

## 2004 Child Nutrition Showcase Abstracts Research Related to Child Nutrition Programs

### **National School Meals Program Not the Only 'Meal Ticket' in Illinois**

Deborah Rees, RD, LDN and Barbara Burnell, PhD; Illinois NET Program

*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.*

#### **Purpose/Objective**

To conduct a survey of principals and school foodservice directors in junior high and high schools to determine the types of foods and beverages sold outside the federally regulated school meals programs and ascertain the attitudes of key decision-makers concerning a healthy school environment.

#### **Method**

A random sample of 1,266 public schools and all of the 128 nonpublic high schools in Illinois was selected for a total sample of 900 schools. The survey was sent to 900 principals and 739 foodservice directors from the selected schools. Completed surveys were received from 339 principals and 404 foodservice directors, representing 585 (65%) schools in the sample.

#### **Results**

Eighty-six percent of the schools reported offering a la carte foods and beverages daily with pizza, snack chips, and French fries identified as the best sellers. The most popular item, purchased in 84% of the vending machines, was soda (12- and 20-oz, sizes). Nearly one-third of the schools surveyed have vending machines that are available to students all day. Seventy-two percent had incentive- and commission-based contracts with soda companies. Seventy-three percent of the schools sold food for fundraising, while 58% sold candy. Principals (53%) and foodservice directors (49%) believe that schools should provide students with a variety of food and drink choices but should, however, promote more healthful choices through such initiatives as price incentives, marketing, and nutrition education. Both groups favored a district- or school-wide policy that sets nutrition standards for all food and beverages sold in the school. When asked what policy should be a top priority in creating a more healthful school environment, 35% of principals and 48% of school foodservice staff indicated a need for nutrition education for students, parents, administration, food personnel, or vendors.

#### **Application**

The information from the survey provides school administrators, child nutrition staff, and health educators with the information they need to develop programs that improve their school's nutrition environment.

### **Effecting Behavior Change in a Multi-Disciplinary Approach to School-Based Health Education Training, Ages 8-12**

Debra Harris, PhD; California Nutrition Network for Healthy, Active Families; California State University, Fresno, CA.

### **Purpose/Objective**

The purpose of this study is to assess the change in nutritional intake behavior of children, ages 8-12, after attending a five-week nutrition-training course.

### **Method**

Forty-seven students attending an after-school recreation program at five low-income elementary schools were studied. The elementary school students participated in a five-week nutrition-training program. During each session, selected elementary school students were interviewed for a 24-hour dietary recall. At that point, students' height, weight and Body Mass Index (BMI) were measured. Health educators, with educational backgrounds in social work, nutrition, and kinesiology, trained the elementary school students. Three months after the conclusion of the training sessions, the students were interviewed for a 24-hour dietary recall to assess the change in their eating habits, nutritional intake, and BMI.

### **Results**

After the five-week training session, students' BMI changed toward a more therapeutic level and their fruit consumption increased. Additional findings indicate a slight increase in their intake of carbohydrates, protein, fat, calories, fruits, and vegetables.

### **Application**

Based on these findings, a multi-disciplinary approach for elementary school health education in after-school programs is suggested for child nutrition professionals.

### **Evaluation of the Free Breakfast Program in St. Joseph, Missouri**

Hui-chun Huag, Kuei-I Lee and Carol Shanklin, PhD; Kansas State University

### **Purpose/Objectives**

The purpose of this study is to evaluate the efficiency of the free breakfast program implemented in the St. Joseph, MO, school district.

### **Method**

The study sample was comprised of three experimental and three control schools. Quantitative and qualitative data were obtained to evaluate the efficiency of the program. Participation and attendance data were obtained for all students in the six schools for the pre-implementation (2001-02) and post-implementation (2002-03) phases. Math and science scores from 345 match samples were assessed to investigate the academic performance of each school. ANCOVA and paired-samples t-tests were used to compare the differences between match samples. In-depth interviews were conducted with foodservice directors and principals and a survey was administered to teachers to assess their perceptions concerning the free breakfast program. Breakfast consumption data were obtained from a random sample of students.

