

## 2007 Child Nutrition Showcase Abstracts

*Please note that this study was published before the implementation of Healthy, Hunger-Free Kids Act of 2010, which went into effect during the 2012-13 school year, and its provision for Smart Snacks Nutrition Standards for Competitive Food in Schools, implemented during the 2014-15 school year. As such, certain research may not be relevant today.*

### **Focus Group Research Identifies Perceptions and Practices of School Professionals Related to Recess Placement Issues in Elementary Schools**

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#### **Purpose/Objective**

The purpose of this study was to investigate perceptions and practices of school professionals (school nutrition directors and managers, school administrators, and teachers) related to recess placement issues in elementary schools.

#### **Method**

Focus group methodology was used to explore school professionals' perceptions regarding the nutritional, behavioral, and academic impacts of recess placement, barriers to initiating recess before lunch programs, and practices related to implementing recess before lunch programs. Eight focus group discussions were held in four USDA regions. Discussions were conducted with groups of school professionals representing elementary schools with recess before lunch and recess after lunch programs. Focus group discussions lasted approximately 90 minutes, and included semi-structured, open-ended questions regarding recess placement issues. Following transcription of the sessions, researchers collapsed responses into meaningful categories.

#### **Results**

Perceptions regarding the nutritional impact of recess placement included responses about amounts of food and beverages consumed by children and the time that children spent eating. Perceptions regarding the behavioral impact of recess placement centered on children's behavior in the cafeteria and the classroom. Perceptions regarding the academic impact of recess placement focused on children's readiness to learn and effects on instructional time. Potential barriers to implementing recess before lunch programs were identified, including scheduling demands, logistics (such as managing hand washing and children's belongings), gaining support for the program from all involved parties, and facility constraints.

#### **Applications to Child Nutrition Professionals**

School professionals should consider these issues when examining recess placement in elementary schools. In general, school professionals agreed that what is best for children should be the primary issue when determining how recess is scheduled in relation to lunch. Focus group results will support the development of a quantitative survey to be mailed to a national sample of school nutrition directors, principals, and teachers assessing their perceptions of issues surrounding recess placement in elementary schools.

### **Relationship Among School Nutrition Program Directors' Perceived Organizational Support, Affective Commitment, and Development of a Wellness Policy**

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### **Purpose/Objective**

SNP directors may have been charged with the responsibility of coordinating the development of wellness policies in their school districts in 2005. For these directors, our study was designed to explore the relationship among perceived organizational support, affective commitment to their job, and their actions in developing the policies.

### **Method**

A survey was mailed to all SNP directors (613) in the state in January of 2006. One hundred sixty-three out of 569 directors responded that they had been given the role to coordinate the development of the wellness policy. Responses from this set of directors was correlated with their responses to a perceived organizational support scale (POS), an affective commitment scale (AC), and their assessment of meeting milestones in policy development. Factor analysis and multiple regression were used for data analyses.

### **Results**

Findings showed that SNP directors had high measures of both POS and AC. These high measures, however, were not related to the SNP director's confidence in developing the wellness policy within their school district.

### **Applications to Child Nutrition Professionals**

A conclusion from this study is that even though POS and AC were high among SNP directors their confidence in the successful development of wellness policies may have been limited due to factors such as the numerous parties required to be involved in the policy formation process.

### **Identification of Resources and Practices That Increase Accountability in the National School Lunch Program (NSLP) Snack Service Provided to Afterschool Care Programs**

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### **Purpose/Objective**

The purpose of this study was to identify resources and best practices used to assist school districts in increasing accountability in the National School Lunch Program (NSLP) snack service.

### **Method**

Case study methodology included direct observation, systematic interviewing, and a review of school nutrition program (SNP) records related to the NSLP snack service in afterschool care programs. Data were organized, tabulated, and cross-checked from each individual case study.

## **Results**

Four school districts with a combined total of 43 afterschool care sites participated in the study. The average number of NSLP snacks served daily ranged from 74 to 750 snacks. Thirty-seven snack sites (86%) qualified to serve all snacks free to students participating in the afterschool care programs. Each district had an established system for ensuring that only one NSLP snack per child was recorded and claimed for reimbursement. Districts served between two and three meal components with children required to take at least two. SNP administrators were asked to rank on a scale of 1 to 6 six specific considerations important to producing and serving NSLP snacks for afterschool programs that included cost, labor, nutritive value, prepackaged product, need for refrigeration, and student preference. Cost, nutritive value, and student preference ranked highest and refrigeration ranked lowest. Food safety was a priority in all districts, which had strict procedures to ensure proper food handling.

## **Applications to Child Nutrition Professionals**

The information from this research can assist SNP directors when planning and implementing a NSLP service to afterschool care programs. The information will also be useful to SNP directors currently seeking to improve the NSLP snack service in their districts. As a result of this study, a best practice checklist resource was developed for SNP directors.

## **Knowledge and Practices of School Foodservice Personnel Regarding Whole Grain Foods**

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## **Purpose/Objective**

The purpose of this study was to examine the knowledge and practices of school foodservice personnel (SFP) regarding whole grain foods.

