

# Food Safety Attitudinal and Behavioral Practices of Foodservice Personnel in Texas Childcare Centers

Margaret E. Briley, PhD, RD, LD  
Deanna M. Staskel, RD, LD



# Introduction

- More than 250 known diseases are transmitted through food
- In 2004, the CDC reported
  - 1,319 disease outbreaks
  - up from 1,073 in 2003
  - majority caused by bacterial pathogens

# Introduction

- No one is immune to foodborne illnesses
- Several high-risk groups:
  - children
  - the elderly
  - pregnant women
  - those with compromised immune systems
- Children <10 years of age experience 1/3 of all the foodborne illnesses in the US

# Introduction

- A disproportionate number of enteric bacterial infections occur in children <5
- Children are particularly susceptible to the serious health consequences
- Children attending childcare centers at an even greater risk

# Introduction

- Children attending childcare centers have higher rates of gastrointestinal infections than same-aged children cared for at home
- Improper food handling is one of the most common causes of foodborne diseases

# Introduction

- Many childcare center employees are not adequately trained to keep food safe and prevent foodborne illnesses
- Effective food safety training and implementation of strict food safety standards are vital to preventing foodborne illness in childcare centers

# Introduction

- The establishment and enforcement of food safety standards in childcare centers differs greatly
- The standards for one childcare center in Texas may differ from another center in close proximity
  - if they fall under different jurisdictions

# Introduction

- Williamson County health department
  - requires each person handling food in a childcare center to have a Food Handler's Card
- Travis County health department
  - requires that one person in each center has a Certified Food Manager's (CFM) Card
  - that person does not have to be involved in food service



# Objective

- Limited research is available regarding the food safety knowledge and behaviors of foodservice staff in childcare centers
- Study objective was to evaluate food safety attitudes, knowledge, and behaviors of foodservice workers in a sample of central Texas childcare centers

# Pilot Study

- Childcare centers located in Travis and Williamson Counties that prepare and serve meals at the center
- 112 childcare center directors agreed to participate in the pilot study
  - Seventy-one centers returned the pilot questionnaire (63.4%)

# Subject Sample

- 36 centers (59%) agreed to participate
- The childcare centers in this study:
  - capacity to care for 50 to 332 children
  - average capacity of 144 children per center

# Questionnaires

- The Food Safety Demographic, Knowledge and Attitude Questionnaire (FSQ)  
and
- The Childcare Food Safety Assessment Form (FSA)
- Adapted from questionnaires developed by Giampaoli, *et al.*

# The Food Safety Demographic, Knowledge and Attitude Questionnaire (FSQ)

- completed by the foodservice cook during the childcare center visit
  - included 3 demographic
  - seven attitudinal
  - 20 multiple-choice

# FSQ Results - Demographic

- Of the 36 head foodservice personnel:
  - 9 (25%) had worked in foodservice for less than 3 years
  - 8 (22.2%) for 3-5 years
  - 9 (25%) had worked in foodservice for 6-15 years
  - 7 (19%) for more than 25 years

# FSQ Results - Demographic

- 22 (61%) reported having some form of food safety certification
  - 14 (39%) did not
  - In centers where the cook did not have food safety certification, the childcare center director had the required safe food-handling certification

# FSQ Results - Food Safety Knowledge Scores

- Scores ranged from 40%-90%
  - mean score = 70.97%
  - A passing score on the FSQ was set at 75% (15 out of 20 questions correct)
    - the passing score established by the Texas Department of State Health Services for the certified food managers' exam
- 50% (18 of 36) passed the exam
- 50% (18 of 36) failed

