

Healthier US Schools Challenge Lunches are More Nutritious than Lunches Brought from Home

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Please note that this study was published before the SY2014-15 implementation of the Smart Snacks Nutrition Standards for Competitive Food in Schools, as required by the Healthy, Hunger-Free Kids Acts of 2010. As such, certain research relating to food in schools may not be relevant today.

Purpose/Objective

The current investigation compared the nutritional content of lunches brought from home (LBFH) and lunches selected as part of the National School Lunch Program (NSLP) in Healthier U.S. Schools Challenge (HUSSC) elementary schools.

Methods

Digital photographs of lunches were taken before and after the meal was consumed. The photos were used to make a visual estimation of food items to determine nutritional content of meals selected and consumed. The nutrient content of 1085 lunches from 560 students in four HUSSC schools was determined and analyzed. Lunches selected and lunches consumed were considered separately.

Results

Chi-square tests indicated a significant ($p < 0.05$) difference between the percent of NSLP meals and LBFH that met the various School Meal Initiative (SMI) guidelines. NSLP meals met the guidelines for lunches both selected and consumed more often for protein, calcium, iron, vitamins A and C, and percentage of calories coming from total fat. LBFH met the guidelines more often for food energy both selected and consumed. A low percentage of selected NSLP meals or LBFH met all the SMI nutrient guidelines simultaneously. Moreover, an even lower percentage of lunches consumed met the guidelines. Nonetheless, selected and consumed NSLP meals met the SMI guidelines more often than LBFH.

Applications to Child Nutrition Professionals

CNPs are doing a better job of meeting most of the NSLP guidelines with the menus they create when compared to LBFH. CNPs may use HUSSC criteria for menu planning to encourage the selection and consumption of nutrient rich foods to meet NSLP guidelines.

Measuring Labor in School Meals Programs

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Methods

Time-Driven Activity-Based Costing (TDABC) techniques (Vaughn, Raab, & Nelson, 2010) and direct video-recorded observations were utilized in a pilot study at a single production site of a small Midwestern school district. The time required to complete operational steps (such as mixing) when preparing similar entrees using similar techniques was determined. Descriptive statistics were calculated and histograms plotted. Confidence intervals were calculated at confidence levels of .90,

.95, and .99. ANOVA was used to determine if the mean times required for each operational step differed between entrees.

Results

Preliminary analysis indicates that mean time to complete each operational step varied little from one entree to the next, and confidence intervals of the mean for each step were narrow at high confidence levels.

Applications to Child Nutrition Professionals

Findings of this research will enable operators to estimate labor needs when making decisions such as make-or-buy, menu planning, recipe change, or process change (such as purchasing frozen ready-to-cook pizza, or purchasing prepared pizza shells and sauce and assembling pizzas on site, or preparing shells, sauce and the pizzas from scratch). These will further affect scheduling, budgeting, menu and recipe development, and equipment selection.

A Research-Based Resource for Sustaining and Strengthening Local Wellness Objectives and Activities

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Purpose/Objective

The purpose was to develop a resource for school nutrition (SN) professionals that focused on communication, leadership and monitoring/evaluation activities that lead to successful sustainability and strengthening of wellness initiatives.

Methods

An expert panel of SN professionals, school personnel, and federal/university researchers with experience in evaluation of SN and Local Wellness Policy (LWP) programs identified and confirmed potential characteristics for a resource to help school districts monitor and evaluate components of their LWP. These characteristics were confirmed by a national panel in an electronic survey and were used to guide the format and content of the resource.

Results

The panels confirmed 29 guiding statements and described the characteristics of a successful resource as: credible and evidence-based, created by a credible entity with a recognizable name, free for users, user-friendly, reliable, includes listing of and annotation for existing tools with links to them, includes training components that can be self-delivered, and includes a list of possible measures and how to make them. The resource describes the evaluation process as a series of action steps and includes aids, such as example evaluations, evaluation tips, glossaries, and customizable tools. Eight steps are described and illustrated in the workbook: select an objective/activity to evaluate, select your measurement type, determine what you will measure, select a data collection tool, collect your data, analyze the collected data, determine what your results mean, and communicate your results.

