

How Much May COVID-19 School Closures Increase Childhood Obesity?

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TO THE EDITOR: In a recent paper titled “COVID-19 Related School Closings and Risk of Weight Gain Among Children,” Rundle et al. (1) proposed the coronavirus disease (COVID-19) pandemic may increase obesity among American children because the pandemic “will likely double out-of-school time this year for many children in the United States and will exacerbate the risk factors for weight gain associated with summer recess.” I add support to Rundle et al.’s (1) argument by demonstrating that doubling of out-of-school time alone may lead to a sizable increase in childhood obesity.

In a 2016 study (2) of a nationally representative panel of kindergarten students, my colleague and I found obesity increased from 8.9% to 11.5% from the fall of kindergarten to spring of second grade. Obesity increased during summer breaks by an average of 0.85 percentage points per month (95% CI: 0.58-1.12) but decreased during each school year. Taking the average summer increase in obesity of 0.85 percentage points per month and extending this pattern over 5 months ($0.85 \times 5 = 4.25$) would project that childhood obesity may be 4.25 percentage points (95% CI: 2.90-5.60) higher after 5 months of

COVID-19 school closures than before the closures began.

The projection of a 4.25-percentage-point (95% CI: 2.90-5.60) increase in childhood obesity demonstrates how important the shift in institutional context from schools to homes is for children’s weight. However, the estimate does not account for other ways in which the COVID-19 pandemic will increase risk factors of childhood obesity. Rundle et al. (1) noted the pandemic increases food insecurity, increases reliance on processed food, and reduces opportunities to exercise outside. Moreover, the pandemic may have effects that reduce the risk for developing childhood obesity. For example, families may eat less frequently in restaurants in response to social-distancing policies. Furthermore, Williamson et al. (3) reported that overweight children were observed to decrease BMI percentile over a period of 28 months, suggesting that over longer periods of time, children who have overweight may lower body weight relative to changes in height.

Studies of summer breaks can provide valuable insights regarding the consequences that parents, policymakers, and public health officials can expect from extended school closures because of the COVID-19 pandemic. The estimated increase in obesity concerns children in the earliest years of elementary school and may not be generalizable to older age groups. This estimate relies on several assumptions. First, the estimate is based on observed patterns of students from the kindergarten class of 2010. However, there is little reason to believe that summer weight patterns have changed

substantially over the past decade. A study (4) using data from the kindergarten class of 1999 found similar trends in children’s BMI over kindergarten, summer, and first grade as those observed in the kindergarten class of 2010. Second, the estimate assumes every month away from school is associated with a consistent increase in childhood obesity. This assumption cannot be tested at this moment, as extended school closures because of the COVID-19 pandemic are unprecedented, but this may be an important area of future research. **O**

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References

1. Rundle AG, Park Y, Herbstman JB, Kinsey EW, Wang YC. COVID-19–related school closings and risk of weight gain among children. *Obesity (Silver Spring)* 2020;28:1008-1009.
2. von Hippel PT, Workman J. From Kindergarten through second grade, US children’s obesity prevalence grows only during summer vacations. *Obesity (Silver Spring)* 2016;24:2296-2300.
3. Williamson DA, Han H, Johnson WD, Stewart TM, Harsha DW. Longitudinal study of body weight changes in children: who is gaining and who is losing weight. *Obesity (Silver Spring)* 2011;19:667-670.
4. von Hippel PT, Powell B, Downey DB, Rowland NJ. The effect of school on overweight in childhood: gain in body mass index during the school year and during summer vacation. *Am J Public Health* 2007;97:696-702.

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