



Insight

A Publication for Child Nutrition Professionals from the National Food Service Management Institute

School Nutrition Directors and Managers Identify Resources and Training Methods to Aid in Implementation of HACCP-Based Food Safety Programs in School Nutrition Programs

Over the past few years, school nutrition directors and managers have been identifying resources and training methods to aid in implementation of HACCP-based food safety programs in school nutrition programs. Food safety is a critical component of a healthy school environment. Each day more than 31 million children receive meals through the National School Lunch Program, and more than 11 million children receive meals through the School Breakfast Program. Although the meals provided in schools are generally safe, analysis of Centers for Disease Control and Prevention (CDC) data showed that there were 195 outbreaks of foodborne illness, affecting about 12,000 people, reported in schools from 1990 to 1999. The CDC data do not distinguish between illness due to foods from federal school meal programs and illness due to foods from other sources, such as students' homes. However, a follow-up survey of state health officials indicated that of the 59 outbreaks involving 50 or more people, 40 outbreaks, affecting about 5,500 people, could be attributed to school meals. Nineteen of the 40 outbreaks due to school meals resulted from improper food preparation and handling practices within the schools. To improve the safety of school meals, Section 111 of the Child Nutrition and WIC Reauthorization Act of 2004 (Public Law 108-265) required that school food authorities fully implement a food safety program for the preparation and service of school meals based on Hazard Analysis and Critical Control Point (HACCP) principles by the end of the 2005-06 school year.

HACCP is a preventative system to reduce the risk of foodborne illness through appropriate food handling, monitoring, and record-keeping. The USDA has provided guidance to assist school food authorities in developing food safety programs based on seven HACCP principles. The USDA guidance document, *Guidance for School Food Authorities: Developing a School Food Safety Program Based on the Process Approach to HACCP Principles*, outlines requirements of a school food safety program, lists steps for developing a school food safety program, and provides sample materials, including sample standard operating procedures (SOPs), a sample food safety program, and sample forms for record-keeping. School food safety programs that conform to the requirements outlined in the USDA guidance document are compliant with HACCP principles.

Although few studies document the extent of implementation of food safety programs based on HACCP principles in school nutrition (SN) programs, research suggests that implementation prior to the new law was limited. Early studies document HACCP implementation rates in schools to be in the range of 14% to 30%. No research was identified investigating the extent of HACCP implementation in schools after the 2006 implementation deadline.



The Seven Principles of HACCP Programs

- 1) Identify hazards
- 2) Identify critical control points
- 3) Establish critical limits
- 4) Establish monitoring procedures
- 5) Establish corrective actions
- 6) Establish verification procedures
- 7) Establish record-keeping procedures

OBJECTIVES

The main purpose of this study was to assess the extent to which SN programs have implemented food safety programs based on HACCP principles, as required by Section 111 of the Child Nutrition and WIC Reauthorization Act of 2004 (Public Law 108-265). Specific issues to be assessed include the following:

- Implementation status of food safety programs based on HACCP principles in SN programs;
- Components included in school food safety programs;
- Barriers and practices related to the implementation of school food safety programs based on HACCP principles;
- Perceived food safety knowledge and skills;
- Sources of food safety information and preferred format for food safety information and training; and
- Resources and training needs for the implementation of school food safety programs based on HACCP principles.

METHOD

Survey Development and Pilot Testing

- The survey was developed by researchers based on the content of the United States Department of Agriculture (USDA) document, *Guidance for School Food Authorities: Developing a School Food Safety Program Based on the Process Approach to HACCP Principles*, and information in professional literature.
- USDA representatives provided input on survey scope, content, and wording on an ongoing basis during the survey development process.
- The survey was designed to be administered electronically. SurveyMonkey, a Web-based survey tool, was used to create and administer the survey.

- The survey asked participants to identify themselves as either a school nutrition (SN) director or SN manager based on the title that best describes their professional position. From that question, participants were routed to a version of the survey designed for either directors or managers. These two versions contained the same six sections, with wording and answer choices modified minimally to be appropriate for either SN directors at the school district level or SN managers at the school level.
- The online survey included six sections. The first section of the survey addressed the status of implementation of food safety programs based on HACCP principles at either the district or school level. The second section of the survey addressed components present in district or school food safety programs. In the third section of the survey, participants provided their perceptions regarding barriers to and practices important in the development and implementation of food safety programs based on HACCP principles. The fourth section of the survey addressed knowledge and skills related to food safety. The fifth section of the survey addressed food safety information, training, and resources. In the sixth section of the survey, participants were asked to provide information about themselves or their districts or schools.
- The online survey was pilot tested and evaluated by USDA and state agency representatives, and minor wording changes were made to the online survey.

