


**PERSPECTIVE**

# Childhood obesity on the rise during COVID-19: A request for global leaders to change the trajectory

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**BACKGROUND**

Childhood obesity has been rising in all world regions; 2019 estimates were that 158 million children aged 5 to 19 years are living with obesity, of whom many live in low-to-middle-income countries (LMICs) (1). However, there has been limited to no progress to halt the rise in more than 20 years, and this number is projected to increase to 254 million by 2030 (1). NCD Child, a global multistakeholder coalition focused on the prevention and control of noncommunicable diseases (NCDs) in children, is concerned with the rising rates of obesity during childhood and its consequences. Childhood and adolescent obesity increases the risk of hypertension in children, as well as the risk of mental health challenges, bullying, and poor school achievements, and in the longer term, it leads to adult obesity, type 2 diabetes, cardiovascular diseases, and other NCDs that cause preventable premature morbidity and mortality (2). The major risk factors for childhood obesity are unhealthy diets, physical inactivity, socioeconomic factors, and psychosocial stress, typically promoted in an obesogenic environment (2).

Over the past year and a half, COVID-19 has spread globally, infecting more than 222 million people and causing more than 4.6 million deaths (3). Decision-makers have made drastic changes to individual's lives in the efforts to protect people from COVID-19, including school closures and confinement, which, at the time, had largely unforeseeable consequences regarding other aspects of population health. With

more than 80% of the world's children being affected by school closures and the consequential disruption of lives, child health has been put at risk, and childhood obesity has risen disproportionately (4). This Perspective will outline the related evidence and showcase the need for greater attention to the adverse effects of pandemic mitigation policies, as well as focus on the interplay between COVID-19 and children with obesity and suggest policy changes.

**THE RISE OF CHILDHOOD OBESITY DURING COVID-19****Changes in children's diets**

The COVID-19 pandemic has caused major changes to the food environment and increased levels of food insecurity, which is associated with risks to physical and mental well-being (5). Many children depend on school meals to ensure appropriate nutrition, and these meals have been disrupted during lockdowns (5). In the United States alone, more than 30 million children receive free or subsidized school lunches, and closure of schools caused an increase in food insecurity from 32.6% to 36% between March and July 2020 (6). The upsurge in food insecurity has led to increases in malnutrition in multiple forms through lack of access to a sufficient number of meals for some, with consequential probable reduced levels of childhood obesity in some segments, and

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increased intake of highly processed foods for many (5). Obesity and food insecurity coexist in many children and adolescents, for example, because of a lack of access to fresh produce and whole grains, which causes many low-income communities to rely on affordable yet calorie-dense foods that are low in nutritional content, creating further malnutrition challenges (5). A multicountry study showed that the food consumption and eating patterns of many adolescents have deteriorated during the pandemic, including having more snacks, eating out of control, and eating unhealthy food types (7).

### Marketing adaptations by the unhealthy commodity industries

The unhealthy commodity industries have adapted and increased their marketing efforts during the pandemic, for example, through donations or promotions of infant formula as a “safe” alternative and booster of the immune system, breaching the code of marketing of breastmilk substitutes, and partnering with fast food or chocolate companies for special versions of popular online games (8). “COVID-washing” of unhealthy products, whereby brands align with an empathetic response to the pandemic to enhance their own image, has, in some instances, been in violation of advertising standard codes for marketing to children, thereby increasing the risk of childhood obesity and damaged child health (9).

### School closures, physical inactivity, and mental health

School closures and confinement have increased children's and adolescents' sedentary time (e.g., daily sitting time rose from 5 hours to 8 hours, screen time increased less time was spent outside) (7). Globally, the lockdown has also led to less overall physical activity and lower intensity levels among children (7). A microsimulation study projected that US childhood obesity rates would increase by 2.4%, representing an upsurge of 1.27 million new obesity cases if schools remained closed until December 2020 (2). This rise was based on canceled physical activity classes; however, it did not account for additional risk factors experienced during the pandemic, including changes in diet, stress, canceled sport club activities, or other factors (2). Additionally, sedentary behavior is associated with depressive symptoms and psychological stress, which have been further triggered by decreased social interaction, fear of canceled exams, and social distancing during school closures. The increased anxiety can lead to overeating, causing obesity and further psychological issues as well as low self-esteem in the future.

### Rising childhood obesity rates, long-term consequences, and enhanced existing inequities

As expected, evidence of increased childhood obesity rates in all age groups during the pandemic has emerged, with preexisting disparities

appearing to have worsened (10). The long-term consequences of childhood obesity are well established and they include the risk of heart diseases, cancer, mental health disorders, and diabetes, as well as complications with subsequent morbidity and premature mortality. There is a positive association between these conditions, low-income, low socioeconomic status, and low educational status in LMICs (11). Therefore, the increased levels of childhood obesity will likely enhance existing inequities, and families living in poverty will continuously do so in future generations, for example, because of health expenditures and unemployment caused by the diseases, thus maintaining the vicious cycle of poverty and NCDs.

