

# Childhood Obesity: Evaluating the Causes and Proposed Solutions of a Global Epidemic

Sowmya Ramesh, Veronica S. Vitko, Aaron E. Stark, & Ian F. Riisager

2024 Virginia Governor's School for Agriculture, Virginia Tech

## Abstract

*Childhood obesity has become a pressing issue in modern society. Obesity rates have doubled in the last 30 years, impacting the health and well-being of our youngest generation at an alarming rate. We explored factors regarding the multi-faceted causes of childhood obesity, previously implemented solutions, and potentially effective strategies to mitigate this issue. A non-systematic literature review explores factors contributing to the increase in childhood obesity while concurrently evaluating solutions that emphasize diverse stakeholders. We conducted this literature review in alignment with the United Nations (UN) Sustainable Development Goals (SDGs) of Zero Hunger (2), Good Health and Well-Being (3) and the United States Department of Agriculture (USDA) National Institute of Food and Agriculture (NIFA) Topic of Food and Nutrition Security. Traditional diet norms and societal perceptions of body image significantly influence children's eating habits and physical activity levels. Access to affordable, nutritious food is pivotal, particularly for underprivileged families who often face barriers to purchasing healthy options. In addition, sedentary lifestyles further fuel the high prevalence of obesity among children. Addressing this wicked problem demands a well-rounded strategy to engage diverse stakeholders. Effective strategies include social marketing campaigns to reshape societal perceptions of nutrition and deter children from a sedentary lifestyle. Additionally, investing in community infrastructure, such as exercise parks and playgrounds, holds promise in encouraging active lifestyles among children. Combating childhood obesity requires coordinated efforts to tackle its causes and empower families and communities to adopt healthier lifestyles. Through proactive steps in our communities, we can create environments that support healthy development in children.*

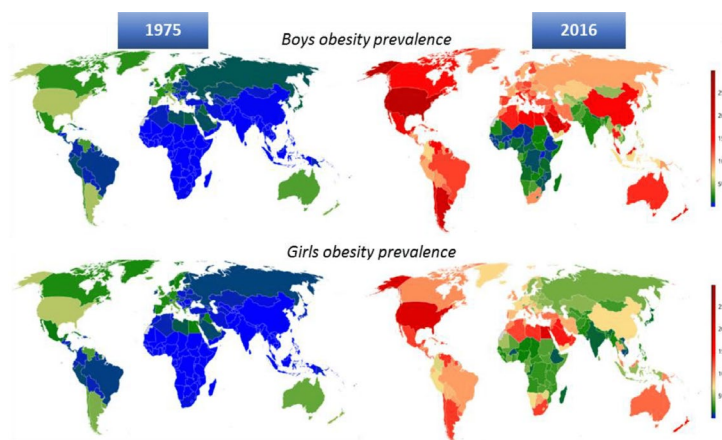
## Introduction

Almost one in five children and adolescents, ages 2 to 19 (19.3%) are classified as obese (National Institute of Diabetes and Digestive and Kidney Diseases, 2024). Unfortunately, childhood obesity rates have increased by more than 50% in the last 30 years (World Health Organization, 2024). This trend can be attributed to many factors—including economic status and homelessness, poor access to healthcare, and specific sociocultural shifts across the globe. Addressing childhood obesity is exceptionally challenging due to its multifaceted nature, categorizing it as a pressing issue without a straightforward solution. To address this problem, all stakeholders must collaborate. As a society, we must find actionable solutions to mitigate childhood obesity.

Since 1930, when the first national survey acquired information about weight trends nationwide, regular studies have been conducted on childhood obesity rates worldwide. In 1970, obesity rates began to increase, and in 2000, soared drastically (Von Hippel & Nahhas, 2013). A study conducted by Dr. Maria A. Gonzalez-Alvarez and her team showed the difference in obesity cases between girls and boys under the age of 18 in 1975 versus 2016, as shown in Figure 1. While most countries have seen some growth in obesity cases, the highest growth can be seen in North and South America, where obesity rates have almost doubled (González-Álvarez et al., 2020).