## **Method**

Focus groups were conducted with 43 SFP from 8 independent school districts in the Minneapolis / St. Paul area. School districts were selected, based on school size, percent student enrollment eligible for free and reduced meals, and suburban versus urban location. An interview questionnaire was developed and pilot-tested using open ended questions to assess SFP's knowledge and use of whole grain foods in their school foodservice operations. The tape recordings were initially transcribed verbatim and coded independently by two investigators. Differences in coding were reconciled and investigators worked together using qualitative data analysis procedures to generate common themes.

## **Results**

SFP appear to have limited knowledge about the major components of whole grains, the ingredient definition, food definitions and use of product label information, particularly as it relates to ordering / purchasing whole grain foods. There is a general understanding about the benefits of whole grain foods among SFP with little awareness of the specific disease-related health benefits. Major barriers identified by SFP that influence whole grain intake among school children include less desirable sensory characteristics of whole grain products (e.g. drier texture, darker color, less tasty), a lack of available products and cost. Participants provided potential

ways to promote and serve whole grain foods in school cafeterias, such as a gradual introduction, eye appeal and masking the taste.

### **Applications to Child Nutrition Professionals**

This research is beneficial in identifying areas that SFP can improve their knowledge and skills regarding the effective use of whole grain foods in school foodservice operations. Subsequent whole grain education programs can be developed and disseminated through the state and national School Nutrition Association, trade groups, and health organizations, along with government and industry efforts.

### **Evaluating the Effectiveness of a Workshop for New and Aspiring School Nutrition Directors**

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#### **Purpose/Objective**

When evaluating training programs, Kirkpatrick suggested that there is more to evaluate than simply measuring the participants' subjective view of program value. Gain in knowledge should be assessed objectively as well as the participants' retention of knowledge that is applied in the workplace. The objective of this study was to establish an evaluation system for the National Food Service Management Institute (NFSMI) that would measure the first two outcomes of a training program. A workshop for new and aspiring school nutrition directors was used for this evaluation.

#### **Method**

Three instruments were developed. The program evaluation form was designed to allow participants to give a rating of program and instructor characteristics on a Likert-type scale. A multiple-choice pretest and post test were developed based on workshop content. Participants in two workshops were asked to complete the study questionnaires (N = 50). The pretest was administered prior to the start of the workshop and the session evaluation and post test were given at the close. Data were analyzed using frequencies and paired t-tests.

#### **Results**

For all 15 items on the program evaluation form, 100 percent of the ratings were at strongly agree (5) or agree (4), indicating a positive evaluation of the workshop from the participants' perspective. For the assessment of knowledge gained, paired t-test results showed a statistically significant improvement in participants' knowledge ( $p < .001$ ).

### **Applications to Child Nutrition Professionals**

A primary goal of the NFSMI is to use taxpayer funds in a prudent and cost-effective manner. A first step in determining cost-effectiveness is to document program effectiveness because no amount of money is worth spending on a program that doesn't meet its objectives. The focus of this study was to evaluate the effectiveness of a workshop for new SNP directors. The workshop was found effective from the viewpoint of the participants and from an objective evaluation of knowledge gained. The next step in this evaluation will be to have participants provide

information on how new knowledge was used in their districts to enhance the management of their SNP program.

### **Feasibility of Offering Reimbursable Vended Lunches to Students**

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#### **Purpose/Objective**

The purpose of this study is to investigate the operational requirements for offering vended reimbursable lunches to students and to identify barriers to implementation.

#### **Method**

A descriptive case study method was utilized to explore the feasibility of offering vended reimbursable lunches. Two school districts were selected based on availability and willingness to participate. A multiple case design followed a replication format, thus conclusions from each study site contributed to the whole. Structured and informal interviews, examination of documents, and direct observations were used to gather data during a one-day site visit.

#### **Results**

Two vending machines in a school in each participating district successfully vended reimbursable lunches to high school students. Three considerations were critical to this outcome; regulations, technology, and support. The ability to integrate point-of-sale software, cashless and vending machine technology, and school district electronic record keeping applications was the key element in implementing electronic compliance with USDA National School Lunch Program regulations. This interface of technology with regulations facilitated identification of legitimate reimbursable lunches, accurate provision of free and reduced price meals to eligible students; correct charges for full-pay meals, second meals and a la carte items, and maintaining confidentiality of student meal eligibility category. The process entailed overcoming barriers and developing solutions to novel obstacles. All involved in the process stressed that it was possible only with the enthusiastic support of CNP and school district administrators, principals, and state department of education personnel.

### **Applications to Child Nutrition Professionals**

This qualitative study provided useful information to child nutrition program and school personnel, administrators, district financial personnel, and state agency professionals when considering innovative vending practices. The results offer guidance in implementing a vended reimbursable lunch that provides an additional menu option and the potential for additional participation and revenue.

### **Soy Goes to School: Acceptance of Meatless Meals in Middle Schools in Maryland**

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## **Purpose/Objective**

The purpose of this study was to test acceptance of meal options adapted from popular lunch menu items in five middle schools with a diverse student population.

