1-24-2012

The Effects of Game Based Nutrition Intervention on 5th Graders School Lunch Choices

Adam Ackerman
Karina Eastman
Albert Emery
Paige Georgiadis
Camilo Martinez

See next page for additional authors

Follow this and additional works at: http://scholarworks.uvm.edu/comphp_gallery

Part of the Community Health and Preventive Medicine Commons, and the Health Services Research Commons

Recommended Citation

Ackerman, Adam; Eastman, Karina; Emery, Albert; Georgiadis, Paige; Martinez, Camilo; Reisman, David; Wubeshet, Maramawit; Heusner, Sarah; Homan, Caroline; and Luby, Robert, "The Effects of Game Based Nutrition Intervention on 5th Graders School Lunch Choices" (2012). Gallery of Public Health Projects, University of Vermont College of Medicine. Book 73.
http://scholarworks.uvm.edu/comphp_gallery/73
The Effects of Game Based Nutrition Intervention on 5th Graders School Lunch Choices

Ackerman A.1, Eastman K.1, Emery A.1, Georgiadis P.1, Martinez C.1, Reisman D.1, Wubeshet M.1, Heusner S.3, Homan C.2, Luby R.1
University of Vermont College of Medicine1, City Market 2, Burlington School Food Service3

Introduction
Evidence shows that consumption of fruits and vegetables has health benefits, yet children across the country consume less than levels recommended by the USDA. Van Duyn MA, Pivonka E. Overview of the health benefits of fruit and vegetable consumption for the dietetics professional: selected literature. Study showed that intervention coupled with food-based healthy options provided.

Observations at Flynn Elementary School 9/22/2011

The Burlington School Food Project aims to provide nutritious and appealing meals to all students which meet the NSLP guidelines. Observations demonstrate that although the nutritious and appealing meals to all students which meet the NSLP guidelines. Observations demonstrated that the attitudes of the 5th graders did not influence the choices of the 5th graders. Post-intervention, a significantly higher proportion of 5th graders reported liking the color of vegetables and the texture of fruits as compared to 4th graders. Fourth grade responses did not change, demonstrating that the attitudes of the 5th graders did not influence the choices of the 4th graders. Our intervention was aimed to expose the students to familiar and unfamiliar fruits and vegetables to encourage them to try new healthy foods in the future. Although we observed an increase in the appreciation of fruits and vegetables in the 5th graders, we did not measure an increase in consumption of salad bar items, perhaps due to the fact that some items were not immediately available on the salad bar.

Methodology
We selected a public elementary school that was representative of schools within Burlington, VT. A survey about food choices was given to both the 4th and 5th grades at the school lunch line, and an entertainment component, which consisted of an integrated game that was designed to meet 3 key goals: nutritional education, exposure to both familiar and unfamiliar, healthy food choices available on the school lunch line, and an entertainment component. The intervention was a life-size game using food images as familiar and unfamiliar, healthy food choices available on the school lunch line, and an entertainment component.

The intervention was a life-size game using food images as a game board and students as game pieces. The game consisted of nutritional trivia and taste tests of kiwi, lacto-fermented tomatoes, and cucumber. Tomatoes, and cucumber were used as the intervention.

Our goal was to improve the food choices made by 5th graders eating lunch at school through a game-based intervention. We hypothesized that by presenting fruits and vegetables in a fun and dynamic manner, in conjunction with educational and role-modeling, we could increase the amount and variety of fruits and vegetables consumed by students at lunch.

Result
There were 47 fifth grade students and 36 fourth grade students surveyed pre-intervention, and 44 5th graders and 32 4th graders post-intervention. Statistical analysis was performed using a t-test. Prior to the intervention, 5th graders liked the taste of fruits significantly more than 4th graders (97.9% vs 77.8%, p = 0.009), and also had a significantly higher belief that fruits were good for them (78.7% vs 55.6%, p = 0.028). After the intervention, a significantly higher number of 5th graders liked both the color of vegetables (50.0% vs 31.9%, p = 0.041), and the texture of fruits (32.3% vs 25.5%, p = 0.004) compared to pre-intervention. 4th graders showed no significant changes.

Methodology
We selected a public elementary school that was representative of schools within Burlington, VT. A survey about food choices was given to both the 4th and 5th grades at the school lunch line, and an entertainment component. The intervention was a life-size game using food images as a game board and students as game pieces. The game consisted of nutritional trivia and taste tests of kiwi, lacto-fermented tomatoes, and cucumber. Tomatoes, and cucumber were used as the intervention.