### Figure 1

Map depicting the growth of obesity cases, separated by sex, across the world comparing 1975 results to 2016 results (González-Álvarez et al., 2020)

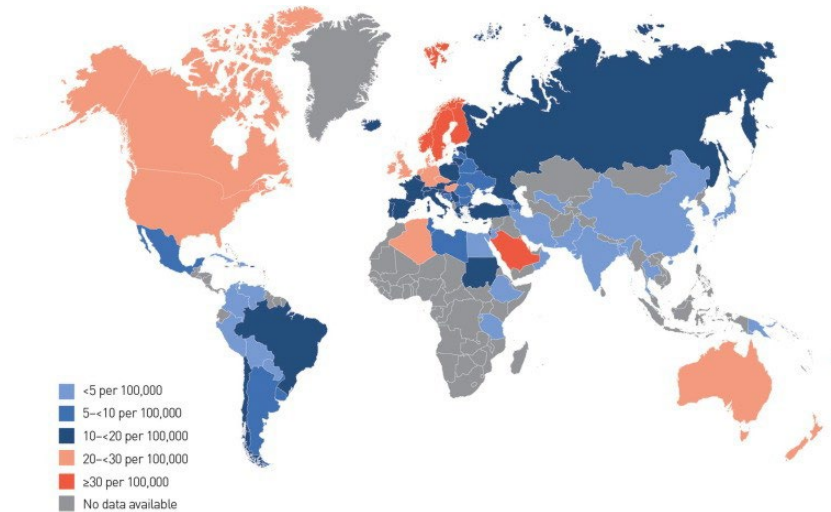


According to *Let's Move!*—a public health campaign led by former First Lady Michelle Obama—if steps are not taken to reduce the rate of childhood obesity in the United States (US), then almost all children born in the 21st century will develop diabetes at some stage of their lives (Let's Move, 2024). As shown in Figure 2, countries in Northern Europe, North America, and the Middle East have a higher prevalence of cases of type one diabetes (Paterson et al., 2019).

We aim to identify the factors that led to the rise of childhood obesity cases and explore solutions to mitigate this issue. We hypothesize that if poverty rates, homelessness rates, and overall quality of life improve, the number of reported cases of childhood obesity will naturally decrease. We conducted a literature review to validate our hypothesis, identify previously proposed solutions, analyze causes and consequences, and explore potential interventions and their limitations. We will conclude our paper by synthesizing our findings and proposing actionable solutions.

**Figure 2**

Map of age-sex standardized incidence rates per 100,000 from publications of type 1 diabetes in children aged under 15 years (Patterson et al., 2019)



### **Problem Statement**

Because of the increased consumption of foods with poor nutrition, childhood obesity has increased. This aligns with the United States Department of Agriculture (USDA) National Institute of Food and Agriculture (NIFA) Topic of Food and Nutrition Security (NIFA, n.d.) as well as the United Nations (UN) Sustainable Development Goals (SDG) of Zero Hunger (2), Good Health and Well-Being (3) (UN, n.d.).

### **Methods**

This paper is a non-systematic literature review that presents the data related to the question, “What has caused increased rates of childhood obesity?” Additionally, this review emphasizes current solutions and existing policies. Specifically, we aimed to emphasize ingredient transparency, nutritious school meals, education regarding childhood obesity, exercise parks, and social marketing campaigns. We assessed potential solutions based on their success rate and sustainability, considering their viability for future implementation. Using databases such as Google Scholar, Academic Search Complete, National Library of Medicine, and PubMed, we searched keywords such as “childhood obesity,” “historical growth,” “economic status,” “food quality,” “exercise parks,” “playgrounds,” “social marketing campaign,” and “education.” Studies published between 2001 and 2024 were considered. We sourced information from US government websites, international research papers, articles, and scientific journals published in English. However, our literature review faced limitations due to restricted access and language barriers. Despite this, we comprehensively examined the factors contributing to childhood obesity, highlighting causes and current solutions to address this pressing public health issue.

