

# Food Safety Behavior of Nutrition Program Graduates: Do They Do... What They Say They Do?

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## Context of Data

- Part of larger study to:
  - Gain consensus among food safety experts on most important behaviors to reduce risks of foodborne illness from home food preparation
  - Develop and validate a food safety behavior questionnaire
  - Identify high risk behaviors that should be further targeted for food safety education

Medeiros, Hillers, Kendall 1999-2001  
USDA grant #99-35201-8126

## Identification of Food Safety Behaviors Most Important in Preventing Foodborne Illness

- Using web-based Delphi process, food safety experts (n=24) identified 29 food safety behaviors as being most important in home food preparation
- Behaviors ranked within 13 pathogens and 5 pathogen control factors and for importance to high risk audiences

*Medeiros, Hillers, Kendall  
J. Amer. Dietetic Assoc., 101:1326;2001*

## Development & Validation of a Behavior Questionnaire

- Expert Panel led process:
  - Panelists (n=6) reviewed results of Delphi process & made final recommendations for behavior list.
  - Worked in small groups to develop questions to assess the 29 behaviors
  - Evaluated content & face validity of questions
- Questionnaire further shortened & revised based on feedback from target audience and project team

## Behavioral Question Bank

- Reliability and validity testing performed on 52-item question bank:
  - Practice personal hygiene (5 questions)
  - Cook foods adequately (12)
  - Avoid cross contamination (7)
  - Keep foods at safe temperatures (12)
  - Avoid foods from unsafe sources (16)

## Recruitment

- Targeted EFNEP/FSNEP classes with 30-60 minute food safety education component
- Classes took food safety behavior questionnaire, then recruited to take part in a cooking methods study
  - Primary food preparer
  - Limited income household

## Kitchen Activity Session

- Cooking observation in Community Kitchen:
  - Cooked a chicken breast to desired doneness
  - Sliced an apple to garnish the chicken
  - Cooked a hamburger to desired doneness
  - Sliced a tomato to go with the hamburger
- In-depth interview
  - Asked same questions on questionnaire in conversational, open-ended manner
- 50 graduates completed sessions

## Observable Behaviors

- Wash hands before food preparation
- Avoid cross contamination:
  - Thoroughly rinse fruits and vegetables
  - Wash hands and utensils with soap and hot water after contact with potentially hazardous foods
  - Clean food preparation surfaces with hot soapy water before and after meal preparation
- Cook foods adequately:
  - Use a thermometer to ensure meat/poultry are adequately cooked

## How Safe are their Practices? Do they do what they say they do?



### Wash hands with soap and water before preparing food (n=50)



- Observation
  - 92% did correctly
  - 4% did incorrectly
    - Included rinse only, wipe with dishcloth or paper towel
  - 4% did not do
- Validation with Questionnaire
  - 92% agreement

## Wash hands with soap & water between working with raw chicken and continuing cooking



- Observation
  - 24% did correctly
  - 74% did incorrectly
    - Included rinse only, wipe with dishcloth or paper towel; clean as part of dishwashing
  - 2% did not do
- Agreement with Questionnaire
  - 94% agreement (correct & incorrect behaviors)
  - 18% agreement (correct only)

## Wash cutting board after preparing chicken and before cutting apple

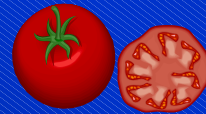


- Observation:
  - 76% did correctly
  - 21% did incorrectly
  - 2% not at all
- Validation with Questionnaire:
  - 83% agreement (correct & incorrect behaviors)
  - 64% agreement (correct only)



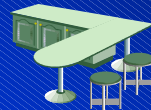
## Thoroughly rinse fresh vegetables under running water before eating

- Observation
  - 74% rinsed tomato before slicing
  - 26% did not
- Validation with Questionnaire
  - 68% agreement



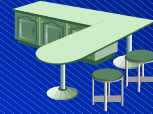
## Clean countertops with hot, soapy water *Before* preparing food

- Observation
  - 2% did correctly
  - 98% not at all
- Validation with Questionnaire
  - 12% agreement



## Clean countertops with hot, soapy water *After* preparing food

- Observation
  - 6% did correctly
  - 76% did incorrectly
    - Included wiping with sponge, cloth or paper towel
  - 18% not at all
- Validation with Questionnaire
  - 76% agreement (correct & incorrect behaviors)
  - 28% agreement (correct only)



## Use thermometer to determine if a chicken breast has been cooked enough

- Observation:
  - 18% used thermometer
  - 82% did not
  - Still, 90% cooked to 160°F
- Validation with Questionnaire:
  - 67% agreement
- Results similar for hamburger patty





## Conclusions

- Handwashing:
  - Message learned
  - Skills need improving, esp. to prevent cross-contamination
- Cleaning utensils/cutting boards to prevent cross-contamination:
  - Message learned
  - Skills need improvement

## Conclusions

- Cleaning food preparation surfaces before/after food preparation:
  - Message not well learned
  - Skills lacking
- Use thermometer to ensure adequate cooking:
  - Message not learned, but most cooked to adequate temperatures
  - Skills lacking in use of thermometer

## Recommendations

- Emphasis should be placed on:
  - Correct handwashing after contact with potentially hazardous foods
  - Cleaning of countertops *before* meal preparation
  - Correct methods for cleaning countertops *after* meal preparation
  - Correct methods for cleaning utensils, cutting boards
  - Thermometer use

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# Thinking Globally -- Working Locally

**A Conference on Food Safety Education**