## **Method**

Fifteen potential menu alternatives using soy-based products were pretested with a representative group of middle school students. Five soy food items were chosen for additional testing--a "hybrid" burger consisting of half ground beef and half soy, "chik'n" nuggets made of textured soy protein, sliced "chick'n" breast made of textured vegetable protein served in a Caesar salad, and macaroni and cheese made with soy pasta--in which they were substituted for the traditional entrees. Students and their parents were informed of the new menu items prior to the trial, but no other cues were provided in the cafeteria. A fifth product, a black bean burger, was introduced as an overt vegetarian option. Trained observers weighed food remaining on students' trays to compare the acceptance of the soy-based products with the traditional foods.

## **Results**

Comparison of acceptance by students, nutrition and costs for traditional and soy-based meals will be presented to assess whether soy protein products offer a viable alternative to popular school lunch menu offerings.

## **Applications to Child Nutrition Professionals**

USDA studies indicate that the fat content of school lunches often exceeds the recommendations. Substituting soy protein in the lunch menu can help reduce the saturated fat and cholesterol content of lunches, increase consumption of fiber, and address special dietary needs and cultural preferences, as well as provide other health benefits.

## **Policies and Practices Regarding Foods Sold to Texas Middle School Students: A Survey of School Foodservice Directors**

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## **Purpose/Objective**

The purpose of this study was to determine practices, attitudes, and opinions regarding the school nutrition environment and foods/beverages sold to Texas middle school students.

## **Method**

A survey form developed by the researchers was validated by 6 current school foodservice directors and pilot tested at 10 school districts. Following revisions, the survey was mailed to a random sample of 391 Texas school foodservice directors. Study results were summarized using descriptive statistics. Statistical analyses were conducted using Pearsons Product Correlation, Analysis of Variance, and Chi-square.

## **Results**

One hundred twenty-one school foodservice respondents returned completed surveys (31% response). Over ½ had >15 years of foodservice experience. Education levels ranged from high

school (33%) to some graduate school or graduate degree (30%). A majority (93%) felt that their middle schools offered a healthy school nutrition environment. Middle school students were typically limited to one 3 oz serving of French fried potatoes; carbonated beverages < 20 oz or cookies < 2 oz were not sold. However, approximately ¼ of respondents indicated that vending machines offering beverages other than milk, 100% fruit juice, and water were available during meal periods. At 45% of schools, sale of candy was not limited to hours after lunch periods. Data analyses showed no significant differences in attitudes or food sale policies related to director education level or work experience.

### **Applications to Child Nutrition Professionals**

The majority of Texas school foodservice directors are following policies that limit the types and portions of high calorie, high fat foods and beverages sold to middle school students. However, school foodservice professionals need to work with other school administrators to ensure that sales of foods and beverages from vending machines also comply with policy.

### **The Development of School Wellness Policies in School Districts**

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### **Purpose/Objective**

The purpose of this study was to examine the process of wellness policy development in school districts in 21 states with all USDA regions represented. The study examined the environments in school districts that support or hinder district-wide policy development.

### **Method**

Phase 1 studied each state's school nutrition legislation, regulations, and training to determine the environment for wellness policy development. Phase 2 consisted of 21 structured telephone interviews with school district foodservice directors in seven USDA regions to explore the process of wellness policy development in school districts.

### **Results**

Supporting factors for the wellness policy development included federal mandate, concern about student health, and the addition of state laws and regulations supporting wellness policies. Major barriers included competition for teaching time, priorities with NCLB, and funding for activities and physical education. Enforcement of the policy by school administration and money to support the program were the most frequently mentioned needs to make the wellness policy successful.

Foodservice directors believed the major change in nutrition policies will come in vending machines and ala carte foods. Directors believed the establishment of one federal nutrition policy is essential.

Foodservice directors indicated wellness policies addressed overarching goals for nutrition education, and minutes per day for physical education. Other goals included adequate time for

student's meals and consistent health messages for the entire school day with the use of food for rewards and parties.

### **Applications to Child Nutrition Professionals**

Results indicate the wellness policy teams have brought together school entities that normally work independently to focus on the goal of wellness. Few districts reported existing structures or experience dealing with health issues. States with training in policy development, step by step templates, and additional nutritional guidelines offered more support in the development process.

### **Nutritional Quality of Lunches at a Seventh-day Adventist School**

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#### **Purpose/Objective**

The Seventh-day Adventist (SDA) church has a strong health message that recommends an increased consumption of fruits and vegetables, adding high fiber foods to the diet, and a moderate consumption of fats, oils, sweets, meat, and dairy products. The purpose of this study was to determine if lunches containing school-provided vegetarian entrees followed the health message of the church and if lunches brought from home (LFH) provided more nutritional quality than lunches containing the school-provided entrée.

#### **Method**

Flyers and a consent form for parents were sent home to the parents of 3rd, 4th, and 5th grade students at an SDA school. After consent forms were collected, the researcher chose random days to observe and document what the children were eating for lunch. Students (n=36) were observed on seven nonconsecutive days. Nutrient analysis of their lunches was performed.

