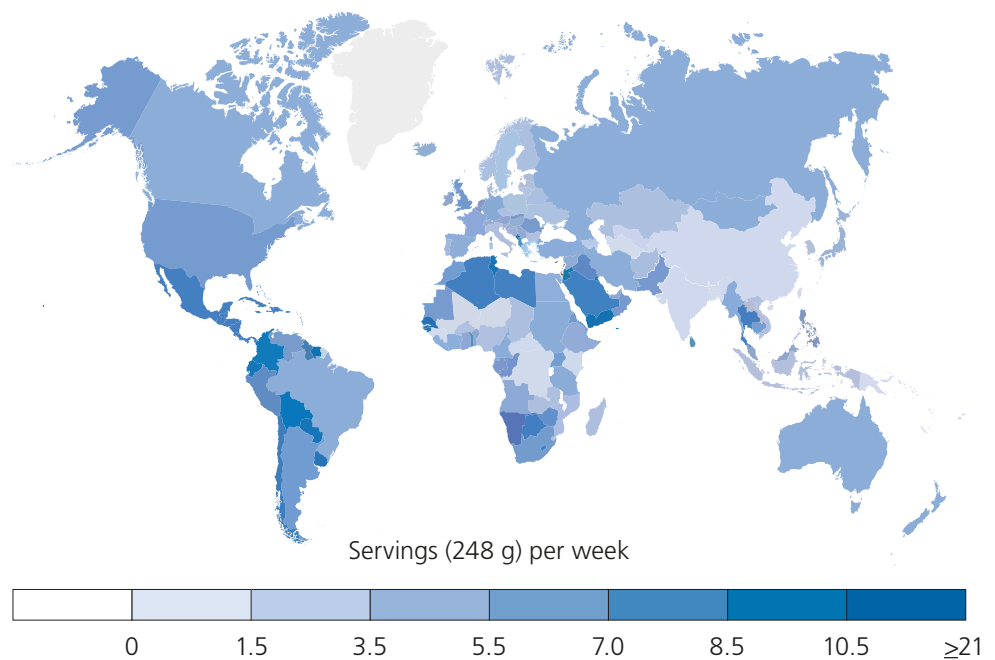




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## editorial

# Childhood obesity, sugar, and Early Childhood Caries: the sweet trap



**FIG.1** National mean Intakes of SSBs (standardised 248 g (8 oz) serving/week for this analysis) in children and adolescents aged 3-19 years across 185 countries in 2018. SSBs were defined as any beverage with added sugars and  $\geq 209$  kJ (50 kcal) per 237 g serving, including commercial or homemade beverages, soft drinks, energy drinks, fruit drinks, punch, lemonade, and aguas frescas. This definition excludes 100% fruit and vegetable juices, non-caloric artificially sweetened drinks, and sweetened milk. For this visual representation, values were truncated at 21 servings/week to better reflect the distribution of intakes globally. The figure was created using the *rworldmap* package (v1.3-6). SSB-sugar sweetened beverage.

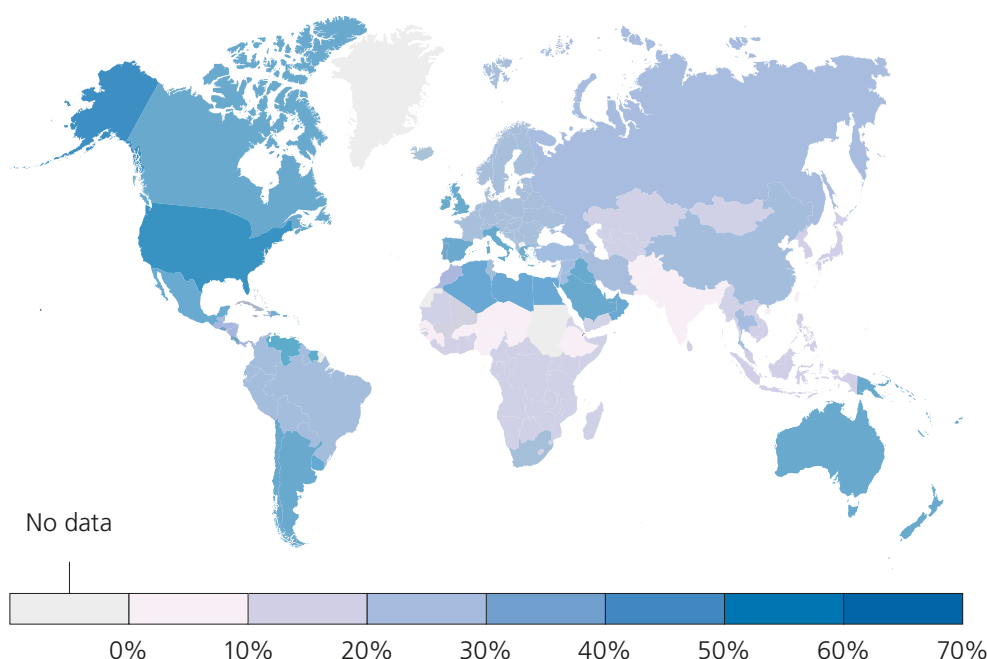
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**Luigi Paglia**, Editor in chief - European Journal of Paediatric Dentistry

