

BACKGROUND

In the Fall of 2009, British chef Jamie Oliver introduced his “*Food Revolution*” program in Huntington, West Virginia. As part of his goal to bring healthier foods to youth, he and his team worked with Central City Elementary to revise the school lunch menus and remove flavored milk. The new menus were intended to include only fresh and made-from-scratch items, eliminating the use of processed foods. This report summarizes an evaluation of the short-term implementation and impact of this school lunch program.

Huntington was chosen for the Food Revolution program because the city was included in a metropolitan region spanning WV, Ohio, and Kentucky that was deemed one of the unhealthiest in the US based on 2006 survey data. However, it is important to note that in 2008 WV passed new Standards for School Nutrition, becoming the first state in the nation to implement the Institute of Medicine's guidelines for food in schools¹.

This evaluation of the Food Revolution school lunch program was designed to answer 7 questions:

1. Are the new menu items acceptable to the students?
2. Do the new menus impact lunch participation?
3. Does removal of flavored milk impact milk consumption?
4. How do teachers perceive the new menus?
5. Do the new menus impact the workload for food service staff?
6. Do the new menus impact meal costs?
7. Do the new menus meet the federal and state nutrition guidelines?

METHODS

Surveys for students, teachers, and food service staff were developed based on: (a) discussions with staff from Jamie Oliver's Food Revolution program, the WV Department of Education, and the WV Bureau for Public Health, and (b) review of nutrition-related questionnaires in the literature. The activities associated with this evaluation were reviewed by the WVU Institutional Review Board.

Student Surveys: 58-items assessed perceptions of 2 weeks of Food Revolution and standard lunch meals, including 10 entrées, 10 side dishes, and 4 dessert items for each lunch program.

Teacher Surveys: 17-items assessed perceptions of the Food Revolution and standard lunch items.

Cook Surveys: 23-items assessed perceptions of Food Revolution and standard lunch items, time needed for food preparation, cooking skills, and food safety concerns.

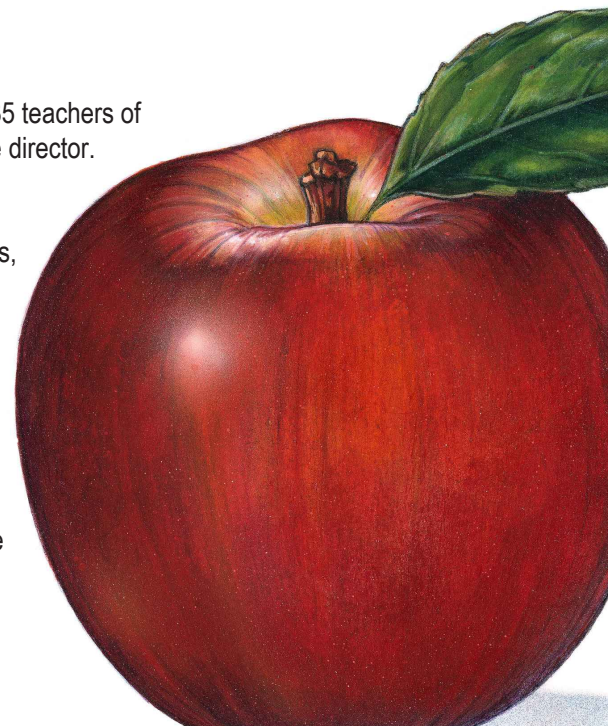
Food Service Director Survey: 29-items assessed purchasing of ingredients, meal preparation, and perceptions of Food Revolution and standard lunch items.

RESULTS

Surveys were received from 109 fourth and fifth grade students (53% girls, 47% boys), 35 teachers of students in kindergarten through fifth grade, 6 school cooks, and the county food service director.

Answers to the Evaluation Questions:

1. **Acceptability to students.** As shown in Figure 1, student ratings of the entrees, sides, and desserts were significantly higher for the standard lunch items than the Food Revolution items. Overall, 77% of the students indicated they were “very unhappy” with the new foods served at school. However, the program appeared to be effective at introducing new foods to students: 66% reported they had tried new foods because of the Food Revolution program.
2. **Lunch participation.** Average lunch participation rates were compared for 2 months before and after introduction of the Food Revolution menus. The average participation rate was 75% during the 2 months of standard meals and decreased to 66% during the 2 months of Food Revolution meals ($p < .001$).



- Milk Consumption.** Average milk consumption rates were compared for 2 months before and after introduction of the Food Revolution menus. Milk consumption averaged 632 units daily during the 2 months of standard lunch meals and 472 units daily during the Food Revolution meals. This reflects a 25% decrease in milk consumption by students during the initial Food Revolution period.
- Teacher perceptions.** Teacher ratings of taste, appearance, and amount of food are provided in Figure 2. There were no significant differences in their ratings for the standard and Food Revolution meals. However, teachers did perceive the Food Revolution meals to be significantly more nutritious than the standard school meals ($p < .001$).