Applications to Child Nutrition Professionals

The resource is both a training aid and a structured guide to developing an initial evaluation action plan for a school district. Its format allows users to progress through the evaluation process, conducting evaluations that are focused on the local policy needs and communicating the results of the evaluations to a range of stakeholders. It allows for sharing and review of planned activities and focuses on continuous improvement of the LWP.

Costs of Refined-Grain Products Compared to Whole Grain-Rich Foods for a California Purchasing Cooperative

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Purpose/Objective

The Healthy Hunger-Free Kids Act (HHFKA) of 2010 mandated the United States Department of Agriculture (USDA) update School Breakfast Program (SBP) and National School Lunch Program (NSLP) meal patterns to align with the most current Dietary Guidelines for Americans. As a result, regulations were released that increased quantities of fruits, vegetables, whole grains, and fat-free and low-fat milk; reduced sodium and saturated fat levels; and modified calorie level requirements for meals. Beginning July 1, 2012, the new federal regulations for NSLP meals required improvements in the quality of grain-based products and set minimum and maximum amounts to be served based on the school grade level of the child. At least 50% of the grain in a “whole grain-rich” food must be whole grain and the remaining grain, if any, must be enriched. Servings per week changed with the new requirements from 12 for Grades K-6 to 10 for Grades K-8 and from 15 for Grades 7-12 to 12 for Grades 9-12. The purpose of this study was to compare costs of refined-grain products used in the federal school meal programs to similar products recently reformulated to meet the whole grain-rich criteria under new USDA regulations and consider impact on school districts’ budgets. Costs per serving of 10 products purchased by a large purchasing cooperative before and after reformulation were compared with implications for school districts’ budgets addressed. Other than cost estimates made by USDA, there has been no work published on the impact of the new regulations on school districts’ budgets.

Methods

A case study approach was used for collecting data in this preliminary study. Bid prices for 10 non-commodity refined-grain products and their whole grain-rich products counterparts were obtained from the SUPER Cooperative, a large private commodity processing and purchasing cooperative in California. A total of 20 products were priced (10 items with pre-post reformulation) with a cost per serving analyzed. The SUPER Cooperative is a private agency administered by its 233 member school districts and in the 2011-12 school year, it served over 235 million meals or 40.3% of the reimbursable lunches served in California. Bids are collected each spring for commodity and non-commodity food product pricing for use by member districts the following school year. Each school district pays the same price for products, regardless of the quantity purchased, and negotiates separate delivery fees with a food distributor of their choice. Only food costs were collected; cost of delivery was not reported. Differences between the purchase cost per serving of refined-grain and whole grain-rich counterparts were calculated for 10 product sets. Paired t-tests were used to determine whether the purchase cost of the whole grain-rich products was significantly different from the cost of the refined-grain counterparts.

Results

Results showed that purchase cost per serving of three of the whole grain-rich food products were less than their refined-grain counterparts and two of the whole grain-rich products cost the same as their refined-grain counterparts. Five of the whole-grain products cost more than their refined-grain counterparts (range of \$0.002 to \$0.035 per serving). The results of paired t-tests indicated that there was not a significant difference in cost ($P < .05$). Because of emphasis on increasing whole grains in schools, and particularly since the initial release of the HHFKA, many food manufacturers that sell to the school foodservice market have worked to reformulate products and create new food items that meet whole grain-rich criteria. A review of the ingredient lists for the 10 products used in this comparison indicated there was little change in product ingredients except for source of the grain. Manufacturers substituted whole grains for refined-grain ingredients to achieve the whole grain-rich standard of greater than 50%. Results of this preliminary study indicated purchase costs

per serving of reformulated refined-grain to whole grain-rich products were not significantly different. The results of this study are not believed to be generalizable to all whole grain-rich products nor to all school districts. Pricing information was available on a limited number of product sets because production of refined-grain counterpart products was declining. In addition, this study only addressed purchase cost per serving of selected grain products; delivery costs were not included in comparisons. Future HHFKA menu criteria of sodium reduction will impact product reformulations of grain items further; implementation of standards is pending.