## Background

Childhood obesity results from external and internal factors in the youth's environment. According to the World Health Organization (WHO), the number of overweight or obese children aged 5-19 has risen dramatically from just 4% in 1975 to over 18% in 2016 (WHO, 2024). This rapid rise poses significant health risks, including the early onset of cardiovascular diseases, various psychosocial issues, and chronic conditions—such as type 2 diabetes (National Institute of Diabetes and Digestive and Kidney Diseases [NIDDK], 2024). We will explore the factors that have contributed to this trend, such as lack of exercise, poor food quality, socioeconomic status (SES), various cultural implications, parental and youth education, and previously proposed solutions.

### Exercise

Physical activity is imperative for children to develop healthily, maintain their energy equilibrium, and regulate hormones. Type 2 diabetes, cardiovascular disease, and various cancers are just some of the chronic diseases and conditions that result from a lack of physical activity.

According to the CDC, only 24% of children aged 6-17 are reported to be active for at least an hour every day (CDC, 2020). An increase in sedentary activities like watching TV, playing video games, or using smart devices has increased childhood obesity rates. Lack of exercise in children and teenagers causes weight gain more easily because it causes an imbalance between calories consumed and calories burnt (Taubes, 2013). Since physical activity burns calories, a sedentary lifestyle can result in a positive calorie surplus, which is stored as fat in the body (Ludwig et al., 2001).

Inactivity also causes obesity through psychological and behavioral aspects. Additionally, obesity is connected with metabolic disturbances—which manifest in the form of resistance to insulin, dyslipidemia, hypertension, and other diseases (often referred to as syndrome X). Inactive children and adolescents are prone to consuming high-calorie, low-nutrient food in large quantities and eating as an emotional coping strategy (Marzieh Abdoli et al., 2023).

Apart from the immediate physiological consequences, inactivity can have a substantial negative influence on children's mental health, which can cause excess accumulation of fat (Bruney, 2011). Exercise has been shown to improve mental health by lowering stress, anxiety, and depression symptoms—as well as elevating mood and self-esteem through the production of certain hormones, such as endorphins. Children who don't exercise regularly lose out on these psychological advantages, which can worsen their mental state. This low emotional state can lead to poor coping strategies like comfort eating, in which children eat foods high in calories when they're depressed, bored, or stressed. Furthermore, a lack of social engagement and a sense of isolation brought on by a lack of physical inactivity can exacerbate depressive and lonely sentiments (Patterson, 2019). Addressing the psychological effects of physical inactivity is essential in the fight against childhood obesity (World Health Organization, 2024).

One example of a lack of exercise contributing to the rise in childhood obesity is the

COVID-19 pandemic that began in December 2019. A 2024 study showed that COVID-19 directly impacted the increased rates of childhood obesity in the past five years. Increased federal regulation encouraged citizens to quarantine, causing them to adopt a sedentary lifestyle (Iacopetta et al., 2024). One example of this is the federal regulations that took place in India.

According to the Blavatnik School of Government, in contrast to the United Kingdom and the United States, India quickly implemented a lockdown policy. With only 360 active cases nationally, in March 2020, they issued a full nationwide curfew (Nagesh et al., 2022). In addition to promoting a sedentary lifestyle and lack of physical exercise, a common symptom reported by Indian citizens was the increased loneliness/isolation they felt during the pandemic. As stated previously, mental health is a significant factor in the increase in childhood obesity, so the increased reports of various mental health conditions, such as depression and anxiety, show a direct correlation between the two events (Changoiwala, 2024).

Fighting the obesity epidemic requires addressing the issue of children's lack of physical activity. Promoting active lives through school-based programs, community initiatives, and family involvement are just a few ways to accomplish this. It is feasible to enhance children's health and well-being and lower the prevalence of childhood obesity by creating conditions that support regular physical activity and lowering obstacles to participation (Australian Institute of Health and Welfare, 2022).

## **Food Quality**

While many factors can promote childhood obesity, one of the most significant is the consumption of poor-quality food. Excessive consumption of food with low nutritional value and high amounts of calories can contribute to child obesity.