#### **Results**

Of the 36 students observed, 86% (n=31) were SDA and 14% (n=5) were non-SDA. LFH (n=26) provided more overall nutrients for the students when compared with school-provided entrée lunches (n=1) and combination lunches (n=9). When LFH were compared with combination lunches, LFH met more of the nutritional requirements based on the Recommended Dietary Intakes (RDI) and the Dietary Guidelines for Americans 2005. This school did not provide milk to its students and none of the students who brought LFH packed milk to drink or other dairy products to eat. In all lunches, vitamin D and calcium intakes were below one-third of the DRI. Also, students at this school did not follow the SDA nutrition recommendations.

### **Applications to Child Nutrition Professionals**

Results of this study provided information to the faculty and staff of the SDA school, to help them determine if they needed to make changes to the lunch entrée menu to better follow the health message of the church.

### **Principals Readiness to Implement the Local Wellness Policy**



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### **Purpose/Objective**

The purpose of this research was to determine principals readiness to implement the local wellness policy using stages of change transtheoretical model.

### **Method**

In phase I, telephone interviews were conducted with child nutrition professionals to obtain information on perceptions of benefits and barriers related to the wellness policy. Phase II involved the development of an instrument that assessed principal's readiness to change and principals' perception of the policy as it related to the core constructs of the transtheoretical model. The final questionnaire was sent to 3235 principals throughout the United States.

### **Results**

A total of 562 questionnaires were used in data analysis. One hundred thirty (18.8%) of the respondents indicated they had never heard of the legislation, while the majority of the school principals indicated they were preparing to implement the policy (45%). Principals were most knowledgeable about the inclusion of a physical education in the curriculum and most strongly believed that a wellness policy would improve the health of students (3.6 + 1.0). They perceived the loss of revenue from vending as the most negative aspect of the policy (3.4 + 1.3). However, the principals felt most confident that they could still implement the policy even if students were upset about the removal of vending machines (3.4 + 1.3).

### **Applications to Child Nutrition Professionals**

Principals are key players to the success of developing and implementing a local wellness policy. School nutrition directors are encouraged to provide information to principals relating to policy legislation. Since perceived barriers were high, school nutrition directors may partner with principals in identifying ways to generate revenue through healthful food and beverages, promote healthful classroom snacks, and support school meals as a healthful choice. School nutrition directors should seek opportunities to work with administrators, teachers, parents, and school nutrition staff to assure implementation of the local wellness policy.

### **Key Stakeholders' Attitudes Toward Wellness Policy Implementation and a Healthy School Environment**

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### **Purpose/Objective**

The goal of this study was to assess the attitudes of school nutrition directors, teachers, parents, and administrators toward wellness policy implementation and the environment in elementary schools.

## **Method**

Qualitative data were collected utilizing focus groups in four school districts throughout the United States. Each focus group consisted of eight or more participants including teachers, parents, principals, school nutrition directors, and school wellness committee members. A total of eight questions were asked during each focus group. Transcripts of each focus group were developed and reviewed by two independent reviewers. Responses were thematically categorized.

## **Results**

Focus group discussions resulted in the identification of seven primary areas related to the implementation of the Local Wellness Policy. Participants felt the most important component of school wellness was offering healthy meals. In addition, they viewed their role in relation to implementation of the policy as an educator to students, parents, and the community. Although the participants felt that the most positive aspect of the policy was healthier students, most felt that there was not enough time in the school day to implement the policy. Participants also identified an aesthetically pleasing and comfortable atmosphere as a healthy school environment and defined the school day to include extracurricular activities. Finally, participants believed they most needed nutrition education to effectively implement the policy.

## **Applications to Child Nutrition Professionals**

School nutrition directors play a pivotal role in planning and promoting nutritious meals accepted by elementary students. Serving as a team member to implement the Local Wellness Policy, the school nutrition director is able to glean important issues impacting the school nutrition program. These data will support the development of a quantitative survey assessing the goals, roles, responsibilities, practices, barriers, and resources needed for implementing the Local Wellness Policy and establishing a healthy school environment in elementary schools.

## **Investigation of Issues Influencing High School Students' Decisions to Eat School Meals**

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## **Purpose/Objective**

The study purpose was to identify issues associated with participation of high school students in the National School Lunch Program.

## **Method**

Focus group methodology was used to explore high school students' perceptions of school meals and barriers to their participation. Researchers conducted focus group discussions with students in four school districts. The discussions lasted approximately 90 minutes, and included semi-structured, open-ended questions on issues previously identified as impacting participation. School nutrition (SN) directors provided profiles of their district high schools and school meal programs. Following transcription of the sessions, researchers collapsed responses into meaningful categories.

## **Results**

The four districts were located in four USDA regions and were selected for their distinctive profiles. The number of high schools per district ranged from 1 to over 30. High school enrollment varied from approximately 500 to almost 3000 students. Two districts reported closed campuses during lunch, and the other two were either open or had open options for students. The percentage of high school students approved for free and reduced meals ranged from less than 5% to almost 80%. Focus group responses were categorized into eight themes: choices/variety, taste, appearance, customer service environment, quality, nutrition, value, and don't want to eat. Discussions revealed that SN programs have two distinct types of high school customers: those who eat school meals regularly and those who do not.