Applications to Child Nutrition Professionals

As children in schools across America are offered more whole grain-rich food products through participation in the SBP and NSLP and these products become more acceptable, availability will likely increase among all foodservice market sectors. It is hoped children will learn to choose whole grain-rich foods in other settings even if refined-grain choices are available. School meal program menu planners must carefully select and include whole grain-rich items that meet HHFKA criteria, satisfy their clientele, and work with districts' menus in order to keep food costs affordable and participation high. Further training can be provided for school foodservice personnel to make cost-effective choices when planning menus and procuring products. School meal programs should continue to phase-in the use of whole grain-rich foods while children adjust to changes in texture and flavor profiles. As food manufacturers innovate and reformulate food products, the cost of whole grain-rich items should stabilize. The quantity of grain products on school menus may have decreased in some schools due to limits placed on grain servings with implementation of the HHFKA. Schools that previously followed the Enhanced Food-Based Menu Planning Option for the NSLP would have been required to offer a minimum of 12 grains/breads servings per week for grades K-6. Under the HHFKA lunch meal pattern, a maximum of 10 grains servings can be offered each week for grades K-8; however, the daily and weekly maximums were temporarily waived through the end of the 2014 school year. Savings from a reduction in required grain item servings per week from previous years may mitigate the cost of replacing refined-grain products with whole grain-rich food products on the menu. This case study provides preliminary information that can be useful for other school foodservice directors in addressing food cost concerns associated with adoption of new HHFKA meal pattern requirements.

Emergency Preparedness Resource for School Nutrition Professionals

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Purpose/Objective

The objective of this study was to identify research-based practices for emergency preparedness (EP) in school nutrition (SN) programs.

Methods

Participants in this study included individuals who were experts in their field of emergency management and response. In Phase I, an expert panel of school nutrition (SN) directors, state agency personnel, school emergency management personnel, and emergency management agency personnel was convened to assist in the development of emergency preparedness (EP) practice statements and goals for an EP resource. In Phase II, an EP resource was developed using the expert panel results. A national review panel of 31 SN and emergency management professionals evaluated the practices statements, goal statements and draft resource for content clarity, accuracy, and usefulness. Qualitative research methods were used to confirm goals and practice statements. Descriptive statistics were calculated to analyze responses in Phase II.

Results

The final version of the EP resource included the practice statements within four EP practice areas (preventions-mitigation, preparedness, response, and recovery) and sixteen goal statements. The practice resource is a user-friendly, web-based self-assessment tool. The practice statements are assessed using a 3-point scale of current status (fully addressed, partially addressed, or not addressed). The resource also allows for recording required actions on statements identified as not addressed.

Applications to Child Nutrition Professionals

The web-based resource is designed to facilitate EP efforts within SN programs at the local level. Results will be useful in the development of policies and procedures for EP and the creation of training modules to provide direction to SN professionals on emergency preparation, response, and recovery.

Marketing the School Nutrition Program Resource Guide for School Nutrition Professionals

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Purpose/Objective

The objectives of this research project were to identify sustainable strategies, resources and successful practices used by school nutrition (SN) professionals to market a SN program and to develop a research-based resource to guide professionals in marketing the SN program.

Methods

In Phase I, an expert panel of SN directors reviewed draft marketing practice statements (based on findings from a previous NFSMI marketing national survey), categorized similar statements, and identified goal statements for a marketing resource guide. In Phase II, a national panel of reviewers evaluated the draft marketing resource guide, providing feedback on the practice and goal statements, formatting, and usefulness of the resource. Descriptive statistics were calculated to analyze responses in Phase II.

Results

The resource guide incorporated the practice statements and goal statements into six previously identified marketing practice areas: SN staff involvement, development and implementation, advantages for students, advantages for other stakeholders, stakeholder's support, and communication. The marketing resource guide is a user-friendly, web-based self-assessment tool. Each of the practice statements is assessed using a 4-point scale for current status (elements are not in place, few elements are in place, majority of elements are in place, elements are in place). The resource also allows for directors to identify additional marketing strategies pertinent to their program.

Applications to Child Nutrition Professionals

This resource is designed to facilitate the development and implementation of marketing concepts in SN programs. SN professionals can use this tool to assist in establishing the local SN program's brand.

CDC's School Health Guidelines to Promote Healthy Eating and Physical Activity

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Purpose/Objective

To identify effective school-based guidelines to improve student physical activity (PA), healthy eating or weight-related health outcomes.

