

Offering Breakfast in the Classroom and Children's Weight Outcomes

Erika R. Cheng, PhD, MPA¹; Aaron E. Carroll, MD, MS²

1. Children's Health Services Research, Indiana University School of Medicine, Indianapolis
2. Center for Pediatric and Adolescent Comparative Effectiveness Research, Indiana University School of Medicine, Indianapolis

This is the author's manuscript of the article published in final edited form as:

Cheng, E. R., & Carroll, A. E. (2019). Offering Breakfast in the Classroom and Children's Weight Outcomes. *JAMA Pediatrics*, 173(4), 317–318. <https://doi.org/10.1001/jamapediatrics.2018.5539>

Obesity is a serious health problem for many children in the United States. Approximately 32% of US children aged 2 to 19 years have overweight or obesity (body mass index [BMI] \geq 85th percentile), and nearly 8% of infants and toddlers younger than 2 years have a weight-for-length at the 95th percentile or greater,¹ predisposing them to obesity.^{2,3} Obesity leads to serious, lifelong medical and psychosocial problems and premature death.⁴ These consequences disproportionately affect racial/ethnic minority groups and low-income communities, where obesity is most pronounced.⁵ Despite previous reports that childhood obesity has remained stable or decreased, more recent evidence shows that the prevalence of obesity and severe obesity is unfortunately increasing, especially among preschool-aged children.⁶

Clearly, more efforts to address childhood obesity are needed and will likely require a coordinated and collective effort across multiple sectors that focus on environments where children eat and play. From this perspective, schools are in an ideal position to help change the course of the obesity epidemic. Nearly all children in the United States aged 5 to 17 years are enrolled in school. These children spend more time there than in any other environment outside of their homes. Furthermore, they consume up to 50% of their total daily calories at school. There is no better place to intervene widely on children's diet and nutrition.

Most school initiatives, however, focus on helping students get more food, not less, through federal initiatives that provide free or discounted school meals. The reason for this, of course, is that too many children in the United States also experience food insecurity. Often, the most nutritious food they eat is fed to them by schools. Two of the largest programs are the National School Lunch Program (NSLP), which was originally designed to address widespread nutritional deficiencies in youth, and the School Breakfast Program (SBP), which provides federally subsidized breakfasts to children in schools and childcare centers. Rates of participation in these programs are high: the NSLP serves more than 30 million children every day in 98% of the nation's public schools,⁷ and although participation in the SBP falls well behind that of the NSLP, 12.2 million children consume breakfast in school every day as part of the program.⁸

Given that fewer children participate in school breakfast programs than school lunch programs, many school districts have implemented Breakfast in the Classroom, a program that offers breakfast in the classroom to all students at the start of the school day instead of the cafeteria before school. The intent of offering breakfast in the classroom is to reach students who are unable to arrive early to school or may feel stigma eating a subsidized meal.

The focus on breakfast is interesting, because many also believe that eating a healthy breakfast may help improve rates of obesity or overweight. Efforts to expand the SBP were sometimes predicated on the common adage that breakfast is the most important meal of the day. Proponents argue that offering breakfast to all students confers positive benefits to overall academic performance and school attendance.⁹ They also suggest that eating breakfast increases metabolic rate, helping people burn more calories throughout the day, while skipping it increases food consumed at subsequent meals. However, this is far from certain. It is true that some observational research shows associations of breakfast consumption with effective weight management,¹⁰ but these findings have not consistently held in randomized clinical trials.¹¹

In this month's issue of *JAMA Pediatrics*, Polonsky et al¹² present findings from a cluster randomized clinical trial on the effect of breakfast in the classroom on a host of children's weight outcomes. Over 2.5 years, the authors examined fourth-grade to sixth-grade students within 16 schools in Philadelphia, Pennsylvania, that were randomized to offer either breakfast in the cafeteria prior to the beginning of the school day or breakfast in the classroom. One result was consistent with prior research: offering breakfast in the classroom substantially increased overall participation in the SBP over the course of the study. However, the study also showed that the Breakfast in the Classroom initiative increased both incident and prevalent obesity.¹²

In the midst of a childhood obesity epidemic, it is important to consider the effect of offering universal breakfast in the classroom on children's weight outcomes. To date and to our knowledge, this question has not been rigorously examined. Limited cross-sectional data show that students who are provided breakfast in the classroom consume more calories in the morning than students who are not offered breakfast in the

classroom,¹³ but other observational research did not find an association between breakfast in the classroom and increased body mass index or obesity prevalence in children.¹⁴

The study by Polonsky et al¹² argues against the belief that feeding kids more in the morning confers healthier weight status among children. Perhaps, as the authors suggest, some children who are offered breakfast at school have other opportunities to eat prior to school and consume excess calories when offered another meal. More troubling is the finding in the study by Polonsky et al¹² that the breakfast in the classroom initiative had an effect on the incidence of obesity but not on the incidence of overweight and obesity combined. This indicates that offering breakfast in the classroom to children with excess weight, who may be less likely to self-regulate their intake in the presence of food, may lead them to consume additional, unneeded calories that increase their risk for obesity.

However, it would be a mistake to use this study¹² to argue that the school breakfast program does more harm than good. Federal programs like the SBP and the NSLP help address the serious problem of child hunger for low-income and food-insecure students, who receive most of these meals. We must remember that these programs were designed to counter food insecurity, not combat obesity, and offering students subsidized meals at school is obviously important if they would otherwise go hungry. The study by Polonsky et al¹² confirms that modifying the existing SBP to offer breakfast in the classroom is likely to increase SBP participation, a clear benefit to those students.

