Motivating High School Students to Follow Safe Food Handling: An Effective Food Safety Curriculum

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• CDC estimates that each year
  – 1 in 6 Americans (or 48 million people) get sick,
  – 128,000 are hospitalized,
  – 3,000 die of foodborne diseases.

CDC, 2016
Background

- Students could be in one of the at-risk population groups
- More teens involved in food handling (cooking or grocery shopping), as rising number of working moms.
- Students could be current and future foodservice employees

-Larson, Story et al., 2006
Background

-52% thought chicken was cooked thoroughly when the internal temperature reached 100°F.
-62% thought wiping off the cutting board with a clean paper towel between raw meat and bread is enough to remove bacteria.
-71% reported often not washing hands before eating at school cafeteria or restaurant.

-Haapala and Probart, 2004
Positive Deviance

Based on the observation that in every community there are certain individuals whose uncommon practices enable them to find better solutions to problems than their neighbors or colleagues despite having access to the same resources.

Goals:

- Identifying best practice
- Promote the best practice within the community or group.
Curriculum Content

Clean
Cook
Chill
Avoid cross-contamination
Choose safe foods
It only takes as few as 10 E. Coli to make you sick, so even a small amount of bacteria can be harmful.

Link to Biology class:
- Bacteria growth pattern
- Bacteria growth condition
- Bacteria classification
Take-home Worksheets

**CROSS CONTAMINATION**

**CLEAN**

**CHILL**

Take Home Assignment: Check your fridge!

- Does your refrigerator have a thermometer? Y N
- What's the temperature? Y N

- Raw meat/pizza should be stored in the bottom shelf of the fridge. Y N
- How often do you wash your hands? Y N
- When you wash your hands, do you scrub for 20 seconds? Y N

- Use cold water. Y N
- Use soap with 60% alcohol. Y N

- Are your dishes clean? Y N
- Do you wash your hands after handling food? Y N

- Please fill out the form below. Y N
- Put a healthy freezer in the picture showing safe storage practices. Y N

Evidence of problems:

1. Smell
2. Mold or mildew
3. Fungus

What are the reasons for this? Y N

- Smell
- Mold or mildew
- Fungus

- What is the temperature of the fridge? Y N
- Top shelf
- Bottom shelf
Methodology

Phase 1: High school students (n=108) completed web-based surveys, measuring safe food handling knowledge, attitude and behavior.

Phase 2: High school students (n=53) participated in an hour-long food safety education program. Pre/post surveys and take-home tasks were collected.
Phase 1 Results

• 17% knew that food thermometers should be used to determine meat doneness.

However,

• 77% thought pasteurization reduced nutritional value significantly.

• 86% thought home canned goods were always safe.
Phase 1 Results

• 94% thought food safety was very important or somewhat important

• 60% reported they were very or somewhat likely to enroll in a food safety class if offered
Phase 2 Results

**Discussion question:**
Do you know the temperature of your refrigerator? How cold should it be?

**Representative Quote:**
"The fridge is at the right temperature if your food smells fine."
Phase 2 Results

Discussion question:
How do you know when the meat or poultry is done?

Representative Quote:
"My parents will cut (the chicken) and see. If there is no blood in the middle, it is definitely done."
Phase 2 Results

Drying hands with paper towel is more sanitary than a cloth towel

Before: 32%  After: 71%

Color is not an accurate indicator of cooked meat

Before: 26%  After: 82%

Whited, Feng and Bruhn, in preparation
## Phase 2 Results

<table>
<thead>
<tr>
<th></th>
<th>Chill</th>
<th>Cross-Contamination</th>
<th>Choose Safe Food</th>
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</thead>
<tbody>
<tr>
<td>Average correct %</td>
<td>74%</td>
<td>67%</td>
<td>89%</td>
</tr>
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<td>Activity image</td>
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<td><img src="image2.png" alt="Image" /></td>
<td><img src="image3.png" alt="Image" /></td>
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</table>
Conclusion

The target audiences want to learn how to safely handle food and why specific actions should be taken. Props can help dramatize facts on bacteria multiplication or cross contamination

- Take-home tasks
- Visualized bacteria growth
- Videos on chicken washing
Impact of The Positive Deviance Program

- Safe food handling knowledge increases significantly
- Participants are engaged to learn and practice recommended behaviors
- Reported that they would recommend this program to their family and friends
IAFP 2017

Poster Title: Evaluation Of Positive Deviance Food Safety Curriculum Among High School Students: A Pilot Study

• High school teacher delivered
• Mixed-method evaluation
• Observation class lab
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