## **Applications to Child Nutrition Professionals**

Student participation is critical as most SN programs are expected to break even financially. SN directors need tools to assist their understanding of issues impacting high school students' decisions to eat or not eat school meals and to achieve their ultimate goals of keeping students who eat school meals satisfied and increasing the participation of those students who do not eat on a regular basis. Findings from these focus groups will provide the foundation for developing surveys to address these issues.

## **School Nutrition Directors Respond to Equipment and Facility Design Needs**

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## **Purpose/Objective**

The study purpose was to conduct a needs assessment of school nutrition (SN) directors on issues related to facility design and equipment purchasing. Specific objectives were to examine the involvement of SN directors in equipment purchasing and facility design and identify the usefulness of available resources to their equipment and facility design decisions.

## **Method**

Several SN professionals previously identified as content experts in facility design and/or equipment purchasing were assembled to discern their views on equipment purchasing and facility design issues, such as sources of information used by SN professionals, usefulness of these sources, and involvement of SN professionals in this area. The information gained from these experts was used to develop a survey that was mailed to a random sample of 1050 SN directors stratified by USDA region.

## **Results**

A total of 351 surveys (33%) were returned. Almost all (95%) SN directors were actively involved in the purchase of equipment for their programs and 81% had participated in renovations or new construction of SN facilities. The majority reported that they had not received any formal training in facility design (79%) or equipment purchasing (72%). Over half (51%) indicated that they did not have enough resources or training programs to be effective in equipment purchasing and/or facility design projects. SN directors used a 4-point scale to rate the

usefulness of 21 resources in their decision making process for equipment purchasing and facility design. Three resources for equipment purchasing and three resources for facility design had mean ratings greater than 3.0, signifying that SN directors viewed these resources as useful.

### **Applications to Child Nutrition Professionals**

Most SN directors are actively involved in equipment purchasing and facility design projects. State agencies and training professionals are advised to seek and provide appropriate resources and training programs that could assist SN directors with these projects.

### **Competencies Knowledge, and Skills of Effective School Nutrition Assistants/Technicians**

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### **Purpose/Objective**

Study objectives were to identify the functional areas, competencies, knowledge, and skills needed by effective school nutrition (SN) assistants in the current SN environment, and determine at what point the SN assistant should be able to know/perform the knowledge/skill statement, at time of hire or after training.

### **Method**

In Phase I, an expert panel of state agency personnel and SN professionals identified functional areas for job duties performed by SN assistants using a modified Delphi Technique. The expert panel also agreed upon the knowledge and skill statements needed in each functional area. Researchers categorized the knowledge and skill statements for each functional area and drafted competency statements. The Phase II review panel were mailed a survey to verify whether the knowledge and skill statements are important to job responsibilities of SN assistants, determine at what point SN assistants should be able to know or perform the knowledge or skill statement, at time of hire or after training, and confirm whether the competency statements are consistent with the supporting knowledge and skill statements.

### **Results**

Six functional areas were identified that encompass the job duties of the SN assistant: food production; sanitation, safety, and security; customer service; program regulations and accountability; equipment use and care; and professional excellence. In addition, 12 competencies, 45 knowledge statements, and 105 skill statements were confirmed by the Phase II review panel. Thirty-seven statements were identified as being necessary when SN assistants are hired.

### **Applications to Child Nutrition Professionals**

SN administrators can use the knowledge and skill statements in preparing job descriptions for SN assistants. Although job requirements for SN assistants may differ, these findings provide needed information for defining the role an effective SN assistant plays. Having an understanding of the functional areas and the supporting competencies, knowledge, and skills provides a clear image of the role of the SN assistant.

## **Exploring the Uniqueness of School Nutrition Programs in Large School Districts**

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### **Purpose/Objective**

The study purpose was to explore the unique issues associated with school nutrition (SN) programs in large school districts. Study objectives were to identify operational issues and practices SN directors encounter, characteristics and qualities needed to be successful in large school districts, and training needed to develop these characteristics/qualities.

### **Method**

A panel of SN professionals from large school districts was assembled to ascertain their opinions regarding operational issues, challenges, and training needs encountered by SN directors in large school districts. This information was used to develop a survey that was mailed to 232 SN directors in districts with 30,000 or more student enrollment.

### **Results**

Ninety-eight surveys (42%) were returned. Over one-third of directors (36.6%) worked on their district's SN management team prior to becoming director and 19.4% were directors in other large districts. Over one-third (36.9%) of respondents will be retiring in the next five years. Regardless of district size, there was strong agreement with the operational issues and practices encountered by SN directors in large school districts. Respondents rated 29 of 33 characteristics/qualities needed by SN directors in large school districts 3.5 or greater on a 4-point scale signifying that they are important to success in large school districts. SN directors rated 31 of the 33 characteristics/qualities phrases 3.0 or greater on a 4-point scale suggesting that SN directors recognize that training is important to assist in developing these leadership qualities.

### **Applications to Child Nutrition Professionals**

Findings suggest that education and training programs are needed to assist in preparing SN professionals to operate SN programs in large school districts. These programs should target SN professionals who work on SN management teams in large districts and SN directors from smaller school districts. Operational issues and practices of large school districts as well as characteristics/qualities of directors identified in this study could provide the foundation for educational and training programs.