### **Results**

Attendance slightly increased from 90.21% to 90.42% in the experimental schools. In the experimental schools, participation increased from 44.61% during the pre-intervention phase to 84% during the post-intervention phase. The service method also influenced participation. Academic performance of students in matched samples did not increase significantly. For

experimental schools, attendance increased significantly from 91.0% to 94.3% for students in the matched sample. Attendance for students in the free eligibility group increased the most. Benefits of the free breakfast program included better attentiveness during morning classes and increased attendance. Availability of nutritious packaged breakfast items for the “Breakfast in the Bag” program was identified as a major challenge.

### **Application**

Program directors can use the results of this study to identify the benefits and challenges they may need to address when assessing the feasibility of implementing a free breakfast program. Data on attendance and participation of students from limited-income families may be helpful in discussing the benefits of a free breakfast program with administrators.

## **Can Fresh Fruit Consumption Be Improved Among Elementary and Middle School Students**

Tzu-Chu Chien; University of Nevada, Las Vegas

### **Purpose/Objective**

This study investigated whether changing the form in which fresh fruit is served increases the consumption of fruit by elementary and middle schools students from limited-income families in one school district. Currently this school district serves fresh fruit as whole fruit. It is thought that students may eat more fruit if it is cut into “ready-to-eat” pieces, treated with an ascorbic acid compound to maintain freshness, and packaged into individual portions.

### **Method**

For three 6-week periods, either whole Red Delicious apples or packaged fresh apple slices were offered free to all students in a low-income elementary and middle school (enrollment = 1500 students). Students were permitted to take as many apples/packages as they liked, however, they were limited to eating them in the lunchroom during the lunch period. All apple and packaging waste was collected in special waste containers monitored by study personnel. The fruit was weighed prior to the service period, unused fruit and waste were weighed after the service period, and the weight of the fruit consumed was calculated. Data means and statistical comparisons of the means was calculated using SPSS.

### **Results**

Data collection was to be concluded in June 2004. Data analysis was to be used to test the following hypotheses: 1) Students will eat significantly more fruit when it is offered in a ready-to-eat form than when it is offered as whole fruit; 2) Given a choice, students will select ready-to-eat fruit significantly more frequently than they will select whole fruit; and 3) There are significant differences in the consumption patterns and preferences of elementary school students and middle school students.

### **Application**

If the first and second hypotheses above prove to be true, the school district plans to modify the way fresh fruits and vegetables are served on school menus in an effort to encourage children to eat these items. If differences are found in the preferences and consumption patterns of

elementary and middle school children, those variations will be taken into account during menu planning.

### **Remembrances of Early Child Nutrition Programs: An Oral History**

Meredith Johnson; National Food Service Management Institute

#### **Purpose/Objectives**

The objective of the oral history project is to record and document the remembrances of those involved in the early years of child nutrition programs (CNP). Through interviews with CNP professionals from each region of the country, different perspectives are being recorded. As part of this project, additional material, such as photos and correspondence concerning child nutrition programs, is being collected. These materials, along with the oral history interviews, document changes the CNP has undergone over the years.

#### **Method**

To implement this project, individuals from different regions who had worked in the child nutrition field over a number of years were selected. They were video- and/or audiotaped. Questions asked by the interviewer depended upon the interviewee's experiences. Interviews were transcribed and made available at the National Food Service Management Institute (NFSMI) Web site. The additional materials collected are housed in the Child Nutrition Archives located at NFSMI. Guides to these collections are being made available at the NFSMI Web site.

#### **Results**

The information and materials collected during this project will be invaluable to nutritionists and social scientists. For nutritionists, the information collected provides a unique opportunity to gain more knowledge and insight into federal child nutrition programs and how they have evolved over the years. For social scientists, data could be used in comparative studies between regions and to help understand the impact of the programs.

#### **Application**

The information collected from the interviews and additional materials documents the successes of and changes in child nutrition programs and enables researchers to gain insight into the impact of these programs and to make decisions for the future based on the past.

### **Prevalence of Cook-Chill and Cook-Freezing Systems in School Foodservice**

Denise Brown, PhD, RD, LD; NFSMI Applied Research Division, The University of Southern Mississippi

#### **Purpose/Objective**

This study was designed to identify the extent to which cook-chill or cook-freeze production systems are used by school districts across the United States. A second objective was to identify equipment used to transport and reheat food onsite.