Methods

CDC conducted a systematic review of school-based nutrition and PA policies, practices, and programs. Scientific manuscripts and documents were included if they described practices to improve student nutrition and PA that were based in schools or that addressed family or community involvement in schools. A codebook was developed and used to rate scientific reports on rigor, confidence in findings, efficacy, and feasibility; expert statements were rated on organization type, conflict of interest, and supporting evidence. The process resulted in the inclusion of 255 scientific studies and 112 expert statements. An external review by over 50 organizations also was conducted.

Results

CDC identified sufficient evidence for nine guidelines to promote healthy eating and PA in schools. The Guidelines address: coordination and evaluation of school policies and practices; school environments; school nutrition services; physical education and activity programs; health education; health services; family and community involvement; school employee wellness; and professional development for school staff. Each guideline includes strategies and actions for implementation.

Applications to Child Nutrition Professionals

School nutrition professionals play a critical role in creating school environments that support healthy behaviors. School nutrition professionals at the state, district, and local school levels can use the Guidelines to identify and prioritize evidence-based practices that facilitate healthy eating and PA in schools, and support the implementation of the new school meal patterns, nutrition standards for competitive foods, and Local School Wellness Policy goals.

In-Classroom Breakfast Menus: Production, Food Costs, and Compliance with Dietary Guidelines

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Purpose/Objective

School breakfast programs are making a positive impact on the health of children, and the growth of in-classroom breakfast service has increased participation in breakfast. The purpose of this study was to analyze in-classroom breakfast menus from five districts for production methods, food costs, and compliance with the 2010 Dietary Guidelines for Americans.

Methods

Using case study research methodology, the National Food Service Management Institute Applied Research Division conducted a study to determine effectiveness of in-classroom breakfast. State agencies recommended exemplary districts offering in-classroom breakfast programs. After a pilot visit to a Midwest USDA Region district, four districts of varying sizes in the Mid-Atlantic, Northeast, Western, and Mountain Plains USDA Regions were visited. Production methods, food costs, and nutrient information were collected from school nutrition directors and managers.

Results

Directors in this study ranked nutritive value, food costs, and student preferences as their greatest considerations when planning in-classroom breakfast menus. One district had a central kitchen and produced and packaged 21.6% of the breakfast menu items including muffins and mini loaves. Three districts purchased only prepackaged foods,

and two districts served only cold menu items. The most popular breakfast foods were cheese bread, mini pancakes, muffins, burritos, and honey graham cereal. The food costs of sample breakfast menus ranged from \$.50 to \$1.04, and menus met the Dietary Guidelines.

Applications to Child Nutrition Professionals

District directors need to work closely with manufacturers to find items that are individually wrapped, meet nutrition guidelines, and are accepted by students. Key recommendations of the Dietary Guidelines include reducing intake of sodium; limiting consumption of saturated and trans fats; increasing consumption and variety of fruits and vegetables; and increasing intake of fat-free and low-fat milk products and whole grains. Directors demonstrated that breakfast menus can meet cost constraints and can be aligned with the 2010 Dietary Guidelines for Americans.

A Guide to Administering School Lunch Satisfaction and Participation Surveys to Middle/Junior High School Students

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Purpose/Objective

The purpose of this project was to develop a step-by-step guide for administering the middle/junior high school student participation and non-participation surveys, interpreting the results, and creating continuous quality improvement action plans to address student concerns.

Methods

The methodology for this project included developing a draft survey guide using the High School Student Satisfaction and Non-Participation Survey Guide: Internal Bench Marking for School Nutrition Programs (Asperin, Nettles, and Carr, 2009) as a template, conducting a review panel of seven SN professionals to review the survey guide, and adjusting the survey guide based on review panel suggestions.

Results

The completed resource contains seven sections designed to guide the SN director and/or manager through the survey process. The sections are as follows: introduction, planning for survey administration, survey options, administering the survey, tabulating and interpreting results, developing a customer service action plan using the Continuous Quality Improvement Process, and appendices.

Applications to Child Nutrition Professionals

This resource will provide SN directors and managers with a broad spectrum of guidance for planning and administering middle school student participation and non-participation surveys. That guidance will include: selecting the appropriate survey, organizing a survey team, selecting participants, administering the survey, tabulating data, analyzing results, and developing action plans based on the results. The survey guide is convenient to utilize because it includes reproducible copies of the two surveys, customized Microsoft Excel templates for tabulating and analyzing data, and templates for creating parental consent forms, student assent statements, and memos for communicating with principals and/or teachers. Information gleaned from conducting the surveys contained in this guide can be used to improve middle school student satisfaction and participation.

