What’s on Your Child’s School Lunch Tray?

Food selections and food intake patterns of elementary school students

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Background

• The Hawaii Department of Health’s Healthy Hawaii Initiative (HHI) has partnered with the Hawaii Department of Education to develop a three-year Model Schools program with 9 pilot schools.
• In recent years, the school food environment has received increasing attention as an important setting to address childhood nutrition. One HHI Model School is working to enhance the quality of their nutrition education program and has collaborated with the HHI Evaluation Team to collect and analyze cafeteria data.

Objectives

Part 1: Food Selection (Grades 3-5)
• To determine what food items students chose at lunch time when offered an option. Students in grades 3-5 may choose 3, 4, or 5 food items.

Part 2: Plate Waste (Grades K-2)
• To identify food items that generated the greatest amount of waste. Students in grades K-2 are served all food items on their tray.

Evaluation Methods

Part 1 - Food Selection (n=317, Gr. 3-5)
• Direct observation of lunch trays before consumption
• Total count (frequency) of food items selected using handheld counters

Part 2 – Plate Waste (n=354, Gr. K-2)
• Assessment of digital photos using 2 independent raters (4-point scale)
• Measurement in grams of each tray after consumption (using digital scales)

Results

Part 1 Results: Food Selection (Observations using handheld counters)

<table>
<thead>
<tr>
<th>Entrée</th>
<th>Bread</th>
<th>Fruits</th>
<th>Vegetables</th>
<th>Milk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 1 (n=161)</td>
<td>100% (macaroni)</td>
<td>83.7% (apples)</td>
<td>53% (chicken)</td>
<td>51.5% (fat free chocolate milk)</td>
</tr>
<tr>
<td>Day 2 (n=176)</td>
<td>100% (turkey)</td>
<td>80% (raisin roll)</td>
<td>60% (corn/green beans)</td>
<td>51.1% (fat free chocolate milk)</td>
</tr>
</tbody>
</table>

Part 2 Results: Plate Waste (Measurements using a digital scale)

<table>
<thead>
<tr>
<th>Observed school day</th>
<th># of plates observed</th>
<th>Average weight of trays before eating in grams</th>
<th>Weight of discarded food in grams (Mean/SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 1 (n=176)</td>
<td>173</td>
<td>321 g</td>
<td>155.6 g (87.8)</td>
</tr>
<tr>
<td>Day 2 (n=190)</td>
<td>181</td>
<td>329 g</td>
<td>165.5 g (79.3)</td>
</tr>
</tbody>
</table>

Part 2 Results: Consumption Levels (Photographs coded on a 4-point scale)

Conclusions

• The three methods of measurements (photography, digital scale, direct observation) were effective, low-cost, and easy-to-implement in measuring food selection and plate waste among students.
• More than half of the students chose fruit and vegetables.
• Students were less likely to choose vegetables compared to other food categories (fruit, bread, entrée).
• Approximately half of the food on the lunch plate was discarded.
• Even though healthy options are being served in school, students are not necessarily consuming these healthy food items.

Next Steps

• Results will be shared with the school principal, school staff, Department of Health, Department of Education, and the School Food Services Branch.
• The follow-up phase will begin in April 2013 using the same menu items.
• Student survey results will be integrated with observational data to compare food intake and plate waste behaviors with knowledge and preferences reported on surveys.
• To increase generalizability, we would like to expand the data collection to include a comparison school without a nutrition education intervention.

Acknowledgements

This research is supported by the Tobacco Settlement Fund and the Hawaii Department of Health. The authors would like to acknowledge and thank the University of Hawaii’s Department of Public Health Sciences, the Department of Health, the Department of Education, and the schools participating in the Model Schools 2013 Program. Contact information: Corresponding author: nhoriu@hawaii.edu