

Documented Success and Future Potential of the Healthy, Hunger-Free Kids Act

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THE HEALTHY, HUNGER-FREE KIDS ACT (HHFKA) OF 2010 required the US Department of Agriculture (USDA) to create updated school meal and competitive food standards that aligned with the concurrent (2010) version of the Dietary Guidelines for Americans.¹ The resulting regulations significantly strengthened the nutrition standards for school breakfast and lunch,² and introduced new nutrition standards for foods sold outside of the school meal program during the school day (ie, Smart Snacks in School).³ Further, the USDA articulated new expectations for local school wellness policies such as limiting student exposure to unhealthy food marketing and increasing district accountability for policy implementation and progress toward goals.⁴

Implementation of the strengthened school meal nutrition standards was designed to occur in stages. Several key changes went into effect at the beginning of the 2012-2013 school year, including increases in the availability and portion sizes of fruits and vegetables, limits to total calories per meal, and the removal of *trans* fats.² The new regulations concerning whole grains and sodium were phased in more slowly. Half of the grains served in lunches were required to be at least 50% whole grain (ie, whole-grain rich) in 2012; by 2014-2015, all grains needed to meet this standard. The sodium limits were scheduled to be phased in over 10 years: Target 1 during the 2014-2015 school year, Target 2 during 2017-2018, and Target 3 during 2022-2023. Target 3 reached the Institute of Medicine (2004) recommendations based on Tolerable Upper Intake limits by age group.⁵

Despite their original efforts to implement changes gradually, during 2018 the USDA reversed course and weakened some of the school meal standards.⁶ Notably, they reverted the required quantity of whole-grain-rich foods from 100% to 50% of grains offered. They also delayed the Target 1 and Target 2 sodium standards until the 2023-2024 and 2024-

2025 school years, respectively, and eliminated the Target 3 sodium standard. The USDA reported that these changes were in response to concerns expressed by program operators.⁶ Specifically, there were concerns that providing healthier foods to students would result in increased food waste in the cafeteria. There were also worries that schools would lose money from the potentially higher costs of healthier foods and/or decreased school meal participation rates. An additional reason cited for the rollbacks was that the food industry needed more time to develop new products to meet the stronger nutrition standards. However, as discussed below, there is accumulating evidence to suggest that these concerns may be unfounded.

EVIDENCE OF POSITIVE INFLUENCE OF THE HHFKA ON SCHOOL MEALS

In this issue of the *Journal*, Gearan and Fox report results from the first national study postimplementation of the HHFKA, examining the influence of the new standards on the quality of school meals.⁷ This study was part of the USDA's School Nutrition and Meal Cost Study (SNMCS), which used a two-stage sampling approach to select a nationally representative sample of public schools in the 48 contiguous United States and the District of Columbia (N=1,248 schools).⁸ Data were collected during the winter/spring 2014-15 school year from school food administrators, students enrolled in the participating schools, and their parents. The SNMCS collected data on school meal program operations and the nutrition environment⁹; foods and nutrients in the school meals and afterschool snacks¹⁰; school meal costs and revenues¹¹; and student participation, satisfaction, plate waste, and dietary intakes.¹²

Gearan and Fox⁷ observed significant improvements in the quality of school meals after implementation of the HHFKA by comparing data from the SNMCS with the fourth School Nutrition Dietary Assessment Study, which also included cross-sectional, nationally representative data.¹³ Using Healthy Eating Index (HEI) 2010 scores to measure alignment with the concurrent Dietary Guidelines for Americans,^{14,15} this study found that HEI scores increased from 58% of the maximum possible score preimplementation of the HHFKA to 82% of the maximum score postimplementation for lunches. Greater quantities of total fruit, whole fruit, whole grains, and dairy, and limited availability of refined grains and empty calories resulted in nearly perfect scores postimplementation. Similar improvements were also observed for the quality of school breakfasts. Particularly noteworthy were the increases in whole grains, which improved from 25% of the maximum HEI score preimplementation to 95% of

the maximum HEI score postimplementation for school lunches, and with similar gains for school breakfasts. These improvements were attributed to the HHFKA's whole grain requirements, which were still fully implemented at the time of the study (ie, all grains were required to be whole-grain rich to comply). Only moderate improvements in the sodium content of the school lunches were observed, with HEI scores increasing from 10% of the maximum preimplementation to 27% of the maximum postimplementation. However, with sodium HEI scores already high for breakfast preimplementation (72% of maximum), nearly perfect scores were achieved for breakfast postimplementation (93% of maximum). Overall, this study suggests that schools were able to develop and prepare menus that aligned with the updated school meal standards.