Processed foods are foods that have been altered from their natural state. Across scientific literature, one classification system for foods has stood out: The NOVA system for food processing. This system breaks all foods into four groups: Unprocessed or minimally processed foods, processed culinary ingredients, processed foods, and ultra-processed foods (UPFs) (Poti et al., 2017b). This paper will focus mainly on processed foods—unprocessed foods like vegetables or meat combined with processed culinary ingredients like oil or sugar—and ultra-processed foods (multi-ingredient foods) developed through several industrial processes. Examples of ultra-processed foods include cookies, soda, pizza, and candy.

Over the past half-century, the American diet has shifted drastically. In an analysis of data from the USDA, researchers from the Pew Research Center determined that the average American today consumes three times as much cooking oil, 23% more calories, and 42% less milk than their counterparts in 1970 (DeSilver, 2024). Similarly, Americans consume large quantities of ultra-processed foods. In a study of 33,795 U.S. youths aged 2-19 years, the portion of ultra-processed calories consumed by the average youth jumped from 61.4% to 67% of their total calories from 1999 to 2018 (Wang et al., 2021).

This mass consumption of ultra-processed foods has been directly linked to increased rates of obesity. In a study of 548 children, researchers found that for each additional daily serving of a soft drink, the likelihood of a child becoming obese increases by nearly 60%

(Yoshida & Simoes, 2018). Furthermore, a study of 8541 college graduates in Spain found that participants in the highest quartile of ultra-processed food consumption (classified using the NOVA classification system) were 26% more likely to become overweight or obese over a median length of 8.9 years. This study was conducted with a confidence interval of 95% and reached statistical significance with a P-value of .001 (Poti et al., 2017).

Several policies and initiatives have been set forth to manage food quality in response to the spread of low-quality foods. One prominent example is the requirement for nutrition labels for food products in the US. By informing consumers, the Food and Drug Administration (FDA) effectively supports healthy decision-making while shopping (FDA, n.d.). However, the push for food transparency through nutrition labels has several flaws. Food labels can be challenging to interpret, and consumers often face language barriers that negate any intended effect on them. Furthermore, seemingly insignificant details like the size, color, or placement of a nutritional label can influence the label's effect (Bhattacharya et al., 2022).

### **Socioeconomic Status**

Economic status—which can be defined as income, education, and access to resources—significantly correlates with an individual's probability of becoming obese. It shapes individuals' living standards, access to healthcare, and educational opportunities, all of which are crucial in maintaining a healthy lifestyle (Houle, 2013). These factors influence the prevalence and management of obesity, as SES impacts an individual's purchasing power, knowledge, and ability to maintain a healthy lifestyle.

The influence of higher SES varies by geographical location. In developing countries, individuals with higher SES are more likely to be obese; conversely, in developed countries, higher SES is associated with lower obesity rates (Houle, 2013). Economic disparities are pronounced, with higher SES brackets in developed nations earning higher wages and enjoying greater GDP per capita compared to their counterparts in developing countries. According to a systematic review, evidence has unanimously depicted that childhood obesity is more prevalent among affluent groups in developing countries (Dinsa et al., 2012). Furthermore, studies conclude that weight-related ailments primarily affect the rich in developing countries. The researchers looked at body mass index (BMI) among more than 547,000 women from 37 low- and middle-income countries in Asia, Africa, and South America and found that being overweight primarily affects women with higher SES (Harvard School of Public Health, 2014). Overall, SES significantly impacts childhood obesity rates, particularly concerning a country's economic status.

Lower economic status significantly contributes to sedentary lifestyles. Individuals with lower SES face barriers to physical activity due to limited access to recreational facilities such as gyms and pools that require memberships, safe outdoor spaces, and time constraints. “Low SES can be a barrier to physical activity and healthful eating (6–8), and children who regularly perform high-intensity activity tend to be more physically fit (9). Previous studies have reported that children of low SES have a higher risk of obesity than children of high SES (6,7).” (CDC, 2015). Additionally, rural areas have lower incomes, lower educational attainment, reduced access to food, and fewer options for exercise. Children in rural areas are approximately 20–25% more likely to be overweight or obese compared to their urban counterparts (Flattum et al.,

2021). Limited access to healthy food options is a contributing factor, as many rural areas are considered food deserts, lacking fresh and affordable foods (Rural Health Information Hub, n.d.). The risk of food insecurity increases as countries become more rural. Food insecurity is associated with weight-related problems such as diabetes and obesity (Halverson et al., 2011).