## **In-Classroom Breakfast: Best Practices in Four Districts**

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### **Purpose/Objective**

The USDA School Breakfast Program is underutilized and some school districts are adopting distribution and service models for breakfast in the classroom. These models include distribution

of breakfasts to each classroom by students and/or school nutrition employees and mobile breakfast carts in hallways. The purpose of this study was to determine the best practices of in-classroom breakfast.

### **Method**

Following case study methodology, the researchers developed two instruments for collecting information pre-visit and on-site to support the identification of best practices of in-classroom breakfast. After a pilot visit in a Southeast USDA Region district, three districts of varying sizes in the Western, Midwest, and Mid-Atlantic USDA regions were selected based on recommendations of their state agency for operating an exemplary in-classroom breakfast program. On-site visits followed a structured approach for observing meal preparation, distribution, and service of breakfast. Interviews with school nutrition directors, principals, teachers, and other school personnel were conducted.

### **Results**

Planning for in-classroom breakfast involved school nutrition personnel, school administrators, teachers, custodians, and parents. The distribution and service of breakfast were customized to each school within the districts; therefore, the planning was time-consuming. In a ranking of menu planning considerations, directors ranked food cost, nutritive value, food safety, and student preference higher than labor cost, prepackaging, heating and cooling requirements, and teacher requests. Teachers and school administrators had positive impressions of in-classroom breakfast based on fewer tardy students, fewer disciplinary referrals, student focus on academics, and creation of a positive school culture.

### **Applications to Child Nutrition Professionals**

School nutrition directors are encouraged to embrace opportunities for implementing an in-classroom breakfast program. Following a team approach for successful planning and implementation, children are provided healthful in-classroom breakfast that is convenient and promotes a positive environment.

### **Emergency Preparedness Needs Assessment of Centralized School Foodservice and Warehousing Operations**

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### **Purpose/Objective**

To conduct an emergency preparedness (emergency readiness, food recalls, and food defense) needs assessment for centralized school foodservice operations, including warehousing and distribution.

### **Method**

An open-ended written questionnaire was mailed to eight foodservice directors, and responses to that questionnaire were used to develop a written questionnaire that was mailed to school foodservice directors in 200 districts identified as having centralized food production and

warehousing. To identify industry best practices, telephone interviews were conducted with foodservice directors of three metropolitan hospitals, corporate administrators of two national restaurant chains, and three food distributors.

### **Results**

Directors from 78 districts responded (39% response rate). Most districts (n=72) had an emergency response team, and foodservice was included as part of 63 of those teams. Not all districts had written procedures for food recalls (47 of 73), natural disasters (37 of 74), or food defense (30 of 74). Barriers to implementing emergency preparedness policies and procedures included limited money, emergency equipment, and time. Most current training was related to food safety. Training on the emergency preparedness plan was done by 61 of 78 districts. Training on emergency procedures was done by less than half of the districts during the past year.

### **Applications to Child Nutrition Professionals**

This study identified best practices related to emergency preparedness that can be implemented in school districts. Results indicate that there is need for written standard operating procedures to be developed related to emergency preparedness practices. Training of employees is needed to make sure that all staff is adequately prepared for response to an emergency.

### **Feasibility and Costs of Processing Fresh, Local Produce for School Food Service Operations.**

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### **Purpose/Objective**

Research the feasibility and costs for minimally processing local, fresh produce into the 'ready to serve' form required by many school food services in order to assess the potential for school food services to participate in farm-to-school programs.

### **Method**

Working with a local production facility we processed a variety of locally available vegetables into ready to serve forms and collected yield, cost, and labor data.

### **Results**

We have yield, cost, and labor time data for a wide range of vegetables and forms including carrots (shredded and coins), peppers, sweet potatoes, lettuce, kohlrabi, broccoli, radishes, and potatoes. The cost effectiveness of a particular fresh-cut vegetable depends on a number of variables including the amount of hand-preparation required vs. the amount of work that can be done by a food processor or other machine. With this data we can say how many pounds of local broccoli it would take to create 700 servings of broccoli florets and the cost of doing so.

### **Applications to Child Nutrition Professionals**

School Food Services can utilize this information to assess the feasibility of preparing various

fresh vegetables in their own kitchens (which is often required when purchasing from local farmers if the vegetables are purchased whole). This information can also assist off-site production facilities determine the feasibility of minimally processing vegetables for school food services. This information can help with the success of farm-to-school projects by showing which produce items will be most cost-effective for the school and most profitable for the farm.

## **The Effect of Offering Three Reduced-Fat Milk Types on Nutrient Intake Among Elementary Children in a School Breakfast Program**

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### **Purpose/Objective**

The purpose of the study was to identify the impact of milk type choice on nutrients consumed by students in an elementary school breakfast program. Milk consumption and its impact on the nutrient intake of students within the School Breakfast Program was compared identifying the variables of reduced-fat (2%), low-fat (1%) and the choice of non-fat/low-fat (1%) unflavored milk acceptance.