INCREASED PLATE WASTE CONCERNS ARE UNSUPPORTED

A key feature of the new school meal pattern was that students were provided larger portion sizes of fruits and vegetables and were required to select a fruit or vegetable with each reimbursable school meal.² In response, concerns were raised about possible increases in food waste.¹⁶ However, early regional studies that compared students' consumption before and after implementation of the HHFKA found that overall school food waste did not increase as a result of the healthier standards. Two studies, conducted by Cohen and colleagues¹⁷ and Schwartz and colleagues,¹⁸ both found increased selection of fruits and increased consumption of entrées and vegetables in schools post-HHFKA compared with preimplementation. A third study by Cullen and colleagues¹⁹ also found increased fruit selection and found no differences in students' waste of fruits, whole grains, or vegetables, although there was a significant increase in legume waste postimplementation compared with preimplementation. Although those studies were geographically limited, additional findings from the nationally representative SNMCS are consistent: The quantity of measured food waste was similar pre- and postimplementation of the HHFKA.¹² The SNMCS found that students participating in the National School Lunch Program (NSLP) consumed meals with higher HEI scores compared with matched nonparticipants (80.1 vs 65.1 out of 100).¹² With the healthier meals available, NSLP participants consumed significantly more whole grains, vegetables, and dairy, and fewer refined grains and empty calories compared with nonparticipants.¹²

Although plate waste did not increase, the persistent level of waste of fruits, vegetables, and milk remains a concern. The SNMCS found that on average, students wasted approximately a third of vegetables and milk, a quarter of fruit/fruit juice and grains, and less than a fifth of combination entrées and meat/meat alternatives.¹² Similar consumption levels were observed in the Child Nutrition Program Operations Study, which was collected by the USDA before the HHFKA from 1991 to 1992, with students wasting on average 25% of their meals overall.²⁰ In general, the alarm over food waste in schools has been warranted, but studies consistently show that food waste was an issue before the HHFKA was implemented and therefore weakening the standards will likely have minimal effects.

HEALTHIER MEALS DO NOT RESULT IN REVENUE OR PARTICIPATION LOSSES FOR SCHOOLS

In the USDA's final ruling rolling back the HHFKA standards, increased costs and decreased participation were both central issues.⁶ Although the nationally representative data from the SNMCS did find that the cost of producing lunches for many schools was greater than the federal reimbursement rate, this study also found that increases in overall revenues helped to offset the cost differences.¹¹ This study found that it did not cost significantly more to produce healthier meals (ie, meals with the highest HEI scores) compared with meals with the lowest nutritional quality scores. These financial results are also consistent with previous research. A national survey of 498 school nutrition directors conducted by the Pew Charitable Trust and Robert Wood Johnson Foundation reported stable or rising revenues.²¹ A smaller, regional study also found that whereas there were initial decreases in revenues in the first year postimplementation of the HHFKA, longer-term revenues were not influenced.²²

Counter to concerns, the SNMCS found that NSLP participation rates were 61% in schools that served the healthiest lunches (as measured by HEI scores) compared with 50% in schools that served the least healthy lunches.¹² In fact, school meal participation was significantly higher in schools with nutrition standards that exceeded the HHFKA regulations.¹² Previous research has also found that participation among students purchasing full price meals remained stable after implementing the HHFKA and increased among students eligible for reduced-price meals.^{22,23} Taken as a whole, these studies suggest that healthier school meals do not negatively influence overall school meal revenues or participation rates.