## THE EFFECTS OF COVID-19 ON CHILDREN WITH OBESITY

Children and adolescents make up a small proportion of COVID-19 statistics because of factors such as asymptomatic infections or the underdiagnosis of clinically silent and mild cases (12). However, a significant number of children and adolescents have been severely affected by COVID-19, and the trend for pediatric cases is increasing in many countries (12). Children with severe COVID-19 experience dyspnea, low oxygen saturation, and acute respiratory distress syndrome or respiratory failure requiring mechanical ventilation, as well as the novel COVID-19-associated multisystem inflammatory syndrome in children (MIS-C) (12,13). MIS-C is a serious illness that can cause multiorgan failure, cardiovascular shock, and potential long-term consequences (14). Systematic reviews and meta-analyses have found that children with obesity are at a higher risk of both severe respiratory disease due to COVID-19 and MIS-C, relative to healthy children (14,15). In order to improve the global understanding of how COVID-19 affects children and which children are at greatest risk of severe illness and MIS-C, there is a need for more structured surveillance and monitoring systems.

## MITIGATING THE RISE IN CHILDHOOD OBESITY

Prior to the COVID-19 pandemic, almost all countries in the world were already off-track in achieving the World Health Organization goals for childhood obesity (1). Considering the evidence of increased levels of childhood obesity and higher risk of severe COVID-19 illness due to childhood obesity, NCD Child harbors a grave concern for the current trajectory. In the coming years, we expect a drastic rise in childhood obesity as an indirect effect of COVID-19, which will lead to increased vulnerability to future epidemics and potential pandemics.

### Mitigating the negative effects of pandemic response

In a pandemic, it is necessary to adopt the most effective and least harmful mitigation strategies while continuing to focus on the health

challenges that existed prior to the outbreak. During lockdown, children should continue to have access to healthy school meals, and policies promoting physical activity should be in place, e.g., activities organized by the school, authorities allowing 60 min/d outside-of-home for exercise. Safe reopening of schools is an essential tool to protect child health and ensure continued education and learning (16). Ensuring social safety nets for vulnerable populations during a pandemic can prevent poverty, support children's and adolescents' access to healthy foods and education, and, in turn, avoid unintended outcomes with detrimental long-term impacts, such as dropping out of school for short-term jobs, early marriages, and teen pregnancies (16).

### Existing challenges and policy gaps

However, decision-makers must also consider existing challenges during a pandemic and the impact on those challenges when implementing new policies. Policy gaps continue to exist with regard to protecting children from obesity, for which action on established evidence-based policies is urgently needed. These policies include taxation and subsidizing schemes that make healthy food products affordable and accessible, lowering the availability and affordability of highly processed unhealthy foods and drinks, and limiting marketing of unhealthy food products, including via online media, front-of-package labeling, and creating a healthy food environment in and surrounding schools (17).

### Childhood obesity is not a political priority

Despite the concerning developments and existing policy gaps, obesity and mental health have not been a political priority lately because of COVID-19's precedence. This is evident, for example, by the disruption of health services, reallocations of budgets to support COVID-19 interventions, and the fact that many LMICs have not included continuing NCD services in their national COVID-19 plans (16). On the global political stage, COVID-19 was the primary theme of the World Health Assemblies in 2020 and 2021; other health topics were discussed but they did not receive the attention that their related burden of disease and global inaction calls for.

### The United Nations Food Systems Summit: An opportunity for change?

The United Nations Food Systems Summit offers another opportunity for change, with the summit's intention to result in "dramatically elevated public discourse about food systems..." and "significant action, with measurable outcomes that enable achievement of the 2030 goals" (18). Such a high-level meeting elevating food systems to a higher priority on the global agenda could inspire national and local action and improve the food environments that children and adolescents

grow and live in. However, with the political outcome document being nonbinding and recognizing the complex nature of the global food systems as well as the diverse range of interests of countries and food producers, the optimism for critical and immediate action will be modest. It is of utmost importance that policies with the intention to protect children from obesity are established in a context free of conflicts of interests so that commercial determinants are appropriately addressed. Additionally, it is a fundamental value of NCD Child to ensure meaningful participation of young people in the creation and implementation of all policies and programs affecting their health.

Childhood obesity is on the rise, and this trajectory has been exacerbated by the COVID-19 pandemic because of decisions made by leaders at different levels, such as heads of state, ministers of health, mayors, United Nations agencies, and school principals and boards. By making global leaders consider the direct and indirect effects of mitigation policies during and after this pandemic and by not losing sight of existing policy gaps in the meantime, we can strive toward a new normal in which the hard-won advances in global child and adolescent health achieved over many past decades are not merely negated by a global rise in childhood obesity and other NCDs. **O**

### CONFLICT OF INTEREST

The authors declared no conflict of interest.

### AUTHOR CONTRIBUTIONS

The guarantors of the study were MH and ZAB. MH conducted the literature review, completed the analysis and interpretation of findings, and wrote the draft of the first manuscript. TN supported the literature review and analysis of findings. All coauthors provided intellectual input and contributed considerably to the analysis and interpretation of findings.

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