Practices and Perceptions of SN Professionals toward Obtaining the HealthierUS School Challenge Award

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Purpose/Objective

The purpose was to explore the impact of obtaining the HUSSC award on SN programs, while the objectives were to identify practices, perceptions, and barriers to obtaining the award.

Methods

The methods included two site visits to SN program award recipients, one expert panel of SN professionals with successful experience applying for HUSSC awards, and an online National Survey to SN directors in programs that received a HUSSC award (N=266). Statistical analysis included means, standard deviations, frequencies, One-way ANOVAs and T-Tests.

Results

The response rate for the survey was 54% (n=139). The majority of participants reported receiving a Bronze award (56.8%). Approximately one third of respondents (34.5%) reported it taking between two to four months to complete the HUSSC application process, while 26.6% reported it taking between five to seven months. A little more than half of respondents (56.5%) reported they planned on submitting for a higher level HUSSC in the future. Two questions on the survey asked participants to rate their level of agreement with several statement from 4 (strongly agree) to 1 (strongly disagree); the first question regarded perception toward obtaining the HUSSC award, while the second regarded barriers to obtaining the award. The perception with the highest mean rating was "The HUSSC award status increases recognition among other SN programs," (3.51+ 0.58), while the perception with the lowest mean rating was "The HUSSC award status increases student participation," (2.45+ 0.75). The barrier with the highest mean rating was "increases in cost," (3.22+ 0.72), while the barrier with the lowest mean rating was "bean/legume requirement," (2.47+ 0.84).

Applications to Child Nutrition Professionals

Study results will be used to develop research and/or resources to support SN in successfully submitting for HUSSC awards.

Refrigeration Equipment in School Nutrition Programs in the USDA/FNS Southwest Region

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Purpose/Objective

The 2012 meal patterns for the National School Lunch Program (NSLP) require more servings of fruits, vegetables and whole grains than prior regulations. Refrigeration equipment is required to safely store many of the nutritious foods served in the NSLP. The purpose of this research was to identify the types and numbers of refrigeration equipment currently used in school nutrition programs and to gain insight into the perceptions of school nutrition directors regarding the adequacy of refrigeration equipment. The study focused on the NSLP participants in the USDA/FNS Southwest Region.

Methods

A modified Delphi method was used via electronic communication to develop a survey. Ten directors piloted the survey electronically before the researcher conducted a site observation to verify equipment information and further refine the survey. A pilot study was conducted in one state prior to deployment of a regional survey in five states with approximately 2,200 school nutrition directors.

Results

More than one-third of school nutrition directors in the USDA/FNS Southwest Region perceived refrigeration equipment to be inadequate to meet the requirements of the 2012 meal patterns. The types of refrigeration equipment found most often in schools were milk coolers (n=212, 88.3%) and walk-in freezers (n=180, 75.0%). Over 95% of refrigerated storage space was provided by walk-in freezers and refrigerators.

Applications to Child Nutrition Professionals

Results of this research may be used to assist school nutrition directors in making decisions about refrigeration equipment purchases. Methodology utilized in this research may be used to establish a web-based tool to assist school nutrition directors in determining refrigeration capacity in their schools.

Nutrient Content of Lunches Brought From Home Differ by Gender for Higher Income Elementary Students

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Purpose/Objective

The current investigation compared the nutritional content of lunches brought from home by male and female elementary school students by income level.

Methods

Digital photographs were taken of 404 home lunches from four schools, both before and after the meals were consumed. Meal nutrient content was estimated from the digital photographs, with lunches selected and lunches consumed considered separately.

Results

Two-sample t-tests indicate higher income male students bring lunches from home that are significantly higher ($p < 0.05$) in calories, total fat, saturated fat, carbohydrates, protein and sodium than brought by female students. Similarly, t-tests indicate higher income male students consume significantly more ($p < 0.05$) calories, total fat, saturated fat, carbohydrates, protein, sodium, iron, fiber and calcium than female students. For lower income students, no gender differences in nutrient content or nutrient consumption of lunches brought from home were found.