FEDERAL NUTRITION REGULATIONS AND THE FOOD INDUSTRY

Another reason given by the USDA for rolling back the sodium and whole grain standards was that it was difficult for foodservice directors to procure products that met the standards.⁶ To this point, it is important to recognize the bidirectional nature of influence between the food industry and federal nutrition regulations. In one direction, the food industry influences nutrition regulations through lobbying. In 2011, there were two clear examples of this that influenced the initial healthier school meal standards. First, in response to efforts to limit starchy vegetables to 1 c/week, reports suggested that the National Potato Council and a legislator from Maine argued that potatoes were being unfairly targeted; subsequently, that element of the standards was dropped.^{24,25} Next, the USDA tried to remove a loophole that allowed tomato paste to be credited as a vegetable serving equivalent to the total volume of the tomatoes that created the paste. However, reporting indicated that a leading producer of school pizza, and their legislator from Minnesota, successfully prevented this change, thus allowing pizza sauce to continue to count as a vegetable.^{24,25}

In the other direction, federal nutrition regulations change industry behavior when they incentivize companies to reformulate their products to sell them in schools. This clearly occurred when the Smart Snacks in School standards were released and major snack companies reformulated their leading brands for sale in schools.^{26,27} Similar reformulations that involve increasing whole grains and decreasing sodium

would benefit schools given the concerns cited by meal program operators regarding the limited availability of products that meet the standards.²⁸ Paradoxically, by removing the federal regulation, the scarcity of products that meet the stronger standards likely becomes a self-fulfilling prophesy because there is no longer an incentive for food companies to invest in reformulation.

FUTURE DIRECTIONS FOR SCHOOL MEAL POLICIES

Moving forward, there are several strategies that can be implemented at the state and local level to maintain and build on the success of the HHFKA. Although the current federal political environment has focused primarily on deregulation,²⁹ states can introduce legislation to codify the components of the HHFKA into state law.³⁰ The American Heart Association's Voices for Healthy Kids initiative has identified this type of state action as a policy priority³¹ and has created resources for advocates.³² Similarly, strong school food policies can be adopted at the district level through its required wellness policy. One component of the HHFKA update for school wellness policies is a requirement to review and consider evidence-based strategies to promote student wellness.⁴ Registered dietitian nutritionists who serve on local wellness policy committees can provide valuable information for school administrators and boards of education about the strength of the evidence base supporting strong nutrition standards in schools.

Although plate waste did not increase in response to the HHFKA, it continues to be a concern. To support students in eating more of their lunches, districts should examine the timing and length of their lunch periods. Data suggest that students consume significantly more when food is offered during traditional lunch hours; however, over a third of schools in the United States serve lunch before 11:00 AM.^{9,33} Students also need enough time to eat. Because there are no federal requirements regarding the amount of time that students have to eat lunch, students can have as little as 10 minutes of seated time.³⁴ Research suggests that when lunch periods are at least 30 minutes long there is significantly less food waste.³⁴ In addition, to ensure students are not spending their lunch period in line, schools can increase the number of serving lines, improve cashier efficiency, and use automated point of sales systems.³⁵ At the elementary school level, recess before lunch may potentially improve school meal consumption, possibly by preventing students from rushing through lunch to play or by delaying the start time of lunch to a more traditional lunch time.³³ Lastly, focusing on the palatability of the healthier school meals can lead to significant increases in consumption.^{36,37} School districts can provide healthier versions of familiar, culturally appropriate foods, offer student taste-tests to try new recipes, and partner with local chefs, culinary schools, or nutrition and dietetics programs with student interns to create new recipes and enhance the skills of existing cafeteria staff to improve school meal consumption.

CONCLUSIONS

The present work by Gearan and Fox⁷ suggests that the HHFKA has led to meaningful improvements in the quality of school meals. This research, along with multiple other studies, highlights the importance of having strong federal

school meal standards and refutes the concerns used to justify weakening the whole grain and sodium standards. Future research and policy efforts should focus on developing and implementing cost-effective strategies to improve children's consumption of the healthier school meals.