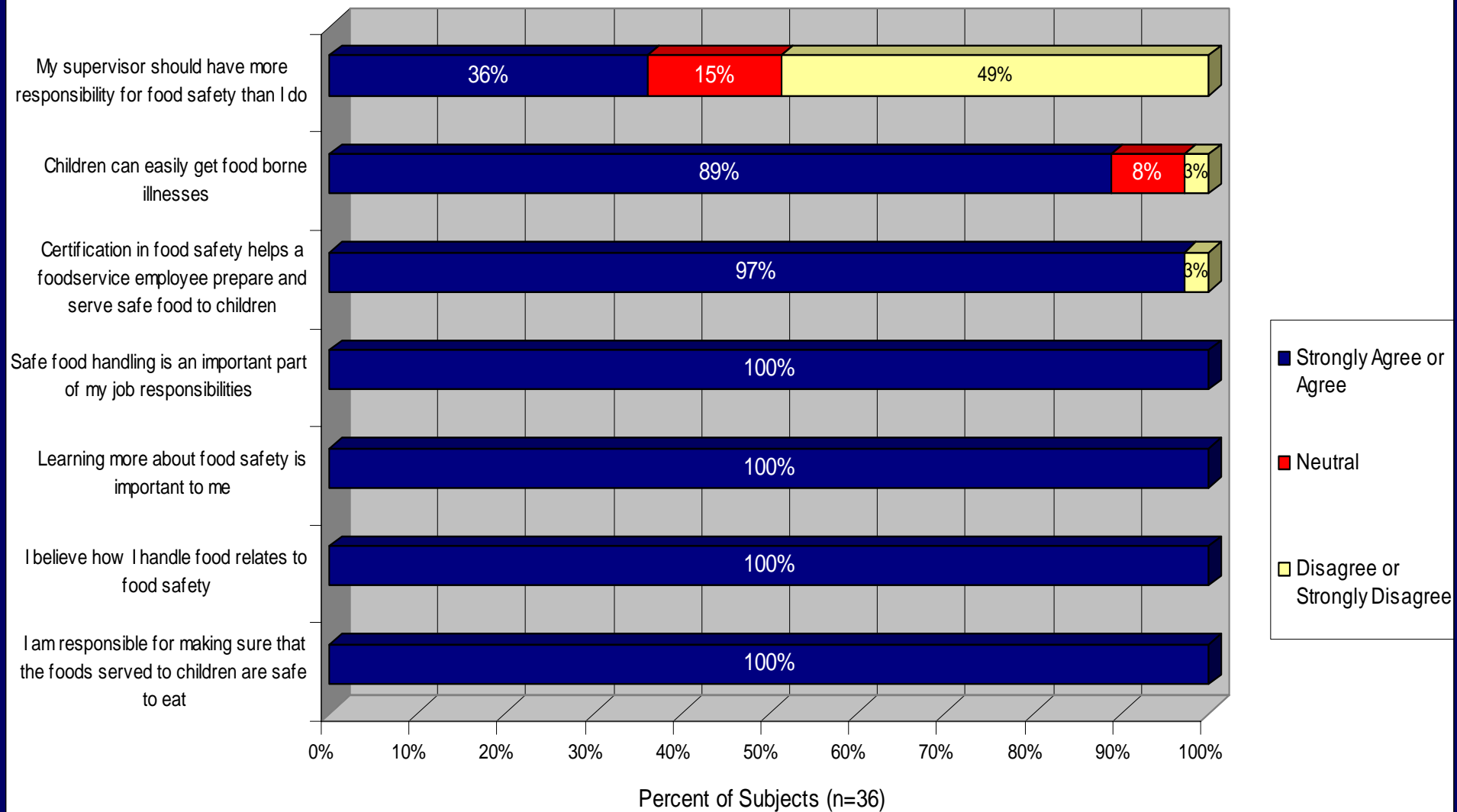


# FSQ Results – Attitudinal

- 100% of head foodservice personnel (n=36) strongly agreed or agreed with the statements:
  - “safe food handling is an important part of my job responsibilities”
  - “learning more about food safety is important to me”
  - “I believe how I handle food relates to food safety”
  - “I am responsible for making sure that the foods served to children are safe to eat”

# FSQ Results – Attitudinal

- When asked if “my supervisor should have more responsibility for food safety than I do”:
  - 48% (n=17) disagreed or strongly disagreed
  - 36% (n=13) strongly agreed or agreed
  - 15% (n=6) remained neutral
- 39% of the head foodservice personnel do not have food safety certification, supervisors did, may contribute to this



**Figure 1.** Distribution of results from the attitudinal questions on the Food Safety Questionnaire in a sample of Texas childcare head cooks (n=36).