Figure 1.
Student Ratings of Lunch Items

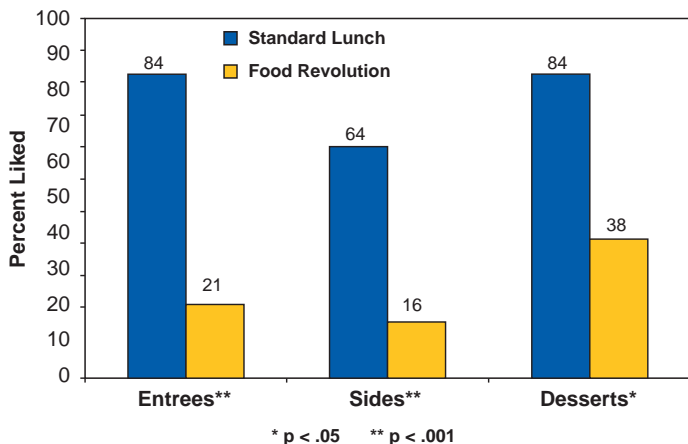
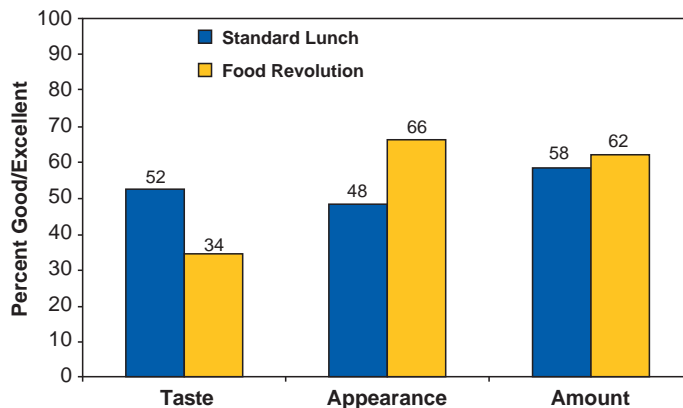


Figure 2.
Teacher ratings of Standard Lunch and Food Revolution meals.



- Food service workload and costs.** The majority of cooks (83%) reported a higher preparation time for Food Revolution meals and estimated an additional hour was needed each day; all cooks perceived the preparation to be more difficult. In addition, 67% reported food safety concerns related to raw chicken and storage of tomatoes in particular. None of the cooks identified a change in their cooking skills after the introduction of the Food Revolution meals. 83% of the cooks rated the taste of the standard school meals as good or excellent, while 50% of the cooks rated the taste of the Food Revolution meals as good and the remaining 50% rated taste as fair or poor. Labor and ingredient costs were identified as higher for the Food Revolution meals, and new equipment (food processors, blenders) was required, but specific cost calculations were not included in this evaluation.
- Compliance with nutrition guidelines.** Three weeks of Food Revolution menus were subjected to nutrient analysis using NUTRIKIDS® Nutritional Analysis software. The analysis indicated that total fat and saturated fat were above the USDA targets, with values of 31.24% (target <30%) and 12.87% (target <10%), respectively. However, calcium, vitamin A, vitamin C, and iron were well above the USDA targets. The values for sodium and fiber, which are set by WV and difficult to meet using processed foods, were also within the guidelines: 924 mg of sodium (target ≤ 1100 mg) and 8.51 gm of fiber (target ≥ 6 gm).

CONCLUSIONS

This report provides findings from the initial evaluation of the acceptability and impact of the Food Revolution program in Central City Elementary School. After several weeks of exposure to the Food Revolution meals, students voiced a strong preference for the standard school lunch entrees, side dishes and desserts. Notably, student participation rates for lunch declined during this time, as did student milk consumption. However, students did report trying new foods as a result of the program. Unlike students, teachers perceived that the two meal plans were comparable in taste, but they perceived the Food Revolution meals as more nutritious—a perception that was partially supported by the nutrient analysis. Cooks reported increased food preparation time and a preference for the taste of typical school meals, and increased costs in labor and ingredients were noted by the food service director.

Overall, the findings for the initial evaluation of the impact of the Food Revolution program suggest that the new menus were not well-accepted and had a negative impact on meal participation and milk consumption, despite some benefits identified through the nutrient analysis. It is important to note that this evaluation reflects only the short-term effects of the program; continuing to evaluate the impact on students and staff over a longer period of time is recommended to identify any longer-term changes in acceptability, burden, and nutrition.

¹Institute of Medicine (2007) Nutrition Standards for Foods in Schools: Steps Toward Healthier Youth in America. National Academies Press, Washington, DC.