References

1. Healthy, Hunger-Free Kids Act of 2010. Pub L No. 111-296, 124 Stat 3183.
2. US Department of Agriculture. Nutrition Standards in the National School Lunch and School Breakfast Programs: Final rule. 77 *Federal Register* 4088-4167. 2012. Codified at 7 CFR §210.0.
3. US Department of Agriculture, National School Lunch Program and School Breakfast Program: Nutrition Standards for All Foods Sold in School as Required by the Healthy, Hunger-Free Kids Act of 2010, 81 *Federal Register* 50131. 2016. Codified at 7 CFR §210.11.
4. US Department of Agriculture. Local School Wellness Policy Implementation Under the Healthy, Hunger-Free Kids Act of 2010: Final rule. 81 *Federal Register* 50151. 2016. Codified at 7 CFR §210.31.
5. Institute of Medicine, Food and Nutrition Board. *Dietary Reference Intakes for Water, Potassium, Sodium, Chloride, and Sulfate*. Washington, DC: The National Academies Press; 2005.
6. US Department of Agriculture. Child Nutrition Programs: Flexibilities for milk, whole grains, and sodium requirements: Final rule. 83 *Federal Register* 63775. 2018. Codified at 7 CFR §210.0.
7. Gearan EC, Fox MK. Updated nutrition standards have significantly improved the nutritional quality of school lunches and breakfasts. *J Acad Nutr Diet*. 2020;120(3):363-370.
8. Zeidman E, Beyler N, Gearan E, et al. School Nutrition and Meal Cost Study: Study design, sampling, and data collection. <https://www.mathematica.org/our-publications-and-findings/publications/school-nutrition-and-meal-cost-study-study-design-sampling-and-data-collection>. Accessed November 22, 2019.
9. Forrestal S, Cabili C, Dotter D, et al. School Nutrition and Meal Cost Study final report volume 1: School Meal Program operations and school nutrition environments. <https://www.mathematica.org/our-publications-and-findings/publications/school-nutrition-and-meal-cost-study-final-report-volume-1-school-meal-program-operations-and-school>. Accessed November 22, 2019.
10. Gearan E, Fox MK, Niland K, et al. School Nutrition and Meal Cost Study final report volume 2: Nutritional characteristics of school meals. <https://www.mathematica.org/our-publications-and-findings/publications/school-nutrition-and-meal-cost-study-final-report-volume-2-nutritional-characteristics-of-school>. Accessed November 22, 2019.
11. Logan CW, Tran V, Boyle M, Enver A, Zeidenberg M, Mendelson M. School Nutrition and Meal Cost Study final report volume 3: School meal costs and revenues. <https://www.mathematica.org/our-publications-and-findings/publications/school-nutrition-and-meal-cost-study-final-report-volume-3-school-meal-costs-and-revenues>. Accessed November 22, 2019.
12. Fox MK, Gearan E, Cabili C, et al. School Nutrition and Meal Cost Study final report volume 4: Student participation, satisfaction, plate waste, and dietary intakes. <https://www.mathematica.org/our-publications-and-findings/publications/school-nutrition-and-meal-cost-study-final-report-volume-4-student-participation-satisfaction-plate>. Accessed November 22, 2019.
13. Fox MK, Condon E. School Nutrition Dietary Assessment Study IV: Summary of findings. <https://www.fns.usda.gov/school-nutrition-dietary-assessment-study-iv>. Accessed November 22, 2019.
14. Guenther PM, Casavale KO, Reedy J, et al. Update of the Healthy Eating Index: HEI-2010. *J Acad Nutr Diet*. 2013;113(4):569-580.
15. US Departments of Agriculture and Health and Human Services. *Dietary Guidelines for Americans, 2010*. 7th ed. Washington, DC: US Government Printing Office; 2010. <http://www.cnpp.usda.gov/dietaryguidelines.htm>. Accessed September 12, 2019.
16. Mitka M. Meal programs questioned. *JAMA*. 2012;308(18):1849-1849.
17. Cohen JF, Richardson S, Parker E, Catalano PJ, Rimm EB. Impact of the new US Department of Agriculture school meal standards on food selection, consumption, and waste. *Am J Prev Med*. 2014;46(4):388-394.