# The Childcare Food Safety Assessment Form (FSA)

- completed by the researcher while observing the head cook in the kitchen
  - during preparation, serving, and clean up of the lunch meal at the childcare center
- One of the 36 centers was used for researcher training to improve inter-rater reliability
  - reducing subject sample to 35

# FSA Results

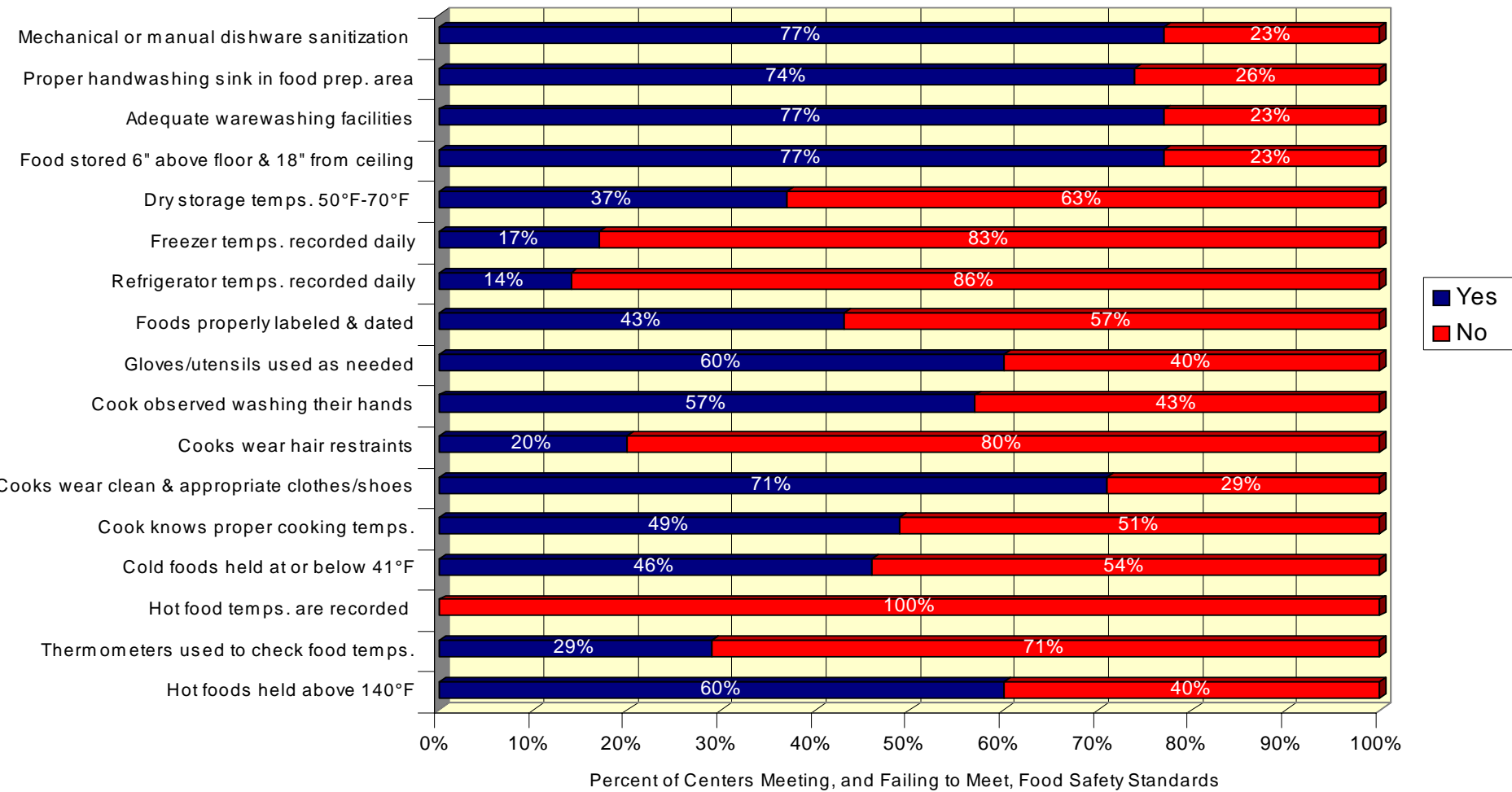
- Behaviors that were not observed in all of the centers were excluded from scoring, such as:
  - “leftovers are reheated rapidly to 140°F in 2 hours”
  - “employees take appropriate action when coughing or sneezing”
- The remaining 26 questions were used to determine a score