### **Method**

Data was collected for three five-day periods identifying food selection and consumption of an elementary breakfast meal. Low-fat (1%), reduced-fat (2%) and low-fat (1%) or non-fat chocolate milk choices were offered for one five-day period while data was collected. Males and females were similar in number; 117 males and 123 females. A plate waste study method was used to determine the food consumed by breakfast participants. After the data collection, food items were analyzed for nutrient content.

### **Results**

A significant increase in the calories ( $p < .05$ ), protein ( $p < .05$ ) and calcium ( $p < .05$ ) was found when non-fat chocolate milk was offered. Low-fat (1%) milk and reduced fat (2%) milk were both found to effectively lower the fat content of meals but also resulted in a decreased overall consumption of nutrients. The acceptance and consumption of non-fat chocolate milk may benefit students who may otherwise opt not to consume milk.

### **Applications to Child Nutrition Professionals**

One benefit for school food service directors derived from this study was the validation of the need to supply the recommended calorie and nutrient content of the meal plan used.

The cost benefit of purchasing non-fat chocolate milk for the School Breakfast Program (SBP) is an important consideration when school food authorities are concerned with calorie and nutrient consumption. Although non-fat chocolate milk costs approximately one cent more per serving than one-percent white milk, students who chose non-fat chocolate milk during this study consumed more nutrients and calories than when one-percent or two-percent white milk was offered. The benefits of calories and nutrients for growth, development and readiness to learn, from non-fat chocolate milk consumption, far outweigh the cost of a penny per carton of milk.



## **Increasing Fruit and Vegetable Consumption Among Fourth Grade Students**

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### **Purpose/Objective**

To determine if school-based interventions can increase the amount of Fruits and Vegetables (FV) consumed by fourth-graders who participate in the National School Lunch Program (NSLP).

### **Method**

Three different interventions were implemented, one each month from February - May of 2007. The three interventions included 1) a FV take-home Newsletter and Challenge, 2) offering a greater variety of FV on the school food service FV bars, and 3) classroom nutrition education. Seventy-one fourth-grade students from Wellsville Elementary in Utah's Cache County School District were selected to take part in the study and receive the three interventions. To assess food intake of the participants, photographs of students' school lunch trays were taken pre- and post-consumption and then analyzed to determine amounts of FV selected and consumed. Data was collected for two days in each of four waves, which occurred before the interventions began and subsequent to each intervention. Differences between the mean numbers of servings of FV consumed pre- and post-intervention were examined using paired sample t-tests.

### **Results**

The average amount of FV consumed before the interventions was 0.18 (0.26) cups per student per day. The average amount of FV consumed after the FV challenge and after adding variety to the FV bar was 0.24 (0.30) and 0.61 (0.45) cups per student per day, respectively (p-value = 0.15, <0.0001, respectively).

### **Applications to Child Nutrition Professionals**

Although offering increased FV variety may be difficult due to time and money constraints, it was a very effective way to increase FV consumption from < ¼ cup per student per day to > 2/3 cup per student per day. This strategy should be implemented in more schools.

## **Management Institute: Improving Knowledge, Skills and Practice of Managers**

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### **Purpose/Objective**

Responding to a training need expressed by the Advisory Board of the John Stalker Institute of Food and Nutrition, a 3-day Management Institute was designed to improve knowledge, skills, and practices of the food service manager in conjunction with NFSMI competencies.

## **Method**

Held in statewide locations throughout the year, the Management Institute covers topics in nutrition, management/leadership, cost control, and culinary.

## **Results**

Experiential learning activities apply directly to the manager's daily job functions. Upon completion managers receive a Certificate in Food Service Management.

## **Applications to Child Nutrition Professionals**

The manager is a key player in determining the quality of a school or child care food service programs. Training increases daily standards of performance.

## **The Continuation and Expansion of Dietary Interventions of the Healthier Options for Public Schoolchildren Study – A School-Based Holistic Nutrition and Healthy Lifestyle Management Program For Elementary-Aged Children**

Jacy Gonzales, BA; Danielle Hollar, PhD; T. Lucas Hollar, Doctoral Candidate; and Arthur S. Agatston, MD  
Agatston Research Foundation, Miami Beach, FL

## **Purpose/Objective**

One of the aims of the Healthier Options for Public Schoolchildren (HOPS) Study is to test the feasibility of nutritious modifications to school-based breakfast, lunch, and snack offerings in elementary schools.

## **Method**

During HOPS, breakfast, lunch, and snack menus are modified to include more whole grains, less saturated fat, fewer trans-fats, more omega-3 fats, more fresh fruits and vegetables, and less high-fructose corn syrup, while working within the confines of a traditional school budget and using existing food distribution networks. All HOPS menus meet the USDA guidelines for public school food service provision, and, as far as possible, maintain the "spirit" of traditional menus. In order to examine the continuation of HOPS nutrition gains and the time that it takes to successfully implement these changes, six weeks of menus from schools that have been in HOPS for three years (HOPS3) and newly added HOPS schools (HOPS1) were analyzed using Nutrikids software. The study design includes 17 public elementary schools (thirteen intervention and four control) - approximately 15,000 students aged 5-11.

## **Results**

Nutritional analyses of HOPS1 and HOPS3 schools versus traditional district menus, key nutritional variations between the sets of menus, and preliminary anthropomorphic findings will be presented.