Lower SES is also associated with fewer opportunities for exercise, as families may struggle financially to afford extracurricular activities, sports programs, or memberships to gyms or recreational facilities. Families with higher socioeconomic status (SES) have greater purchasing power, enabling them to afford a wider range of products and services. This financial capability allows higher SES families to allocate more resources toward purchasing fresh produce and other nutritious foods. Consequently, they tend to adopt better dietary habits and lead overall healthier lifestyles compared to lower SES families, who often face limited access to affordable healthy food options.

Overall, eating healthy foods tends to cost more than less healthy options. This stems from the fact that manufacturers can produce processed, unhealthy food options more efficiently, making naturally grown food more expensive (Auguste Escoffier School of Culinary Arts, 2021). As their incomes rise, U.S. households spend more money on food, which represents a smaller share of their income. In 2022, households in the lowest income quintile spent an average of \$5,090 on food (representing 31.2 percent of income), while households in the highest income quintile spent an average of \$15,713 on food (representing 8.0 percent of income) (Mena, 2024). Research consistently demonstrates an inverse relationship between economic status and obesity rates, highlighting that lower SES is associated with higher obesity rates. Factors associated with lower SES, such as barriers to healthy food and exercise, all contribute to rising rates of childhood obesity.

## **Culture**

Cultural dietary practices have a major impact on childhood obesity because they affect the foods that are consumed and meal patterns. For instance, traditional diets high in fruits, vegetables, whole grains, and healthy fats like olive oil have been associated with reduced incidences of obesity in Mediterranean nations. However, even these historically healthful diets are being supplanted by high-calorie, processed meals as Western fast food becomes more widely available. In contrast, the move toward Westernized diets high in sweets and fats has increased the prevalence of childhood obesity in societies where rice and other carbs are staple foods, such as in many Asian countries (Muscogiuri et al., 2022). These dietary modifications are frequently brought about by globalization and the power of large, multinational food companies.

Historically, obesity has been attributed to extreme wealth and prosperity. A 2015 study reported on the prevalence of overweight women in the upper class. In Northern European culture, the middle and lower classes suffered from extreme malnourishment, resulting in mass death from starvation. Being obese was seen as a privilege reserved for the wealthy. Larger women were seen as desirable due to being associated with wealth and fertility. In stark contrast, many Asian countries disliked larger women, as it was attributed to extreme gluttony and no self-control. Countries like India, China, Korea, and Japan, where Buddhism and Hinduism were prevalent, associated obesity with overindulgence (Hruby & Hu, 2015).

Currently, it has become much easier to become obese, as nearly 1 in 3 adults (30.7%) are overweight (NIDDK, 2024).

The way that cultures view their bodies also has a significant influence on childhood obesity. It is customary in several Polynesian and African societies to link beauty, riches, and good health with larger bodies, despite the cultural changes explained above (Townsend et al., 2014). In many cultures, parents would urge their kids to eat more because they have positive associations with larger bodies, which may result in overindulging and a disregard for obesity. According to a 2015 study, “mean BMI increased by more than 2.0 kg/m<sup>2</sup> per decade between 1980 and 2008 for men and women in both the Cook Islands and Nauru.” (McLennan & Ulijaszek, 2014). On the other hand, there is greater social pressure to maintain a lower body weight in Western countries, where being small is frequently associated with health and attractiveness. This may result in a stronger focus on physical exercise and a nutritious diet, but it may also cause children to develop negative body image and bad dietary habits.

