

# Child care food safety: A population at-risk?

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# Introduction

- Annually, an estimated 48 million Americans become ill due to foodborne illnesses (FBIs) (Scallan, Griffin, Angulo, Tauxe, & Hoekstra, 2011)
- Young children are considered a high risk population for FBIs
  - Immune systems not fully developed
  - Low body mass and reduced stomach acid production
  - Lack of control over food handling practices (CDC, 2013)
- Children are also more likely to contract FBIs in child care facilities
  - Close proximity & natural curiosity to touch a wide range of objects and surfaces (Aronson & Shope, 2013)
  - Person-to-person transmission, particularly in diapering and toileting (Lee & Greig, 2008)

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# Child Care

- Over 15.6 million U.S. children under five are in a regular arrangement for child care
- Children spend 33 hours per week in a child-care facility (U.S. Census, 2013)
- Children in center-based childcare are reported to be 2–3.5 times more likely to get symptoms of acute gastrointestinal illness than those cared for in their own homes (Lu, et al., 2004)

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# Food Safety Inspections in Child Care

- First step to improving an organization's food safety culture is to identify gaps in current food-handling practices
- Research has evaluated health and safety inspection reports in the restaurant setting to identify gaps in food safety practices (Kwon, et al., 2010)
- However, little research has evaluated health inspections in the child-care setting and none have evaluated food safety practices through review of child-care health and safety inspection reports

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# Purpose of Study

The purpose of this study was to evaluate child-care health and safety inspection reports to identify gaps in current food-handling practices, specifically, the frequency of food safety violations in South Carolina licensed center-based child-care facilities.

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# Sample

- Drawn from the list of licensed center-based child-care facilities in the ten most populated South Carolina counties that were subject to the South Carolina Department of Social Services (SCDSS) health and safety inspections
- Home-based and religious-based child-care facilities were removed
- Of the 547 remaining child-care facilities, 300 licensed center-based (i.e., commercial, church, and preschools) facilities were randomly selected
- One inspection report per facility between 2013-2015

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# Variables

- Facility demographics
- Food safety violations
- SCDSS child care licensing policy manual was accessed.

- 13 food safety violation categories were established:

*Nutritional Guidelines; Hand Hygiene; Personal Hygiene; Heating & Cooling Food; Temperature Controls; Food Service; Labeled Food & Beverages; Food & Beverage Storage; Chemical Storage; Cleaning & Sanitizing; Evidence of Pest Infestation; Expired Food & Beverages; and Waste Storage*

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## Characteristics of licensed center-based child care facilities (n=300)

Characteristic	n (%)
<b>Organizational Accreditation</b>	
NAEYC	12 (4)
CACFP	84 (28)
Head Start	31 (10.3)
No affiliation	173 (57.7)
<b>Facility Child Capacity</b>	
Less than 50	38 (12.7)
51-100	85 (28.3)
101-150	71 (23.7)
151-200	49 (16.3)
201 or more	57 (19)
<b>Facility Operational Type</b>	
Independently Owned/Operated	261 (87)
Chain/Franchise	39 (13)

## Frequency of food safety violations per category (n=453)

Food Safety Violation Category	n (%)
Labeled Food & Beverages	98 (21.6)
Temperature Controls	75 (16.6)
Cleaning & Sanitizing	67 (14.8)
Food & Beverage Storage	41 (9.1)
Chemical Storage	32 (7.1)
Waste Storage	30 (6.6)
Hand Hygiene	27 (6)
Expired Food & Beverages	27 (6)
Food Service	20 (4.4)
Personal Hygiene	13 (2.9)
Nutritional Guidelines	10 (2.2)
Infestation	7 (1.5)
Heating & Cooling Food	6 (1.3)

## Frequency of food safety violations and child care facility accreditation

<b>Food Safety Violation Category</b>	<b>NAEYC (n=12) n (%)<sup>a</sup></b>	<b>Head Start (n=31) n (%)<sup>a</sup></b>	<b>CACFP (n=84) n (%)<sup>a</sup></b>	<b>No Accreditation (n=173) n (%)<sup>a</sup></b>
Labeled Food & Beverages	7 (7.1)	4 (4.1)	32 (32.7)	55 (56.1)
Temperature Controls	3 (4)	2 (2.7)	15 (20)	55 (73.3)
Cleaning & Sanitizing	1 (1.5)	9 (13.4)	23 (34.3)	34 (50.8)
Food & Beverage Storage	1 (2.4)	1 (2.4)	15 (36.6)	24 (58.6)
Chemical Storage	2 (6.3)	6 (18.7)	10 (31.2)	14 (43.8)
Waste Storage	0 (0)	0 (0)	7 (23.3)	23 (76.7)
Hand Hygiene	1 (3.7)	1 (3.7)	8 (29.6)	17 (63)
Expired Food & Beverages	0 (0)	0 (0)	10 (37)	17 (63)
Food Service	1 (5)	1 (5)	5 (25)	13 (65)
Personal Hygiene	2 (15.4)	1 (7.7)	7 (53.8)	3 (23.1)
Nutritional Guidelines	1 (10)	0 (0)	4 (40)	5 (50)
Infestation	0 (0)	0 (0)	2 (28.6)	5 (71.4)
Heating & Cooling Food	0 (0)	0 (0)	2 (33.3)	4 (66.7)

Note: <sup>a</sup>Child care accreditation food safety violation number divided by overall food safety violations per category

# Discussion

- Three most prevalent food safety violations found have been identified as being among the top five factors contributing to a foodborne illness outbreak
  - As well as being preventable by employees if proper food safety practices are followed
- The most cited violation category was lack of *Labeled Food & Beverages*, at 21.6% of all violations
- Followed by improper *Temperature Controls*, at 16.6% of all violations

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# Discussion

- The third most cited food safety violation was improper *Cleaning & Sanitizing*, at 14.8% of all violations
  - Category ranged from cleaning and sanitizing equipment in the kitchen to properly cleaning the table and chairs in the classrooms where children eat
  - The American Academy of Pediatrics notes the close proximity of children in child-care facilities and their natural curiosity to touch a wide range of objects and surfaces heightens their risk of infection
- The three least cited food safety violation categories were *Heating & Cooling Food* (2.2%); *Evidence of Pest Infestation* (1.5%); and *Nutritional Guidelines* (1.3%)
  - Similar to results in the restaurant setting pertaining to low frequency of heating and cooling food violations
  - Potentially be contributed to health and safety inspections being conducted when little food is being reheated or cooled

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# Recommendations

- This study was the first to evaluate food safety violations in the child care setting and identifies the need for further research pertaining to this high risk population
- The health and safety reports helped identify food-handling practices that were lacking or improper
- Increased communication from child care directors needed regarding food safety
  - The majority of food handlers in child care facilities are teachers and assistant teachers not strictly foodservice employees
- Child care directors should review results and use to tailor food safety interventions
  - Written food safety policies should be used in all child care facilities
  - Food safety signage is also an inexpensive intervention

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# Limitations

- Results of this study are specific to licensed center-based child care facilities in 10 South Carolina counties
  - Each state has its own regulations for child care facilities, generalizing of the results to other states must be done with caution
- Limited to licensed center-based facilities
- Inspections are only a snapshot in time

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# Future Research

- Investigate child care food handling employee's perceptions of food safety organizational culture
- Assess child care food handling employee's perceptions of food safety barriers and motivators to handling food safety
- Use interviews and observations to further explore results of this study

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Thank you

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