Our goal was to improve the food choices made by 5th graders eating lunch at school through a game-based intervention. We hypothesized that by presenting fruits and vegetables in a fun and dynamic manner, in conjunction with educational and role-modeling, we could increase the amount and variety of fruits and vegetables consumed by students at lunch.

Discussion:
More than half of elementary school students in Burlington are enrolled in the school lunch program, but many are not meeting daily nutrition goals as outlined by the USDA. Our pre-intervention survey demonstrated that a significantly higher proportion of 5th graders liked the taste of fruits and thought fruits were healthy compared to 4th graders. Post-intervention, a significantly higher proportion of 5th graders reported liking the color of vegetables and the texture of fruits as compared to 4th graders. Fourth grade responses did not change, demonstrating that the attitudes of the 5th graders did not influence the choices of the 4th graders. Our intervention was aimed to expose the students to familiar and unfamiliar fruits and vegetables to encourage them to try new healthy foods in the future. Although we observed an increase in the appreciation of fruits and vegetables in the 5th graders, we did not measure an increase in consumption of salad bar items, perhaps due to the fact that some items were not immediately available on the salad bar.

A larger study that introduces regular nutrition lessons and taste tests in classrooms may have a greater effect on students’ attitudes and choices regarding healthy foods.

Limitations of the Study:
The lack of accuracy of self-reporting of the students limited our data analysis. Due to limited time, we were only able to provide one 1 hour intervention, but a longer program may have had a greater effect.

Table 1

<table>
<thead>
<tr>
<th>5th pre</th>
<th>5th post</th>
<th>4th pre</th>
<th>4th post</th>
</tr>
</thead>
<tbody>
<tr>
<td>Like vegetables?</td>
<td>87</td>
<td>86</td>
<td>79</td>
</tr>
<tr>
<td>Like taste</td>
<td>10</td>
<td>77</td>
<td>12</td>
</tr>
<tr>
<td>Like color</td>
<td>32</td>
<td>50</td>
<td>25</td>
</tr>
<tr>
<td>Like texture</td>
<td>13</td>
<td>23</td>
<td>15</td>
</tr>
<tr>
<td>Good for me</td>
<td>74</td>
<td>73</td>
<td>58</td>
</tr>
<tr>
<td>Not like taste</td>
<td>21</td>
<td>16</td>
<td>19</td>
</tr>
<tr>
<td>Not like color</td>
<td>13</td>
<td>14</td>
<td>13</td>
</tr>
<tr>
<td>Not like texture</td>
<td>28</td>
<td>34</td>
<td>31</td>
</tr>
<tr>
<td>Not good for me</td>
<td>4</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

Table 1 5th pre 5th post 4th pre 4th post

- Like vegetables?
- Like taste
- Like color
- Like texture
- Good for me
- Not like taste
- Not like color
- Not like texture
- Not good for me

All values are in percentages

Table 2

<table>
<thead>
<tr>
<th>5th post</th>
<th>Like fruits</th>
<th>Like taste</th>
<th>Like color</th>
<th>Like texture</th>
<th>Good for me</th>
</tr>
</thead>
<tbody>
<tr>
<td>98</td>
<td>98</td>
<td>94</td>
<td>100</td>
<td>93</td>
<td>79</td>
</tr>
<tr>
<td>98</td>
<td>93</td>
<td>78</td>
<td>91</td>
<td>66</td>
<td>77</td>
</tr>
<tr>
<td>95</td>
<td>65</td>
<td>59</td>
<td>59</td>
<td>77</td>
<td>77</td>
</tr>
<tr>
<td>95</td>
<td>65</td>
<td>59</td>
<td>59</td>
<td>77</td>
<td>77</td>
</tr>
</tbody>
</table>

Table 2 5th post

- Like fruits
- Like taste
- Like color
- Like texture
- Good for me

All values are in percentages

Chart 1

Overall Salad Bar Suggestions

- Vegetables include: carrots, tomatoes, cucumbers, potatoes, beets, snap peas, broccoli, collard greens, brussel sprouts, bell peppers, lettuce, red onion, yellow onion, red cabbage, green cabbage, kale, spinach, arugula, romaine lettuce, endive, radicchio, watermelon, cantaloupe, watercress, watercress, watercress, watercress

Chart 2

- Other fruit: mangos, apples, strawberries, 13, plums, peaches, watermelon, 9, limes, 9, blackberries, 29, grapes, 26, blueberries, 28, strawberries, 13, mangoes, 29