The process of acculturation, or adjusting to a new culture, can have a big impact on immigrant families' eating patterns and levels of physical activity, which can affect the prevalence of childhood obesity. For instance, traditional diets rich in fruits, vegetables, and lean proteins are frequently replaced by more Westernized diets heavy in processed foods and sugary drinks among Latino immigrant families in the United States (Martin et al., 2015). According to the CDC, a study conducted in 2024 showed that 26% of Latino American children are obese. Compared to the other children assessed, such as Asian American children being less than 15%, these rates are considerably high (CDC, 2022).

## **Education**

The percentage of children and adolescents affected by obesity has more than tripled since the 1970s (CDC, n.d.). Education plays a crucial role in promoting healthy habits among children about eating habits, exercise, and the importance of balanced diets. Children have the power to learn to make healthier food choices, emphasizing the growing role of youth education in combating childhood obesity and fostering lifelong healthy habits.

Schools, where children spend a significant portion of their time, can implement policies and practices aimed at promoting healthier eating habits—such as increasing fruit and vegetable consumption, reducing intake of sugary and fatty foods, and encouraging more daily physical activity (CDC, n.d.). Early nutritional education and intervention from institutions decrease a child's probability of becoming obese. Research shows that the main effect observed during school-based interventions was a decrease in z-score body mass index (zBMI) in the intervention group (IG) compared to the control group (CG) (Gato-Moreno et al., 2021). Furthermore, each additional serving of fruits and vegetables per day was associated with a 5% lower risk of all-cause mortality and a 4% lower risk of cardiovascular disease (Ashton et al., 2019). These findings point toward the effectiveness of educational intervention in combating adolescent obesity.

Another important source for shaping the mindset and habits of youth is their homes. Parents significantly influence childhood obesity rates through home education on nutrition, physical activity, and food-related emotions, as children spend around 86.64% of their time

outside school settings (Wherry, 2004). Factors such as parental nutrition knowledge, meal planning, modeling of healthy eating practices, physical activity levels, and sedentary behaviors profoundly shape children's lifelong habits and weight status. A study found that a middle schooler's odds of becoming overweight increased by 60% for each additional serving of sugar-sweetened drinks consumed daily (Yoshida & Simoes, 2018), underscoring the importance of parental efforts to limit these beverages at home. Parental education plays a crucial role globally in addressing childhood obesity, with disparities in knowledge in terms of health and nutrition contributing to rising obesity rates.

Schools implement various interventions with mixed success rates. Jump Rope for Heart, supported by the Australian Council for Health Physical Education and Recreation and launched by the Heart Foundation in 1983, encourages physical activity and heart health fundraising in schools (Ellis, 2023). Furthermore, an initiative seen in New York City (NYC) since January 2022 has introduced Plant-Powered Fridays, committed \$100M to the Cafeteria Enhancement Experience, and \$1M to integrate food education throughout the school day. The New York State government executive committee is emphasizing food education in schools to help increase rates of healthy food habits and lower rates of childhood obesity (NYC Government, 2023).

Additionally, the Let's Move movement, initiated by Michelle Obama, is dedicated to addressing childhood obesity through initiatives like the Healthy, Hunger-Free Kids Act. This legislation updated school meal standards for the first time in 15 years and increased funding for the first time in 30 years, providing healthier meals and snacks to over 50 million children. It also expanded financial aid to ensure more students receive these meals at little to no cost, with specific nutrition standards. Childcare meals were also improved with more whole grains, diverse fruits and vegetables, and less added sugars and saturated fats (*Let's Move!*, n.d.). These changes will initiate healthier environments for children worldwide.

## **Previous Solutions**

With the growth of the obesity epidemic, efforts have been made to curb the rise in reported cases. While there is no one solution, as it is a multi-faceted problem, measures have been taken to mitigate the problem and reduce the range of affected individuals.