18. Schwartz MB, Henderson KE, Read M, Danna N, Ickovics JR. New school meal regulations increase fruit consumption and do not increase total plate waste. *Child Obes.* 2015;11(3):242-247.
19. Cullen KW, Chen T-A, Dave JM. Changes in foods selected and consumed after implementation of the new National School Lunch Program meal patterns in southeast Texas. *Prev Med Rep.* 2015;2:440-443.
20. St Pierre R, Fox MK, Puma M, Glantz F, Moss M. Child Nutrition Program Operations Study: Second year report. <https://www.fns.usda.gov/child-nutrition-program-operations-study-second-year-report>. Accessed November 22, 2019.
21. Pew Charitable Trust and Robert Wood Johnson Foundation. School meal programs innovate to improve student nutrition. http://www.pewtrusts.org/~media/assets/2016/12/school_meal_programs_innovate_to_improve_student_nutrition.pdf. Accessed September 3, 2019.
22. Cohen JF, Gorski MT, Hoffman JA, et al. Healthier standards for school meals and snacks: Impact on school food revenues and lunch participation rates. *Am J Prev Med.* 2016;51(4):485-492.
23. Vaudrin N, Lloyd K, Yedidia MJ, Todd M, Ohri-Vachaspati P. Impact of the 2010 US Healthy, Hunger-Free Kids Act on school breakfast and lunch participation rates between 2008 and 2015. *Am J Public Health.* 2018;108(1):84-86.
24. Nestle M. *Food Politics: How the Food Industry Influences Nutrition and Health (10th anniversary edition)*. Berkeley, CA: University of California Press; 2013.
25. Schwartz C, Wootan MG. How a public health goal became a national law: The Healthy, Hunger-Free Kids Act of 2010. *Nutr Today.* 2019;54(2):67-77.
26. Harris JL, Hyary M, Schwartz MB. Effects of offering look-alike products as Smart Snacks in schools. *Child Obes.* 2016;12(6):432-439.
27. Jahn JL, Cohen JF, Gorski-Findling MT, et al. Product reformulation and nutritional improvements after new competitive food standards in schools. *Public Health Nutr.* 2018;21(5):1011-1018.
28. SNA Comments on USDA School Meal Rule. <https://schoolnutrition.org/news-publications/press-releases/2017/sna-comments-on-usda-school-meal-rule/>. Accessed October 7, 2019.
29. Bleich SN. Food policy in the era of Trump: Limits to deregulation. *Prev Med.* 2018;113:13-14.
30. Robert Wood Johnson Foundation. Laws for school snack foods and beverages vary widely from state to state. <http://foods.bridgingthegapresearch.org/>. Accessed September 3, 2019.
31. American Heart Association. Voices for Healthy Kids: 2018-2019 Policy Levers. <https://voicesforhealthykids.org/wp-content/uploads/2018/08/Voices-for-Healthy-Kids-2018-2019-Policy-Agenda-FINAL.pdf>. Accessed September 3, 2019.
32. American Heart Association. Voices for Healthy Kids: Schools. <https://voicesforhealthykids.org/schools/>. Accessed September 12, 2019.
33. Chapman LE, Cohen J, Canterberry M, Carton TW. Factors associated with school lunch consumption: Reverse recess and school "brunch." *J Acad Nutr Diet.* 2017;117(9):1413-1418.
34. Cohen JF, Jahn JL, Richardson S, Cluggish SA, Parker E, Rimm EB. Amount of time to eat lunch is associated with children's selection and consumption of school meal entrée, fruits, vegetables, and milk. *J Acad Nutr Diet.* 2016;116(1):123-128.
35. Conklin MT, Lambert LG, Anderson JB. How long does it take students to eat lunch? A summary of three studies. *J Child Nutr Manage.* 2002;26(2).
36. Cohen JF, Richardson SA, Cluggish SA, Parker E, Catalano PJ, Rimm EB. Effects of choice architecture and chef-enhanced meals on the selection and consumption of healthier school foods: A randomized clinical trial. *JAMA Pediatr.* 2015;169(5):431-437.
37. Cohen JF, Smit LA, Parker E, et al. Long-term impact of a chef on school lunch consumption: Findings from a 2-year pilot study in Boston middle schools. *J Acad Nutr Diet.* 2012;112(6):927-933.

For more information on the subject discussed in this article, see Sites in Review on page 477.

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