What drives our irresistible attraction to foods like chocolate, fries, or a warm apple pie? Sugar intake triggers the brain's dopamine system, creating a sense of reward that unconsciously conditions a preference for foods that satisfy cravings. Over time, this weakens attraction to healthier, low-fat and low-sugar foods. This response shares characteristics with addiction, sparking the concept of "food addiction." For early humans, this reward-driven behaviour was advantageous, motivating them to seek high-calorie foods essential for survival when food was scarce. Today, however, it fuels a global surge in obesity and diabetes the real "killer" of our times. Additionally, a study on fruit flies (*Drosophila melanogaster*) found that a sugar-heavy diet reduces sensitivity to sweetness, leading to increased consumption. This phenomenon, like "desensitisation" in humans, suggests that high sugar intake may promote obesity by altering taste perception and reward circuits [May et al., 2019].

The link between sugar-rich diets, obesity, and public health is a critical concern for healthcare professionals, policymakers, and the sustainability of the western healthcare system.

A 2024 study published in *BMJ* [Lara-Castor et al., 2024] revealed that from 1990 to 2018, the consumption of sugar-sweetened beverages (SSBs) in children and adolescents (aged 3–19) from 185 countries rose by 23%, paralleling a global rise in obesity rates in this age group (Fig. 1). The findings highlighted a range of consumption levels influenced by factors like age, parental education, and urban living; however, the overall increase calls for national and targeted approaches to reduce SSB intake.

**Analysis of the charts: the parallel increase in sugar consumption and childhood obesity rates suggests the need for a careful analysis of global dietary trends and health policies, aiming to promote lifestyles and eating habits that can improve the long-term health of younger generations.**



**FIG.2** Share of children and adolescents who are overweight or obese. 2016. Share of children and adolescents aged 5 to 19 years old that are defined as either overweight or obese. This means their weight-for-height is more than one standard deviations from the median of the World Health Organization (WHO) Child Growth Standards.

Data source: World Health Organization - Global Health Observatory (2024)  
OurWorldinData.org/obesity | CCBY

Exactly like the prevalence of overweight (including obesity) among children and adolescents aged 5–19 has risen dramatically from just 8% in 1990 to 20% in 2022.

While just 2% of children and adolescents aged 5–19 was obese in 1990 (31 million young people), by 2022, 8% of children and adolescents were living with obesity (160 million young people) [GBD 2019 Risk Factors Collaborators 2020; Okunogbe et al., 2022] (Fig. 2) [Ritchie and Roser, 2017]. Establishing good habits early is vital, as children are highly receptive to new behaviours. Notably, paediatric prevention begins even in the womb [Paglia 2017; Paglia, 2019]: a 2021 Canadian study [Laforest-Lapointe et al, 2021] linked maternal consumption of artificial sweeteners during pregnancy to an increased risk of infant obesity. By examining the gut microbiomes of 100 infants, researchers found that artificial sweetener intake could influence infant gut health and body mass index in the first year of life.

The effects of sugar thus begin before birth and extend into early childhood. In Italy, added sugars are often introduced into infants' diets before 12 months, and delayed oral hygiene practices worsen the risks. Parental obesity further correlates with a higher incidence of Early Childhood Caries (ECC), emphasizing the need to address sugar consumption and health habits from prenatal to early childhood stages [D'oria, Bettocchi et al., 2024]

Addressing the roots of obesity and diet-related diseases in young populations is therefore crucial and early intervention is key.

In Italy, the government is attempting to curb sugar consumption through the so-called "sugar tax," introduced in the 2020 Budget Law. The tax was initially set to take effect on January 1<sup>st</sup>, 2021; but was postponed to January 1<sup>st</sup>, 2022. Then to January 1<sup>st</sup>, 2023; again to January 1<sup>st</sup>, 2024, and recently postponed once more to January 1<sup>st</sup>, 2025...Hoping next year will finally be the one!

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