Survey Distribution

- The sample for this study consisted of SN directors and managers participating in SN programs. Survey invitation letters were mailed to 14,848 SN directors. Each SN director was asked to distribute an additional survey invitation letter to an SN manager in his or her district, resulting in a potential sample size of 29,696.
- The survey invitation letters informed participants of the purpose of the study, asked for their participation, assured them of the anonymity of their responses, and provided researchers' contact information for questions or concerns. In addition, survey invitation letters provided instructions for completing the online survey.
- One week after the survey invitation letters were mailed to SN directors, a follow-up postcard was sent to remind SN directors to complete the online survey, and also to ask an SN manager to complete the survey.
- Participants were asked to complete the online survey within a two-week period; however, the survey remained open in SurveyMonkey for a four-week period.

Data Analysis

- Survey data were analyzed using the statistical package SPSS Version 17.0 for Windows.
- Descriptive statistics were computed for all variables, including means, standard deviations, and frequencies of total responses, as appropriate.

FINDINGS

Participant Demographics

- A total of 2,716 participants responded to the online survey, for a response rate of 9.2%. Of the 2,716 respondents, 1,610 (59.3%) were SN directors and 1,106 (40.7%) were SN managers.
- The majority of directors worked in school districts with an enrollment of less than 2,799 (56.1%). Most directors reported that there were no formal food safety teams in their districts or schools (79.8%) and that district schools receive two or more health department inspections per year (92.9%). The main type of food production system used in the school districts was a conventional on-site system (88.1%).
- The largest percentage of managers worked in schools with an enrollment of 300-599 (33.7%), and served an average of less than 300 lunches per day (30.3%). A majority of managers reported that there were no formal food safety teams in their district or school (67.3%) and that their schools receive two or more health department inspections per year (94.2%). The main type of food production system used in the schools was a conventional on-site system (80.7%).

Implementation Status of Food Safety Programs Based on HACCP Principles

- Results indicated that although the vast majority of SN directors and managers surveyed reported that their districts and schools, respectively, had implemented food safety programs based on HACCP principles, a more detailed status assessment revealed that the implementation process was often not complete.
- SN directors and managers reported that their main motivation for developing food safety programs was “requirement of the state agency,” “improvement in safety of food served,” “awareness of HACCP as the best approach to food safety,” and “awareness of risk/consequences of foodborne illness.”

Food Safety Program Components

- When the components of the food safety programs in SN programs were assessed, results indicated that school food safety programs did not include all components required for a program consistent with HACCP principles, as outlined in the USDA guidance document.

Perceived Food Safety Knowledge and Skill

- In general, SN directors perceived their food safety-related knowledge and skill as “good,” while SN managers perceived their food safety-related knowledge and skill as “good” to “excellent.” Thus, SN managers perceived themselves as having slightly greater knowledge and skill levels than did SN directors. It is important to emphasize, however, that perceived, rather than actual, knowledge and skill level were assessed in this study.

Practices Important in Implementing Food Safety Programs Based on HACCP Principles

- The top practices important in implementing food safety programs based on HACCP principles were related to restricting ill employees from work with food, positive role modeling regarding food safety, ensuring that role expectations are understood, providing necessary training and materials, ensuring that programs are practical to apply, and gaining employee “buy-in” to programs.

Barriers to the Implementation of Food Safety Programs Based on HACCP Principles

- For both SN directors and managers, the top barriers to the implementation were related to time, costs, and negative perceptions of food safety programs based on HACCP principles.

Food Safety Information, Training, and Resources

- Both SN directors and managers indicated a preference for printed information/materials, followed by in-person training, for receiving personal information or training as well as for providing information or training to employees.