Applications to Child Nutrition Professionals

Child nutrition professionals (CNPs) may use the information to tailor educational material to the student's gender. Male children bringing lunches from home could be encouraged to select lower fat, lower saturated fat, and lower sodium choices. Additionally, CNPs could encourage female students bringing lunches from home to select and consume more calcium and iron rich foods.

Change on Physical Activity, Video Games and Television Preferences of Elementary School Children after the Application of the Childhood Obesity Prevention Strategies: "Póngale Vida", Costa Rica

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Purpose/Objective

To identify changes in preferences of physical activity, use of video games and television in school age children in Costa Rica after the application of Pongale Vida Strategies.

Methods

A case-control study including 269 (case school) and 213 (control school) children was evaluated; using a questionnaire about physical activity preferences. Children of the intervened school were exposed to the following Pongale Vida physical activity strategies: 1. 15 minutes of physical activity in the classroom, 2. Active recess, 3. Family Sundays with activities within the community of residency

Results

Before the intervention most children showed preference for active play and sports; however, only 20% participate in after school sport activities. After the intervention, an increase of 4.1% of children in the case school got involved in sports and an increase of 5.6% in preference for more active games. Also recorded was a 6.7% reduction in their preference for video games and a reduction of 8% in the frequency of watching TV.

Applications to Child Nutrition Professionals

Physical activity strategies in the school setting contribute significantly in increasing the interest towards physical activity of school age children which contribute to behavior modification for the

prevention of childhood obesity. Teachers are key in the application of physical activity strategies in the classroom and during active recess.

PONGALE VIDA: Strategies for Childhood Obesity Prevention in Elementary Schools, Costa Rica

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Purpose/Objective

To contribute in the prevention of childhood obesity through the development of suitable strategies to apply in Costa Rican Public Schools

Methods

A group of strategies for childhood obesity prevention was developed using the stages of change theory and the ecological model with two main objectives: to promote physical activity and healthy eating. The strategies included activities for the classroom, the school, the family and the community. The design was the joint effort of researchers of the School of Nutrition at UCR, elementary teachers and community leaders of La Union County in Costa Rica.

Results

PONGALE VIDA is a group of strategies developed according to the national curricula for elementary schools with particular focus on 1st, 2d and 3th grades since these ages are more prompt to learn and include new physical activity and healthy eating behaviors and modify the current ones. A package of nutrition education materials to be used within the regular curricula was designed including: worksheets for using as a part of regular subjects, a daily planner for using local produce and improving lunches and snacks and multimedia for promoting physical activity with 15 minutes in the classroom and active recess. The family was included through the strategy named Family Sundays.

Applications to Child Nutrition Professionals

The strategies are currently being replicated in urban and rural public schools by trained teachers who received didactic support materials and technical assistance from professional nutritionists. More resources are needed to extend the benefits to other public schools.

School Nutrition (SN) Professionals' Perceptions, Barriers, and Benefits for Supporting Green/Environmental Conservation Practices (GEC)

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Purpose/Objective

To capture perceptions, barriers, and benefits identified by SN professionals as essential for implementing and sustaining GEC practices in SN programs and the school environment

Methods

This study occurred in two phases. In phase I, an expert panel of SN professionals (n=7) met to discuss the perceptions, barriers, and benefits of SN professionals and their roles implementing, evaluating, and sustaining GEC practices. The information collected from the expert panel, previous GEC research, and GEC literature was used to draft a GEC national survey in phase II. The instrument was formatted as a print survey and was mailed to 700 SN professionals in seven USDA regions. A total of 223 of 700 surveys (31.8%) were completed and analyzed by researchers using SPSS 17.0.

Results

Respondents believed that sustainability of GEC practices (3.32 + .58) relied upon administrative support. Simple GEC practices that require changes in behavior were dominant sustainable practices in SN programs and schools and included: recycling paper and cardboard (78.0%), turning off excess lights (87.0%), and sending e-mails (88.4%) to reduce paper waste. SN directors perceived their primary roles in GEC efforts were as nutrition educators (56.0%) and role models

(49.1%). The top perceived benefits for implementing and sustaining GEC practices were: providing a safe and healthier environment for students (3.2 ± 0.8) and encouraging students to adopt lifelong conservation behaviors (3.2 ± 0.7). Perceived barriers that have prevented the sustainability of GEC practices in SN programs/schools included: the lack of equipment and/or resources to support GEC practices (2.8 ± 0.8) and cost (2.7 ± 0.9).