#### **Method**

A 5-minute telephone survey was constructed and pilot tested. The questions were designed so that there was a minimal need to reference supporting records or documents. Calls were

conducted using a Computer Assisted Telephone Interviewing (CATI) system. A nationwide proportional random sample of school district contacts was identified (n=540) from a commercial database. Individuals received an informational letter prior to the calling period. Data were collected during each phone call and saved as data files. Descriptive statistical analyses were completed using SPSS Version 11.5 (SPSS, Inc., Chicago, IL).

## **Results**

A total of 353 (65%) individuals completed the surveys, which were collected over a 2-week calling period. A total of 151 school district contacts reported using either a central kitchen or a combination of a central kitchen with additional onsite kitchens. A total of 42 of these 151 school districts (27.8%) reported use of either cook-chill or cook-freeze systems. Central warehouse inventories were reported by 20 of these 42 school districts and 14 other districts reported a combination of a central warehouse inventory in addition to onsite inventories. Daily deliveries using basic trucks were reported most often. Convection ovens as the method used to heat foods prior to service were reported most frequently. District enrollment, number of schools, and the percentage of free and reduced-price meals were not associated with the type of production system implemented.

## **Application**

Child nutrition professionals considering renovation of existing school kitchens or participating in new facility construction may find this information helpful for planning either a central kitchen or a combinations of central and onsite kitchens systems.

## **Perceptions, Practices, and Barriers to School Foodservice Directors in Providing Nutrition Education to Students**

Laurel Lambert, PhD, RD, LD, University of Idaho; and Deborah Carr, PhD, RD, LD, NFSMI Applied Research Division, The University of Southern Mississippi

## **Purpose/Objective**

Individuals who manage National School Lunch and School Breakfast Programs are encouraged to take an active role in providing nutrition and healthy lifestyle education to students. The purpose of this research was to identify foodservice directors' perceptions, practices, and barriers concerning their role in supporting nutrition education for elementary school students.

## **Method**

A survey instrument, Nutrition Education Practices Survey (NEPS) for Foodservice Directors, was developed and mailed to school foodservice directors from 140 randomly selected elementary schools in Idaho and Arkansas. The survey addressed demographics and included 28 statements that measure the directors' level of agreement in providing nutrition education. Cumulative frequencies and factor analysis were used for data analyses.

## **Results**

Forty percent of directors reported providing no nutrition education during the school year, while 26% provided one to ten hours and 28% provided less than one hour of nutrition education per school year. The top three nutrition education resources used by the directors were materials from: 1) Dairy Council; 2) Team Nutrition Scholastics; and 3) School Lunch Menus. Ninety-

seven percent of directors agreed that nutrition education should be a part of elementary school curriculum, with 65% agreeing that it was their role to provide nutrition education and 70% agreeing they were adequately trained to provide nutrition education. Only 22% of directors agreed that there was adequate funding to support nutrition education.

### **Application**

For nutrition education to be successful in the school setting, it must be implemented in an environment that fosters a team approach that involves all stakeholders, including foodservice directors, teachers, school administrators, parents, and students. It is also important that state curriculum standards address nutrition education in order for stakeholders to incorporate the topic into the educational experience. Additionally, training is needed for directors to increase their confidence and competence in the area of nutrition education. Directors can take a proactive approach in their professional development by possessing a credential that acknowledges ownership of the competencies, knowledge, and skills needed to promote a healthy nutrition environment.

### **Perceptions of Adequacy of After-School Program Coordinators' Job Performance to Support Accountability in the NSLP Snack Service**

Jerry Cater, PhD; and Denise Brown, PhD, RD, LD; NFSMI Applied Research Division, The University of Southern Mississippi

### **Purpose/Objective**

The Child Nutrition Reauthorization Act of 1998 enhanced nutrition benefits for school children by authorizing reimbursement for National School Lunch Program (NSLP) snacks served in qualified after-school programs. This study compared the school foodservice administrators' and after-school program coordinators' perceptions of the adequacy of the program coordinators' job performance to support accountability requirements for the NSLP snack service.

