Assessing Consumer Food Safety Education Programs

Maria Olmedo-Malagon,
Director of Food Safety Education

Amelia Kermis, MPH, CHES
Public Affairs Specialist

USDA/FSIS Office of Public Affairs and Consumer Education
Food Safety Education Staff
Who we are?

**Food Safety Education Staff**

- Located at USDA/FSIS/OPACE
- Coordinates food safety messages development and implementation
- In charge of:
  - Advertising
  - Partnerships
  - Media Outreach
  - Social and Digital Media
  - One-on-one consumer education
Examples of FSES Campaigns

Be Food Safe
Clean.

Be Food Safe
Separate.

Be Food Safe
Cook.

Be Food Safe
Chill.

it GRILL Safe
BEFORE THE GOOD EATING CAN BEGIN

Todo Cuenta
Cuando se Trata de Cuidar a su Familia

Cook It Safe!
1. Read and Follow Package Cooking Instructions.
2. Know When to Use a Microwave or Conventional Oven.
4. Always use a Food Thermometer to Ensure a Safe Internal Temperature.

Learn more at http://fightbac.org/cookit saf e
Kitchen Tasks Regularly Performed by Respondents of 2013 International Food Information Council Foundation Food & Health Survey

- **Wash cutting board(s) with soap & water or bleach**: 89%
- **Separate raw meat, poultry, and seafood from ready-to-eat products**: 77%
- **Use different or freshly-cleaned cutting board for each product (such as raw meat or poultry or produce)**: 67%
- **Use food thermometer to check doneness of meat and poultry items**: 36%
Food Safe Families Campaign
Evaluating Food Safe Families Campaign

- Needed a way to assess how consumers responded to the Food Safe Families campaign: Clean, Separate, Cook, and Chill

- Commissioned Kansas State University Impact of Food Safety Messaging on Consumer Food Handling Behaviors Study
This slide seems a little random can we put it at the end?

W7user, 11/24/2014
Consumer Food Handling: Self-Reported Practices, Behaviors, and Risks

Jeannie Sneed, PhD; Kevin Sauer, PhD; Kevin Roberts, PhD; Diane Duncan-Goldsmith, MS; Emily Patten, MS, RD; Chen-Wei Tao, MS

Department of Hospitality Management and Dietetics

Randy Phebus, PhD and Donka Milke

Food Science Institute
Objective

Summarize consumer food handling practices based on three recent studies:

• National telephone Survey
• Experimental study with video observations
• Focus groups with African American and Latino consumers
Telephone Survey

• Based on FDA Food Safety Survey
• 2500 randomly selected consumers using Random Digit Dial (landline)
• CATI system used to randomize telephone numbers and automatically reschedule follow-ups
• Survey given in English and Spanish
• Data collected March-April 2014
• 100 cell phone surveys, Nov 2014
Key Findings

• 98% report to know how to prepare food safely

• Most reported behaviors have remained consistent with the 2006 and 2010 FDA studies

• More reported to have a thermometer (73% in current study; 66% in 2010; 67% in 2006)
Key Findings, cont.

• Demographics different for cell phone and landline users
  – Younger
  – More children in household
  – More children under 5
  – Fewer adults over 60
  – More males
Key Findings, cont.

Cell phone compared to landline respondents
• More confidence in the safety of food
• More likely to use personal device in kitchen
• Less likely to wash bagged lettuce
• More likely to use produce cleaner for tomatoes
• Less likely to wash cantaloupe
• More likely to use a thermometer
• Less likely to sanitize sponges
Experimental Study

• Control Group (n=41)

• Group 1 (n=41)
  – Received 1 hour training on Food Safe Families content: clean, separate, cook, chill
  – Handouts

• Group 2 (n=41)
  Viewed Ad Council video messages and discussed the meaning of those messages
Study Sample

- Gender—90% female
- Age
  - 47% 25-34 years
  - 52% 35-45 years
- Race—78% white
Procedures

Participants:

• Participated in training session
• Asked to participate in a project to develop quick and easy “kid friendly” recipes
• Completed a cooking session
• Completed food handling practices questionnaire
• Debriefed
Environmental Cues