# FSA Results - Scores

- Scores ranged from 23% - 92%
  - mean score of 57%  $\pm$  2.6%
- 40% (21 of 35) did not hold hot foods at or above 140°F
- 71% (25 of 35) did not use thermometers to check food
  - All childcare centers are required by TDSHS to have a thermometer on site

# FSA Results

- Cold foods were not held at or below 41°F by 54% (19 of 35)
- Only 20% (7 of 35) employees were observed wearing hair restraints
  - this is recommended but not mandated by TDSHS
- 57% (20 of 35) of cooks were observed washing their hands



**Figure 2.** The sanitary conditions and observed food safety behaviors of head cooks in Texas childcare centers (n=36)



# FSA & FSQ Results

- No significant correlation was seen between the scores on the knowledge portion of the FSQ and the FSA
- Suggests food safety knowledge may not predict food safety behaviors

# Conclusions

- Food handlers are not adequately following food safety procedures
- This may increase the risk for children at these centers to acquire foodborne illnesses
- All foodservice workers in childcare should be required to have food safety certification training

# Conclusions

- Childcare directors and local health authorities must strictly enforce food safety behaviors which research has demonstrated to be the most influential in preventing food borne illnesses :
  - frequent, proper handwashing
  - adequate cooking
  - proper holding temperatures

# 1 Year Follow-Up Results

- V2 (visit 2) was conducted approximately 12 months from the date of V1 (visit 1)
- Approximately two months after the completion of V1, and about 6 months before the start of V2, a food safety training class was offered

# 1 Year Follow-Up Results

- *Serving It Safe* was used for the food safety education class
  - published by National Food Service Management Institute
- Participants had the opportunity to take
  - The Certified Food Managers exam
    - Travis County
    - or
  - The Food Handlers exam
    - Williamson County

# 1 Year Follow-Up Results

- The food safety training class was attended by 47% (n=15) of the centers
- Attendance did not significantly affect the change in questionnaire scores from V1 to V2