Applications to Child Nutrition Professionals

The results from this study will be used to develop GEC education and training resources for SN professionals.

Perspectives of School Nutrition Committees, a la Carte Administrators, and Parents of a Healthy a la Carte Setting.

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Purpose/Objective

Identify school nutrition committees, a la carte administrators, and parents' perspectives of a healthy a la carte setting.

Methods

Interviews and discussion groups were used to collect data. Parents of third and fourth graders (N = 109) and a la carte settings administrators (N=6) of six Costa Rican schools were interviewed using a structured questionnaire. School nutrition committees' perspectives (N=25) were collected using focus groups. The questionnaires were pilot tested for content validity and understanding. Each one of the questionnaires had four sections. For the focus group a guide was developed and a moderator and assistant moderator participated. Responses were analyzed using descriptive statistics, including frequencies, means, and standard deviations. Data from the focus groups were analyzed using Atlas ti software.

Results

Parents have limited knowledge about the food that is offered in each a la carte setting. They feel more fruits, vegetables, and fresh juices should be offered to the kids in this type of settings and are willing to give more money to their children to use in a la carte settings if these products are offered. A la carte setting administrators think more fruits and vegetables should be included in the menu; but they expressed their concern about the negative economic impact this might have on their business. School nutrition committees agreed that fruits and vegetables should be included as well as from-scratch complete meals; economic support for a la carte settings is limited because all resources go to the school lunch programs, which are supported by the government. The three groups mentioned other general characteristics as good service, best food safety practices and layout, and accessible prices, as the main features to be included in a healthy a la carte setting.

Applications to Child Nutrition Professionals

A large portion of the daily calorie intake for children is consumed at schools. This work presents information about parents, a la carte setting administrators, and school committees' perspectives of a healthy a la carte setting. This information can help school foodservice authorities in making decisions about the type of food that can be included in a la carte settings, influencing in a positive way the diets of children and adolescents which can help prevent child obesity. School foodservice authorities should also consider ways to transmit information to parents about the food that is offered in a la carte settings and how to educate their kids to make a good selection of the food they buy.

Status of HACCP Programs in School Foodservice Operations

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Purpose/Objective

The purpose of this research was to assess the status of HACCP programs in school foodservice operations to understand areas that are successfully implemented and areas that need improvement.

Methods

A mega district (=40,000 students) was randomly selected for each of the seven USDA Regions. A list of the schools in each state was then requested from each respective state. Next, a convenience sample of four other districts within 50 miles of the mega districts was selected and recruited. The final sample of 34 schools included 11 small districts (<2,500 students), nine medium (2,500–19,999), six large districts (20,000–39,999 students), and eight mega districts. Six researchers conducted on-site HACCP inspections at one school in each of 34 school districts. To assure inter-rater reliability, extensive pilot testing was conducted and results were discussed after each observation until researchers were in agreement.

Results

The majority of schools (28) used the Process Approach to HACCP and had a conventional food production system (20). The majority of schools had standard operating procedures (SOPs) in place for cooking potentially hazardous food (PHF) (28), cooling PHF (25), and holding hot and cold PHF (30). However, most schools did not have a procedure in place for handling a food recall (17) and using time as a control (21). Moreover, while many schools had the SOPs delineated in the HACCP plan, there was a disconnect between what was in the HACCP plan and documented corrective actions.

Applications to Child Nutrition Professionals

The data from this study helps researchers and directors determine appropriate and improvable practices in their district's HACCP plans. These data also allow directors and supervisors to benchmark their operations to a larger national sample and can be utilized to build educational programs for directors, managers, and employees.

Restroom Handwashing Facilities in Proximity to School Cafeterias

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Purpose/Objective

To assess adequacy of handwashing facilities near school cafeterias.

Methods

A sample of 34 school districts, representing the seven USDA regions, was selected. Researchers noted the number of hand sinks, functional soap, sanitizer, and hand drying devices. The number of dispensers with and without available product was documented, including functioning automatic vs. manually-operated air dryers and faucets. Running water temperatures at 10- and 60-second intervals were gathered. Visible signage for handwashing was noted. Restroom entryways were assessed for required hand contact, such as handles, knobs, or push plates.