In 2010, First Lady Michelle Obama launched *Let's Move*, an anti-childhood obesity public health campaign. The campaign was announced to have four main initiatives: educating parents to help them raise healthy children, feeding children healthy food in schools, increasing access to healthier foods, and encouraging exercise among children. One direct effect of the campaign was the commitment of several powerful food manufacturers such as Coca-Cola, General Mills, Kellogg, Kraft Foods, and Pepsico to reduce 1 trillion calories from their products within two years (Health Affairs Forefront, 2011). The campaign also expanded the HealthierUS Schools Challenge—an award program that recognizes schools for their dedication to proper nutrition and physical activity, created the Chefs Move to Schools program—a system in which local Chefs worked with schools to educate children on nutrition, and several other partnerships with businesses and corporations nationwide (Cappellano, 2011).

Another move spurred by the *Let's Move* campaign was perhaps the most notable

legislation passed to combat childhood obesity in the U.S. The Healthy, Hunger-Free Kids Act of 2010 (HHFKA) created a set of policies to improve the food consumed by U.S. children. One action implemented by HHFKA was to update the nutritional guidelines for the National School Lunch Program and School Breakfast Program—which affect over 30 million and 14 million children, respectively. This was the first update in over 15 years. Since the nutritional guidelines were outdated, they did not reflect the severity of the child obesity epidemic. The HHFKA aligned the guidelines with modern dietary recommendations from the National Academy of Medicine. These changes were implemented in 2012 and quickly increased consumption of fruit, vegetables, and whole grains. In a study published in *The Culture of Health*, researchers examined data from 173,013 American children with a mean age of 13.5 years. While it was found that the HHFKA had no effects on child obesity for children of medium and high economic status, researchers concluded that for kids in poverty, the risk of obesity would be 47% higher by 2018 without the HHFKA. Furthermore, for each year that the HHFKA was in effect, children in poverty had a 9% lower chance of reaching obesity (Kenney et al., 2020).

One peculiar attempt to remedy childhood obesity was the Shape Up Somerville community intervention. The project, which lasted from 2002-2005 and took place in Somerville, Massachusetts, involved children aged 6-8. The initiative aimed to completely transform all aspects of the participants' lives—including their time at school and home—to mitigate childhood obesity and promote a healthier lifestyle. To target the school environment, school lunches were changed to increase fresh fruit, low-fat milk, and whole grain intake. Project leaders created a campaign to encourage walking and biking to school. Students were provided with new recess equipment to promote physical activity, and the school curriculum was edited to educate participants on the importance of a cleaner diet and exercise. At home, the intervention attempted to influence children through their parents primarily. Parents received newsletters and health “report cards” for their children. In the broader community, the city worked with restaurants to offer healthier dishes and physicians to better counsel and treat obese children. The campaign had a noticeable effect on the city’s youth. Researchers found an average consumption of sugar-sweetened beverages and an average screen time usage of 2.0 Oz and 15 minutes below neighboring control cities, respectively (Folta et al., 2013).

A unique solution, popular in Europe, called “Play streets,” emphasizes physical activity in children. (Meyer et al., 2016) (Zieff et al., 2016). Another study of 126 children conducted in Ghent, Belgium, reported that of the parents of the children who utilized Play Streets, “93.8% agreed that their children were enthusiastic about the Play Street and 78.2% agreed that their children had a lot of friends in the Play Street.” (D’Haese et al., 2015). Additionally, Play Streets increased physical activity in children involved by 9.1 minutes per day.

## **Solutions**

To evaluate solutions for childhood obesity, we evaluated their feasibility and

effectiveness. The implementation of a successful solution requires the involvement of children, parents, teachers, and lawmakers. Their combined efforts can lead to significant public health improvements. We propose two solutions to influence children's school and home life, beginning with a social marketing campaign, which has historically been effective in creating social change. Social marketing campaigns can be defined as strategic initiatives that utilize marketing principles to promote positive behavioral changes or societal actions to improve communities and individuals.

Examples of social marketing campaigns used to combat childhood obesity include the *Let's Move* public health campaign initiated by First Lady Michelle Obama in 2010 and the Shape Up Somerville community intervention in Somerville, Massachusetts, from 2002 to 2005. *Let's Move* used various tactics to attack childhood obesity, including legislation, social media, and school partnerships. Additionally, *Let's Move* was highly publicized by the media, solidifying itself as a notable initiative of the Obama administration (Health Affairs Forefront, 2011). One particular success of the program was its intervention within education to reach children. Through the Healthier US Schools Challenge, Chefs Move to Schools program and the Healthy, Hunger-Free Kids Act of 2010, *Let's Move* worked to create school environments that supported the fight against child obesity (Cappellano, 2011).