### **Method**

A survey was mailed nationwide to 623 school foodservice administrators and 1,206 program coordinators. Participants were selected randomly from school districts participating in the after-school NSLP snack service during the 2002-03 school year. Responses were analyzed using descriptive statistics. A five-point Likert-type scale, where 1=strongly disagree and 5=strongly agree, was used to examine accountability factors. These factors focused on the program coordinators' awareness of accountability requirements and their level of performance when documenting accountability.

### **Results**

Results indicated that both foodservice administrators and program coordinators believed program coordinators were providing adequate documentation and were sufficiently aware of program requirements. Both groups indicated a high level of agreement for the program coordinators' adequacy of job performance pertaining to the two factors: "accurate snack counts are provided by due date" (4.4) and "NSLP snacks served are reconciled with daily attendance records" (4.3). The two awareness factors receiving high ratings by both groups were "program coordinators are aware that accurate daily snack counts are required to receive federal reimbursement" (4.6) and "only one snack per child per day can be reimbursed" (4.5). The

performance factor believed to be least adequate was “program coordinators reconcile the number of snacks served plus left-over snacks with the number of snacks received.” The factor rated 3.9 among foodservice administrators and 3.9 among program coordinators.

### **Application**

Findings from this study can be used to develop job expectation guides to help after-school program sponsors and program coordinators improve implementation of a NSLP snack service.

### **Self-Perception Profiles of Rural African American Boys**

Vicky Elliott, MS, RD, LD; NFSMI Applied Research Division, The University of Southern Mississippi

### **Purpose**

Ecological systems theory conceptualizes that there are developing children in a Mississippi community that has both the highest national rate of overweight individuals and a school system reporting almost 27% of first-graders and 40% of the eighth-graders as overweight or at risk of being overweight. Research suggests that low self-confidence is linked to a child’s overweight status. The purpose of this study was to pilot test a psychometric tool, the Self-Perception Profile for Children, in African Americans. The objective was to examine if the perceived domain means differed by age or from the profile norms.

### **Method**

The Self-Perception Profile for Children (SPPC) is a 35-item questionnaire measuring six domains of “self-concept” with historical reliability, validity, and norms. School officials permitted administration by randomly assigning two after-school classrooms, resulting in a sample of 23 African-American boys. A descriptive comparative study design captured the domains as dependent variables and age as the independent variable. One-way analysis of variance (ANOVA) procedure was performed with a statistical significance of  $p < .05$ .

### **Results**

The mean age was 9.5 with four age levels: 8, 9, 10, and 11 years. Perceived domain means by age did not differ significantly. Group domain means resembled the profile norms. These results show the SPPC is an effective tool for use with African-American boys. Intriguingly, four of the six domain means, (scholastic competence, social acceptance, behavioral conduct, and global self-worth) were higher than the norms.

### **Application**

The sample limited the study, but simultaneously fostered confidence in the use of the SPPC tool in future ecological investigations linking self-concept to dietary behavior similar to that of school meal participation and obesity among Mississippi children. The sharing of this pilot test informs and empowers school foodservice professionals with new knowledge.

### **Revised Competency Research Indicates an Increase in Essential Knowledge and Skills Necessary for Entry Level School Nutrition Managers**

Deborah Carr, PhD, RD, LD; Jerry Cater, PhD; and Vicky Elliott MS, RD, LD; NFSMI Applied Research Division, The University of Southern Mississippi

## **Purpose/Objective**

School nutrition managers working within the guidelines of the National School Lunch Program and School Breakfast Program are faced with many forms of accountability that assure program integrity and tackle environmental changes in an effort to contribute to the success of their respective districts' school nutrition program. Researchers finalized a three-phase research project to revise the competencies, knowledge, and skill statements of school nutrition managers to reflect the current environment in which they perform daily job duties. This revision determined which statements are essential for entry-level and beyond entry-level positions. The 1995 version of Competencies, Knowledge, and Skills of Effective School Nutrition Manager served as the foundation for the revision.

## **Method**

A national panel of school nutrition professionals (n=38) responded to a survey developed from the 1995 version of the competency, knowledge, and skill statements. Study participants took part in regional work group sessions, validating 206 statements challenged by the survey. Gap analysis identified areas for new statements. New statements were developed and validated by study participants, following a survey process.

## **Results**

The revised document describes 12 functional areas, 35 competencies, and 526 knowledge and skill statements. Findings reported an 18% increase in statements concerning the level of requisite knowledge and skills at the entry level, with 65% of the revised statements rating important for an entry-level school nutrition manager.