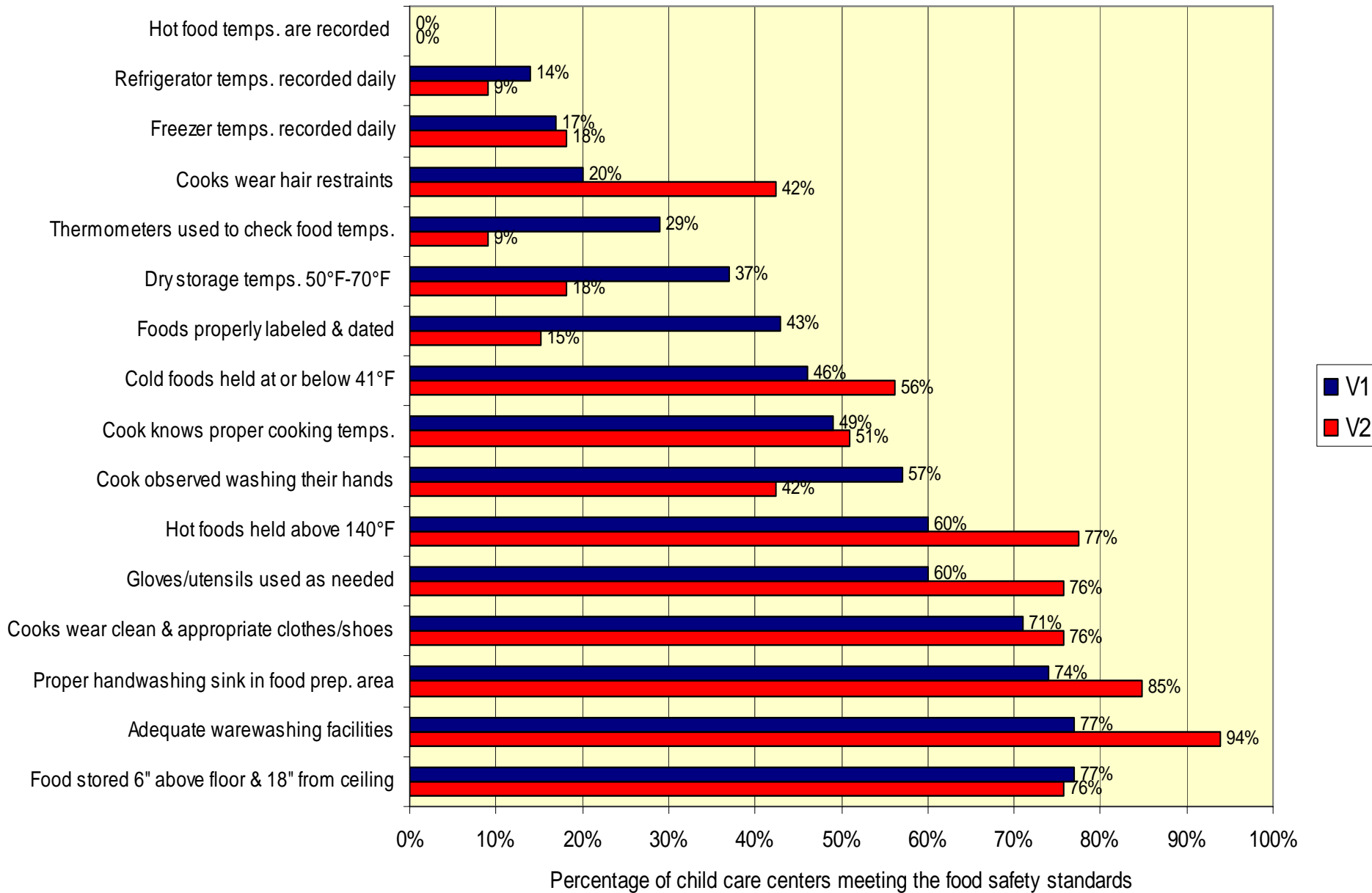
# 1 Year Follow-Up Results

- If the subject had attended the food safety training class:
  - scores decreased 47% (n=7) of the time
  - improved 33% (n=5) of the time
  - did not change in the remaining 3 cases
- If the subject did not attend:
  - the scores decreased 47% (n=8) of the time
  - increased 35% (n=6) of the time
  - did not change in the remaining 3 cases.

# 1 Year Follow-Up Results

- A significant increase ( $P < .05$ ) occurred from V1 to V2 in the scores on the:
  - storage section
  - personal hygiene section
- Inadequate personal hygiene is associated with 10 million cases of foodborne illness per year
  - so an improvement in this area alone has the potential to reduce the risk of foodborne illnesses in these childcare centers





**Figure 3.** The sanitary conditions and observed food safety behaviors of head cooks in Texas child care centers at at V1 and V2 (n=32)

# Conclusions

- Education must be applicable to all types of food service establishments, since the needs of different establishment vary greatly
- The regulations that are established by the state and local health authorities must be strictly regulated and enforced
  - yet be flexible enough to protect the population served by different types of establishments

# Conclusions

- Unlike restaurants, foodservice in childcare centers is only a part of the services offered
- Childcare center directors have many types of rules and regulations to follow apart from those imposed by the local health department
- Less time and resources are available for use on issues of food safety
- Many times only one food service person is employed per center and the turn-over rates are high

# Conclusions

- Due to time and resource constraints, childcare staff may focus on completing tasks most often enforced by regulatory agencies
- Food safety regulations established should be ones most likely to reduce the incidence of foodborne illnesses while requiring the least investment of resources as possible