Everyone

• End-point cooking temperature included on recipe
• Meat package label

Half of each group

• Refrigerator magnets
Data Collection Site

• Condo used only for project
• Equipped with four small cameras
Recipes

• Entrée, contains raw egg
  – Baked Herbed Chicken Nuggets (165 degrees F)
  – World’s Fastest Meatballs (160 degrees F)

• Salad—Super Easy Fruit Salad
Tracer Organism

- Used *Lactobacillus casei*, a non-pathogenic bacteria to track cross contamination
- Ground beef and chicken inoculated prior to food preparation
- Known quantity of inoculate
Sanitized Kitchen
Micro Samples

- Fresh Fruit Salad
- Handles
  - Sink
  - Refrigerator
  - Oven
  - Trash drawer
- Salt Shaker

- Towels
  - Small (dish cloth)
  - Large (hand towel)
- Countertops (2)
Notes:
- asked if she needed to wash cutting boards
- all cutting boards were for retail or TV specification
- prepared dry ingredients first
  - chicken pieces
- asked if there were knives
- asked if there were knives
- did not use knives
- asked often about what utensils/bowls to use, didn’t know how to cut kiwi
Key Findings

• About 90% of ready-to-eat salads were contamination with *L. casei*, with 24% being heavily contaminated

• Kitchen towels were largest source of contamination

• Greater than 82% left contamination on all handles
Key Findings, cont.

• About half washed hands before food preparation
• Over half either did not wash or rinse hands after handling meat packaging and throwing away trash
• Most hand washing did not follow guidelines—warm water, soap, 20 seconds
• Cloth towels used often, paper towels sometimes used more than once
Key Findings, cont.

• More behaviors led to cross contamination for poultry than for beef
• *L. casei* counts on oven handle lower for food safety messages group than for control group
• *L. casei* counts for fruit salad and sink handles lower for food safety messages group than for Ad Council messages group
• Slight positive impact of cues on cross-contamination
Key Findings, cont.

- 80% of countertop samples showed contamination
- 16% did not wash strawberries
- 90 participants used a food thermometer, and 26 of them did so incorrectly
- Cooking temperature on recipe served as a cue, participants asked researcher how to take temperatures
Table 21. Consumer behaviors related to temperature control (n = 123)

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Yes</th>
<th></th>
<th>No</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Have food thermometer in kitchen</td>
<td>88</td>
<td>71.5</td>
<td>35</td>
<td>28.5</td>
</tr>
<tr>
<td>Type of food thermometer</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Digital</td>
<td>21</td>
<td>17.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dial</td>
<td>53</td>
<td>43.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Both</td>
<td>13</td>
<td>10.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have refrigerator thermometer</td>
<td>48</td>
<td>39.0</td>
<td>56</td>
<td>45.5$^a$</td>
</tr>
<tr>
<td>Frequency of checking refrigerator temperatures</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>83</td>
<td>67.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily</td>
<td>5</td>
<td>4.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weekly</td>
<td>5</td>
<td>4.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monthly</td>
<td>27</td>
<td>22.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$^a$18 (14.6%) did not know
### Key Findings, cont.

#### Table 22. Use of food thermometers for specific foods (n=123)

<table>
<thead>
<tr>
<th>Food</th>
<th>M ± SD&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roasts</td>
<td>3.2 ± 1.9</td>
</tr>
<tr>
<td>Steaks</td>
<td>2.7 ± 1.9</td>
</tr>
<tr>
<td>Chicken parts such as breasts or legs</td>
<td>2.7 ± 1.8</td>
</tr>
<tr>
<td>Hamburgers</td>
<td>2.5 ± 1.8</td>
</tr>
<tr>
<td>Baked egg dishes (such as quiche or breakfast casseroles)</td>
<td>2.0 ± 1.8</td>
</tr>
<tr>
<td>Casseroles</td>
<td>1.6 ± 1.4</td>
</tr>
<tr>
<td>Leftovers</td>
<td>1.4 ± 1.1</td>
</tr>
<tr>
<td>Vegetables</td>
<td>1.3 ± 1.0</td>
</tr>
</tbody>
</table>

<sup>a</sup>Responses were given on a 5-point scale with an anchor of “none of the time” for 1, “some of the time” for 3, and “all of the time” for 5.
Key Findings, cont.