But their study¹² also highlights the challenge of trying to address children's hunger while also combating the childhood obesity epidemic. Clearly, the findings also caution us to be aware of the potential harm that might arise by encouraging breakfast consumption to everyone without solid evidence of its value¹⁵ or understanding what children might be eating outside of the home. This study was not designed to examine what foods children consumed for breakfast, so conclusions with regard to the influence of breakfast type on weight gain cannot be determined. The findings are also limited to a specific population of urban middle-school aged children in Philadelphia. Additional research across a variety of populations with a focus on key dietary factors is crucial to fully assessing whether current school-based breakfast programs are appropriate for obesity prevention.

More children in the United States have overweight or obesity than in any other time in history. We need to pair the positive outcomes of Breakfast in the Classroom, which are many, with interventions that simultaneously provide nutrition education for teachers and families and limit children's consumption of lower-quality breakfasts inside and outside of school. Getting more kids to eat a nutritional meal is a worthy goal, no matter where it occurs, but for many it must be coupled with a reduction in nonnutritive calories. Instead of just universally encouraging children to eat more breakfasts, we might also talk about what a healthy breakfast looks like. Reducing both child hunger and obesity are important, and we must do both, but it is essential to make sure that efforts to improve one outcome do not worsen the other.

REFERENCES

1. National Academies of Sciences, Engineering, and Medicine. Obesity in the early childhood years: state of the science and implementation of promising solutions, workshop summary. <https://www-nap-edu.proxy.ulib.uits.iu.edu/catalog/23445/obesity-in-the-early-childhood-years-state-of-the-science>. Published 2016. Accessed January 18, 2019.
2. Taveras EM, Rifas-Shiman SL, Belfort MB, Kleinman KP, Oken E, Gillman MW. Weight status in the first 6 months of life and obesity at 3 years of age. *Pediatrics*. 2009;123(4):1177-1183. doi:[10.1542/peds.2008-1149](https://doi.org/10.1542/peds.2008-1149)
3. McCormick DP, Sarpong K, Jordan L, Ray LA, Jain S. Infant obesity: are we ready to make this diagnosis? *J Pediatr*. 2010;157(1):15-19. doi:[10.1016/j.jpeds.2010.01.028](https://doi.org/10.1016/j.jpeds.2010.01.028)
4. Ebbeling CB, Pawlak DB, Ludwig DS. Childhood obesity: public-health crisis, common sense cure. *Lancet*. 2002;360(9331):473-482. doi:[10.1016/S0140-6736\(02\)09678-2](https://doi.org/10.1016/S0140-6736(02)09678-2)
5. Ogden CL, Carroll MD, Fryar CD, Flegal KM. Prevalence of obesity among adults and youth: United States, 2011-2014. *NCHS Data Brief*. 2015;219(219):1-8.
6. Skinner AC, Ravanbakht SN, Skelton JA, Perrin EM, Armstrong SC. Prevalence of obesity and severe obesity in US children, 1999–2016. *Pediatrics*. 2018;141(3):e20173459. doi:[10.1542/peds.2017-3459](https://doi.org/10.1542/peds.2017-3459)[PubMedGoogle ScholarCrossref](#)

7. Food and Nutrition Service, US Department of Agriculture. National School Lunch Program: participation and lunches served 2018. <http://www.fns.usda.gov/sites/default/files/pd/slsummar.pdf>. Accessed January 22, 2019.
8. Food and Nutrition Service, US Department of Agriculture. School Breakfast Program participation and meals served 2018. <http://www.fns.usda.gov/sites/default/files/pd/sbsummar.pdf>. Accessed January 22, 2019.
9. Imberman SA, Kugler AD. The effect of providing breakfast in class on student performance. *J Policy Anal Manage*. 2014;33(3):669-699. doi:[10.1002/pam.21759](https://doi.org/10.1002/pam.21759)
10. Odegaard AO, Jacobs DR Jr, Steffen LM, Van Horn L, Ludwig DS, Pereira MA. Breakfast frequency and development of metabolic risk. *Diabetes Care*. 2013;36(10):3100-3106. doi:[10.2337/dc13-0316](https://doi.org/10.2337/dc13-0316)
11. Dhurandhar EJ, Dawson J, Alcorn A, et al. The effectiveness of breakfast recommendations on weight loss: a randomized controlled trial. *Am J Clin Nutr*. 2014;100(2):507-513. doi:[10.3945/ajcn.114.089573](https://doi.org/10.3945/ajcn.114.089573)
12. Polonsky HM, Bauer KW, Fisher JO, et al. Effects of a breakfast in the classroom initiative on obesity in urban school-aged children: a cluster randomized controlled trial [published online February 25, 2019]. *JAMA Pediatr*. doi:[10.1001/jamapediatrics.2018.5531](https://doi.org/10.1001/jamapediatrics.2018.5531)
13. Van Wye G, Seoh H, Adjoian T, Dowell D. Evaluation of the New York City breakfast in the classroom program. *Am J Public Health*. 2013;103(10):e59-e64. doi:[10.2105/AJPH.2013.301470](https://doi.org/10.2105/AJPH.2013.301470)
14. Corcoran SP, Elbel B, Schwartz AE. The effect of breakfast in the classroom on obesity and academic performance: evidence from New York City. *J Policy Anal Manage*. 2016;35(3):509-532. doi:[10.1002/pam.21909](https://doi.org/10.1002/pam.21909)

15. Edefonti V, Rosato V, Parpinel M, et al. The effect of breakfast composition and energy contribution on cognitive and academic performance: a systematic review. *Am J Clin Nutr*. 2014;100(2):626-656. doi:[10.3945/ajcn.114.083683](https://doi.org/10.3945/ajcn.114.083683)