## **Applications to Child Nutrition Professionals**

Results will assist the field in understanding the efficacy of a rigorous dietary intervention, and the challenges associated with such an intervention in an elementary school setting that includes approximately 15,000 children.

## **School-based Early Prevention Interventions Improve Body Mass Index Percentiles: Preliminary Results the HOPS Study**

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### **Purpose/Objective**

The Healthier Options for Public Schoolchildren (HOPS) Study aims to understand the efficacy of prevention efforts that address dietary offerings, nutrition and lifestyle education, and increased physical activity implemented in the elementary school setting.

### **Method**

The HOPS Study was implemented in fall 2004 and includes approximately 3,200 children (48% Hispanic; 1,549 out of 3,247) attending six elementary schools (4 intervention; 2 control). Data are collected at baseline/fall and follow-up/spring (demographic information, height, weight, BMI percentiles, sedentary behavior and food consumption data). HOPS Study interventions include modified dietary offerings, nutrition and lifestyle educational curricula, school gardens, and other school-based wellness projects, with the goal of reducing childhood obesity rates in a manner that is replicable in other public school settings.

### **Results**

Overall, 2005-2006 data show statistically significant differences between treatment groups with respect to changes in BMI age- and gender-specific z-scores (intervention: mean (std dev) =  $-.07$  (.64); control: mean (std dev) =  $-.02$  (.44);  $p=.004$ ). Analyses of subgroups show statistically significant differences between intervention groups for BMI risk groups as well as some quintiles, when controlling for one control school with a particularly rigorous physical activity program.

### **Applications to Child Nutrition Professionals**

Early results indicate efficacy of HOPS Study interventions, which include changes in dietary offerings, nutrition and health lifestyle education, and increased physical activity, in improving BMI percentiles of elementary-aged children. Additional data collection and analyses, over time, will provide important data to inform school-based obesity prevention strategies.

### **Wellness Policy: Up and Running in Idaho**

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### **Purpose/Objective**

To determine the strengths and weaknesses that National School Lunch Program (NSLP) sponsors in the state of Idaho are demonstrating in implementing the Wellness Policy. Also, to determine past training effectiveness, regional workshops/usefulness of Idaho State Department of Education (SDE) Wellness website, and whether further training is necessary.

## **Method**

A survey was sent out electronically to 145 NSLP sponsors in Idaho. Follow up phone calls were made to those that had not responded. One \$100.00 prize of nutrition education materials was added as an incentive, to be chosen from those that responded.

## **Results**

Ninety-nine of the sponsors responded (68.3% response rate.) Of those responding, 92% of the sponsors have a Wellness Policy. Most sponsors (88%) have the superintendent or principal in charge of the policy. Ninety-seven percent or more of the policies have the nutrition education, physical activity and nutrition standards components. Most sponsors (94.8%) are teaching nutrition education in the classroom; primarily health, physical education, and science subject areas. Physical activity, three or more hours per week, is the norm (57.9%) in most facilities; occurring predominately in the classroom but often seen in walking programs at lunch. Most sponsors (84.8%) used suggestions and information from Idaho SDE, Child Nutrition Programs (CNP) for guidance for nutrition standards, secondly (66.3%) using information from Idaho SDE Wellness website. Sponsors mentioned having the superintendent or principal as the evaluator however; most sponsors (70.8%) have not developed assessment/evaluation criteria yet. Monitoring of food items in vending machines is the most common area for evaluation.

## **Applications to Child Nutrition Professionals**

The results indicate that Idaho SDE initial trainings were very valuable and useful but that additional technical assistance needs to be given to NSLP sponsors in the evaluation component of their policies. Also, the website will be developed further to include evaluation component examples.

## **Exploring the Need for Web-Based Training Among School Nutrition Directors**

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## **Purpose/Objective**

Web-based training (WBT) has the potential to meet the diverse learning needs of school nutrition directors (SNDs). The overall objective of this needs assessment targeting SNDs was to explore their needs and interests in utilizing WBT.

## **Method**

Researchers developed and administered two instruments including: 1) a qualitative structured-interview questionnaire to assess SND's use of computers, experiences in web-based education, and perceived acceptances to WBT, and 2) a quantitative survey to assess perceived knowledge, skill, training, and interests in utilizing WBT within 14 established functional areas.

## **Results**

Participants included 42 SNDs with an average of 3.1 (SD+4.6) years of director experience. Results indicate the majority of SNDs have the technology infrastructure needed to support WBT at work and at home. Thirty-eight (90%) reported interest in utilizing WBT to acquire

knowledge, and 40 (95%) reported interest in WBT for practice activities to further improve skills. Benefits of WBT included the convenience, opportunities to study unfamiliar areas in more detail and practice the skills, ability to gain knowledge and get current information, and accessibility of information. Barriers included lack of instructor/student interaction or feedback to questions, on-site interruptions or time, technology problems, and the motivation or discipline needed to complete assignments. The five functional areas with the highest interest rating for a WBT format included: 1) Sanitation, Food Safety and Employee Safety, 2) Financial Management and Record Keeping, 3) Nutrition and Menu Planning, 4) Program Accountability, and 5) Computer Technology.