Preferred Formats for Personal Food Safety Information/Training

School Nutrition Directors' Choices

Printed information/materials
In-person training (seminars, workshops, in-service training)
CD or disk containing information/materials
Information/materials downloaded from Web site
State or national conferences or meetings

School Nutrition Managers' Choices

Printed information/materials
In-person training (seminars, workshops, in-service training)
Video/DVD training
CD or disk containing information/materials
State or national conferences or meetings

Preferred Formats for Personal Food Safety Information/Training to Employees

School Nutrition Directors' Choices

Printed information/materials
In-person training (seminars, workshops, in-service training)
Microsoft PowerPoint presentations/slides
Video/DVD training
Information/materials downloaded from Web site

School Nutrition Managers' Choices

Printed information/materials
In-person training (seminars, workshops, in-service training)
Video/DVD training
Information/materials downloaded from Web site
State or national conferences or meetings

- Participants were asked to indicate sources from which they obtain food safety information. Sources of food safety information used by a majority of directors included USDA (85.4%), state or local health department (81.9%), School Nutrition Association (81.1%), National Food Service Management Institute (NFSMI) (80.2%), ServSafe® (67.3%), and state agency (57.0%). Sources of food safety information used by a majority of managers included state or local health department (79.8%), School Nutrition Association (79.0%), USDA (78.0%), ServSafe® (67.0%), and NFSMI (60.0%).

Top Five Sources of Food Safety Information

School Nutrition Directors' Choices

United States Department of Agriculture
State or local health department
School Nutrition Association
National Food Service Management Institute
ServSafe®

School Nutrition Managers' Choices

State or local health department
School Nutrition Association
United States Department of Agriculture
ServSafe®
National Food Service Management Institute

- Participants were given a list of 18 resources that were potentially helpful in the development and implementation of food safety programs based on HACCP principles. Participants were asked to rate their level of agreement that the resources would be helpful, using a four-point Likert-type scale (4 = *strongly agree*, 1 = *strongly disagree*).
- Both SN directors and managers agreed to strongly agreed that all of the resources would be helpful in developing and implementing food safety programs based on HACCP principles, with mean ratings for individual resources ranging from 2.8 to 3.5 and 2.9 to 3.5 for directors and managers, respectively.

Top Five Resources in Implementing Food Safety Programs Based on HACCP Principles

School Nutrition Directors' Choices

USDA Guidance

Training/resources from ServSafe®, Serving It Safe, and/or Food Handler's program
 Sample food safety programs based on HACCP principles designed for school foodservice
 Sample standard operating procedures
 Sample documentation/record forms

School Nutrition Managers' Choices

USDA Guidance

Training/resources from ServSafe®, Serving It Safe, and/or Food Handler's program
 Sample food safety programs based on HACCP principles designed for school foodservice
 Standardized recipes with critical control points and critical limits identified

PRACTICAL USE OF THIS INFORMATION

- Education and training programs and materials could be geared toward those SN programs with less likelihood of having implemented these food safety programs, such as smaller school districts.
- Study results could be helpful in developing and promoting resources and training programs specifically for use at the local school district level.
- Barriers identified in this study can be used to promote and support implementation efforts at the local school district level. Barriers that must be addressed included time constraints, cost issues, and negative perceptions about food safety programs based on HACCP principles.
- An opportunity exists for the USDA to partner with state agencies in providing information, training, and follow-up related to the effective implementation of food safety programs based on HACCP principles in SN programs. Study results indicate that SN directors and managers rely on state agencies for guidelines, information, and resources related to food safety.



For More Information

Child Nutrition and Women, Infants, and Children (WIC) Reauthorization Act of 2004, Section 204 of Pub. L. No. 108-265, 42 U.S.C. § 1751 et seq.

Giampaoli, J., Sneed, J., Cluskey, M., & Koenig, H. F. (2002). School foodservice directors' attitudes and perceived challenges to implementing food safety and HACCP programs. *The Journal of Child Nutrition & Management*, 26(1). Retrieved June 11, 2009, from <http://docs.schoolnutrition.org/newsroom/jcnm/02spring/giampaoli1/>

National Food Service Management Institute. (2005). *HACCP Implementation in K-12 Schools*. University, MS: Author.

United States Department of Agriculture, Food and Nutrition Service. (2005, June). Guidance for School Food Authorities: *Developing a School Food Safety Program Based on the Process Approach to HACCP Principles*. Retrieved January 21, 2009, from <http://www.fns.usda.gov/cnd/lunch/Downloadable/HACCPGuidance.pdf>

United States General Accounting Office. (2003, May). *School meal programs: Few instances of foodborne outbreaks reported, but opportunities exist to enhance outbreak data and food safety practices*. Retrieved June 15, 2009, from <http://www.gao.gov/news.items/d03530.pdf>

Youn, S., & Sneed, J. (2003). Implementation of HACCP and prerequisite programs in school foodservice. *Journal of the American Dietetic Association*, 103, 55-60.



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