Results

Observations were gathered from 59 restroom facilities in 34 schools. Most (53) restrooms had three or fewer sinks. The range of available soap dispensers was one to three, while 53 soap dispensers had product available. Only three restroom facilities had hand sanitizer. The majority of sinks (46) had manually-operated faucets while 16 automatic faucets were observed. The water temperature range, measured in degrees Fahrenheit, at ten seconds was 56 to 112 ($M = 80.76 \pm 14.52$) and 57 to 135 ($M = 88.28 \pm 19.34$) at 60 seconds. Paper towel dispensers were available in 46 and air dryers in 14 of the facilities respectively. The majority of entryways required hand contact with a door handle or knob (34), followed by no door in (16) and push plate (9). Most restroom facilities (43) had no form of signage or prompting for handwashing or sanitizing.

Applications to Child Nutrition Professionals

To decrease the transmission of illness among children who participate in school lunch, it is

imperative that restrooms located near the cafeteria are adequately stocked and are in proper working order. Results show that opportunities exist to improve conditions in school restroom facilities. Directors and school personnel should consider these findings as they evaluate food safety and child health programs.

Employee Handwashing Practices in School Foodservice Operations

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Purpose/Objective

The purpose of this research was to assess the handwashing practices of employees in school foodservice operations.

Methods

A convenience sample of 34 districts was selected and recruited. Districts in each of the USDA seven regions were recruited for participation. The sample included 11 small districts (<2,500 students), nine medium (2,500–19,999), six large districts (20,000–39,999 students), and eight mega districts (=40,000). Six researchers conducted on-site observations of employee handwashing practices at one randomly-selected school in each of the 34 districts. To assure inter-rater reliability, extensive pilot testing was conducted and results were discussed after each observation until researchers were in agreement.

Results

A total of 575 handwashing observations were recorded. Only 21% of the observations found employees washing hands properly and when required. While only a few recorded observations were made, employees generally performed well when switching between handling raw animal products and ready to eat foods. The practice that had the highest out of compliance percentage was handwashing after touching body parts, coughing/sneezing, blowing nose, or eating and drinking. For this particular activity, less than 4% of employees were observed washing their hands properly and when required; 15% washed their hands but did so improperly, and 81% failed to wash their hands at all. The majority of employees engaged in some sort of handwashing prior to food preparation, but many times, the handwashing was done improperly.

Applications to Child Nutrition Professionals

The opportunity to improve handwashing exists in all facets of the foodservice industry, and school foodservice operations and employees are no different. Results will assist school foodservice directors in benchmarking their employee practices and will serve as a reminder to encourage handwashing, the most basic line of defense in combating foodborne illness.

Mississippi's First Annual Farm to School Week: Evaluation of School Participation

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Purpose/Objective

Mississippi recently established the first week of October as Farm to School (F2S) Week. F2S efforts will allow Mississippi the opportunity to improve the health status of children while improving the local economy. This study measured participation of Mississippi schools in F2S Week 2012 and identified perceived barriers and future interest of participation among child nutrition directors (CND).

Methods

A cross-sectional, descriptive correlational design was used with census sampling to survey 156 Mississippi CNDs employed by schools participating in the National School Lunch Program. A self-

administered, electronic survey was disseminated two months following F2S Week 2012. This study was approved by The University of Southern Mississippi's Institutional Review Board.

Results

F2S 2012 participation tripled from previous years, and 16 school districts participated in F2S for the first time. Among the 75 CNDs who responded to the survey, 32% reported F2S 2012 participation. Seventy-five percent of CNDs that participated in F2S 2012 reported at least one school will participate in 2013, whereas 33.3% that did not participate in F2S 2012 reported at least one school will participate in 2013. Among the CNDs that did not participate, 70% reported they would be more likely to participate if local farmers sold to regularly used distributors. Local food availability/variety was among the highest reported barriers to participation. Significant positive correlations were found between F2S education and perceived overall success ($p < 0.01$).

Applications to Child Nutrition Professionals

Results suggested a need to enhance relationships between distributors, farmers, and the Mississippi Department of Education to increase availability of local items. The geographic location of the school districts could not be determined because of confidentiality, but this information could reveal F2S barriers specific to certain regions. Future research needs to be conducted regarding farmers' attitudes towards food safety certifications and selling produce to local distributors, along with distributor's attitudes towards buying and selling local produce.