• About $\frac{3}{4}$ knew the correct cooking temperature for chicken, but less than half knew proper temperature for reheating leftovers

• 42% reported to use color as doneness indicator

• 32% reported to follow microwave stand times
Key Findings—Ad Council Messages

• Food safety message not conveyed in a clear manner, humor may have lessened importance
• Participants want a specific message
• Ads would not impact behavior
• FoodSafety.gov web site needs more emphasis
Focus Groups

- Kansas City Metropolitan Area—Kansas and Missouri
- Worked with Cooperative Extension Service in both states
- 4 focus groups—2 African American (n=25) and 2 Latino (n=25)
- Questions and sequencing to explore clean, separate, cook, and chill behaviors
Key Findings

Clean

- Both groups wash poultry before cooking
- Latinos use lemon(lime) juice to rinse poultry
- Many do not wash cantaloupe because of rind
- Many wash pre-washed lettuce
- Latinos use vinegar, iodine, Microdyne to wash produce
- African Americans strong proponents of bleach
- Latinos use bleach but also vinegar and lemon juice
Key Findings, cont.

Separate

• Know about need to use separate cutting boards
• Use gloves/tongs, but not because of cross contamination

Cook

• Most have thermometers but don’t use them
• Do not comply with microwave stand time recommendations, mention power variations
Key Findings, cont.

Chill

• Don’t check refrigerator temperatures
• Confusion about refrigerator thermometers
• Thaw foods on the counter or in the sink
Recommendations

• Continue to use Food Safe Family messages: cook, clean, chill, separate
• Emphasize hand washing
• Emphasize need to purchase and use thermometers
• Include temperatures on recipes
• Develop educational materials/programs related to handling produce
Recommendations, cont.

Provide information on:

• Cleaning and sanitizing
  – Use of sponges
  – Use of cleaning products—bleach, vinegar, etc.

• Appropriate thawing

• Microwave stand times
Recommendations, cont.

• Develop messages to reflect changes in food preparation behaviors of consumers; differences in ethnicity
• Study methods of reaching consumers
• Conduct observational studies
• Seek additional information related to minority consumers
Questions
Using the Data from Kansas State University

- Used to guide new Public Service Announcements (PSAs) developed by the Ad Council
- New PSAs emphasis Separate and Cook
- Tone of PSAs became more serious
- Conveys a clear message
- Foodsafety.gov web address emphasized
Public Service Announcements

Salmonella PSA

E. coli PSA
Partnerships: At Risk Audiences
Outreach: Social and Digital Media

- Foodsafety.gov
- Mean Girls Tweet
- Sharknado Tweet
- Facebook
**Outreach:**

**Targeted Media**

---

**Why Americans Refrigerate Eggs and Europeans Don’t**

By LIZ NESPOR ( {@kzy})

July 15, 2014, 9:15 AM ET

1 of 6

Why is it that European eggs are stored on supermarket shelves while American eggs chill in the cold section?

The difference, experts say, has to do with the egg production process.

Unlike European eggs, American eggs are washed and sprayed with a sanitizer immediately after collection, then placed into a cooler. Bringing the eggs back to room temperature would increase the chance of bacterial growth, according to the USDA’s egg grading manual. Bottom line: we have to refrigerate our eggs because our egg distributors do.

But even eggs that are clean on the surface can harbor unsafe bacteria, said Marianne Gravely, a technical expert with USDA’s food safety hotline.

"Up until about 20 years ago, we thought inside the egg was safe. But then we discovered that the chicken can pass salmonella infection through its ovaries to the egg," she said, explaining that refrigerating eggs is an easy safeguard against bacteria wherever you live. Cooking eggs...
Outreach:
Food Safety Discovery Zone
Summary

• Food Safe Families Campaign
  – Research informed consumer outreach

• Partnerships
  – At risk populations
  – Hispanic populations

• Outreach
  – Targeted Media
  – Social and Digital Media
  – Food Safety Discovery Zone
Questions?

Maria Malagon can be reached at Maria.Malagon@fsis.usda.gov

Amelia Kermis can be reached at Amelia.Kermis@fsis.usda.gov