While *Let's Move* focused primarily on children's educational environment, Shape Up Somerville transformed the entire environment of Somerville, Massachusetts, to combat childhood obesity. Participants' parents were sent educational resources and health updates on their children, and the city of Somerville worked to hold community events and partner with local businesses to combat childhood obesity. Finally, the curriculum was changed to educate students on childhood obesity, and school food was edited to include more fruits, vegetables, and whole grains. Overall, the campaign was successful, noting a statistically significant drop in consumption of sugar-sweetened beverages compared to control cities. By transforming the city of Somerville, the project worked to establish a culture against childhood obesity, which has proven to be an influential factor in the development of childhood obesity (Folta et al., 2013).

Social marketing campaigns can be exceptionally successful if appropriately deployed. To maximize their effect, they should target all aspects of children's lives—working to create a community committed to addressing childhood obesity. Governments of all jurisdictions can launch social marketing campaigns.

The availability of parks in urban areas has shown a negative correlation with childhood obesity. A study of over 3000 children over eight years from 12 municipalities in southern California found that parks significantly affected children's health and body weight. Over 50% of urban children did not have a park near their residence, and the author recommends increasing the availability of free-to-access parks (Wolch et al., 2011). Increasing park availability may be an effective intervention to decrease obesity rates and crime while increasing public satisfaction.

Park prevalence in other countries is associated with lowered obesity rates and higher general health. America has been shown to have lower park accessibility when compared to Europe, which is marginally closer to the ideal proximity (Schipperijn et al., 2017). This distance is attributable to having 24 more minutes of activity per week, which can have

observable effects on body composition. Children with playground access are similarly 26 percent less likely to be obese (Orstad et al., 2020).

Outdoor parks with explicit accommodation for fitness activities have arisen in many cities and may be an effective intervention in low-income and aging communities. In Taiwan, the growing prevalence of such fitness parks has shown improvement in physiology and cognition within the general population (Chow, 2013). WHO's Global Action Plan on Physical Activity 2018-2030 has recognized increasing park prevalence among effective interventions to reach a 15% reduction in obesity (World Health Organization, 2018). Policies have been proposed to increase park prevalence; notably, the Ten-Minute Walk movement aims to provide parks to nearly 100 million people who cannot reasonably access one. Interventions in this area tend to benefit underserved communities where obesity is disproportionately (10-Minute Walk, 2024).

### **Conclusion**

The growing trend of childhood obesity must be mitigated. Currently, the epidemic is driven by a multitude of factors. Physically, a sedentary lifestyle can induce a positive calorie surplus in children, causing fat storage. Similarly, overconsumption of calories produces the same effect. Children often overconsume calories or fail to exercise enough to burn excess calories for socioeconomic, cultural, or educational reasons. For example, lower socioeconomic status has been associated with higher rates of childhood obesity since poorer individuals face economic barriers to exercise and quality food (Harvard School of Public Health, 2014). In regards to cultural drivers of child obesity, some cultures frown upon obesity while others praise it, leading to countries often reflecting their culture's stance. Finally, education plays a prominent role in the childhood obesity epidemic. Educating both parents and children on the importance of a proper diet and the adverse effects of obesity can have a considerable decrease in the chances of a population of children developing obesity.

This review has identified two feasible solutions to combat child obesity. To combat socioeconomic factors of child obesity, government investment in public parks could help increase exercise among children. By providing free access to parks, children would be encouraged to exercise. To fight cultural causes, governments at any level can implement social marketing campaigns focused on creating an environment against childhood obesity. By turning the cultural tide against child obesity, children and parents would be encouraged to maintain healthy fitness levels. Then, to educate children and parents on the consequences of obesity, the social marketing campaign can deliver important insight on the topic to individuals.

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