## **Application**

The information will assist the National Foodservice Management Institute, U.S. Department of Agriculture, state agencies, and other professional groups to design training that is appropriate for school nutrition managers. Additionally, the information will provide a framework of well-defined competencies, knowledge, and skills to assist educators in developing curriculum and professional development opportunities designed specifically for the entry-level and experienced school nutrition manager. The ability to descriptively characterize the competencies, knowledge, and skills for these professionals provides essential information for selecting, developing, and coaching future school nutrition managers.

## **Georgia Quality Measure Needs Assessment Survey for Schools**

Carrie Lynn Davis, PhD; James Bason, PhD; and Annette B. Hopgood, M.Ed, LD; Georgia Department of Education

## **Purpose/Objective**

The purpose of this research was to conduct a needs assessment to identify areas of training and technical assistance to local school systems, to gather data for strategic-planning purposes, and to bring more awareness to the best practices necessary for quality school nutrition programs. The objective of this research was to: 1) identify practices that local personnel perceive to be of the highest importance in program management; 2) list practices that local personnel anticipate will change during the next three years; 3) identify practices perceived to be of the highest



importance but lowest in program implementation; and 4) target the use of resources for the long-range planning of training and technical assistance.

### **Method**

Scannable surveys were mailed to all school superintendents (n=190), all nutrition directors (n=190), randomly selected principals (n=315), and nutrition managers (n=315). The survey included 50 and 55 questions for Superintendents/School Nutrition Directors and Principals/Nutrition Managers, respectively. Respondents were asked about the current level of implementation (high, medium, low, and don't know) and anticipated change in emphasis (more, same, less, and don't know) over the next three years. All questions, with the exception of three, were directly from the Quality Measures for Georgia's School Nutrition Program manual.

### **Results**

Of the 1,010 surveys mailed, 517 (51.2%) useable surveys were returned, with Superintendents/Nutrition Directors returning 246 (47.6%) and Principals/Nutrition Managers returning 271 (52.4%). Across both groups, current reported levels of implementation are high, but in both cases, significant numbers of respondents anticipate more change during the next three years in attempting to implement the Quality Measures.

### **Application**

This needs assessment provided data for the state agency's Long Range Planning Conference with local directors, managers, state association leaders, healthcare professionals, and school and community leaders. Increased attention should be paid to promoting change from current levels of implementation in an attempt to increase Quality Measures in certain areas in the future.

### **Implementation of a Recess-Before-Lunch Policy in Four Montana Elementary Schools Brings Positive Changes in Student Food Consumption and Discipline**

Chris Emerson, MS, RD; Molly Stenberg, RD; and Katie Bark, RD; Montana Office of Public Instruction

### **Purpose/Objective**

In order to provide a pleasant eating experience for children and encourage adequate food intake during lunchtime, the Montana Team Nutrition Program was interested in exploring a recess-before-lunch policy for elementary schools through a pilot study done from Spring 2002 to Spring 2003. The purpose of this study was to assess changes in food and beverage waste and overall acceptance by students, staff, and administrators after the implementation of a recess-before-lunch policy.

### **Method**

Four schools were chosen based on their interest in implementing the recess before lunch policy. These schools represented four specific different grade level ranges in central, western, and northern Montana. The study consisted of different phases, the first being when the school followed a lunch-before-recess policy and the second after a recess-before-lunch policy was implemented. Each phase included a plate waste study, student focus group, and staff surveys to help evaluate changes in student consumption and acceptance level by students and staff.

**Results**

Study results indicated a decrease in the average amount of food and beverage wasted per student. The overall acceptance by staff was very favorable as positive improvements in the cafeteria, playground, and classroom discipline and attention span also occurred. After the initial adjustment, the staff also felt the cafeteria atmosphere was much more relaxed, quiet, and conducive to eating.

**Application**

An implementation guide was developed and posted on the state agency Web site. The guide, which included the results and lessons learned from this study, can be used by schools across the nation in exploring the use of this policy in elementary schools to improve the dining experience and nutritional intake of children. A 2001 USDA Team Nutrition Training Grant awarded to the Montana Office of Public Instruction funded this project.