

Child Nutrition Showcase Abstracts

SNDA III Study Results Indicate Improvements Needed in School Meals

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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 provide up-to-date information on the school meal programs (including the National School Lunch Program (NSLP) and the School Breakfast Program (SBP)), and the nutrient content of school meals from data collected during the third School Nutrition Dietary Assessment Study (SNDA-III).

Method

SNDA-III data were collected from a stratified sample of schools and are representative of all public School Food Authorities (SFAs) that offer the NSLP in the contiguous United States.

Results

In general, with a few exceptions, the type of menu planning method used (nutrient-based, enhanced food-based, or traditional food based) had little effect on the calorie or nutrient content of the meals served. However, only 13% of schools offered breakfast menus that met all the calorie and nutrient breakfast School Meal Initiative (SMI) standards. Also, only 7% of schools had students who took meals that met the SMI breakfast standards. Only 7% of schools offered lunch meals that met the SMI standards while only 2 % of schools had students who took meals that met the SMI standards. The students in the schools with the highest rates of students qualifying for free and reduced breakfasts were presented with and took breakfast foods that met the SMI standard for energy less often. Students from the largest schools (greater than 1000 students) have a greater chance of being presented with adequate breakfast calories than smaller schools based on the SMI standards. This also results in the students from the largest schools selecting foods with more calories than students in smaller schools.

Applications to Child Nutrition Professionals

School Food Service Managers will be able to make adjustments in menu selection to provide adequate meals to all students; especially in schools that are populated by students who qualify for free and reduced meals.

How is Average Daily Participation Percentage in the National School Lunch Program affected by the number of students to be served per minute and by cafeteria seating capacity?

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Purpose/Objective

This study analyzes the National School Lunch Program Average Daily Participation (ADP) percentage in the Blount County Schools Child Nutrition Program (CNP) in relation to four variables: the number of potential students served per minute; seating capacity of cafeteria sites (potential table turns); the percentage of free and reduced eligible students; and the percentage of non-English speaking students.

Method

Participation data were collected from Blount County Schools CNP, located in a predominantly rural

setting, and serving 8,311 students in grades K – 12 at eleven cafeteria sites. Data were compiled into tables for analysis using descriptive statistics and Pearson Correlation to identify possible relationships between ADP percentage and the proposed variables.

Results

The CNP had 49.57% of students approved for free or reduced meals with 10.67% of students non-English speaking. Average Daily Participation ranged from a low of 69.3% to a high of 95.37%, with a Mean of 79.77%. Analysis of the data revealed a positive but not statistically significant relationship between ADP% and two variables: the percentage of free and reduced eligible students and the percentage of non-English speaking students. Analysis of the data revealed a negative but not statistically significant relationship between ADP% and the seating capacity of cafeteria sites and a negative statistically significant relationship between ADP% and the number of potential students to be served per minute.

Applications to Child Nutrition Professionals

This study suggests a need for additional seating capacity and service locations for cafeterias with the largest student populations. Systematic statistical analysis of routinely collected data can provide important support to CNP directors when shared with key school district administrators.

Eating Right Around The Clock Nutrition Education Program in A Tangipahoa Parish Elementary School

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Purpose/Objective

Nutrition education can impact the health of elementary school children. The objective of this study was to examine the effects of Eating Right Around The Clock (ERAC) nutrition lessons using a multi-component approach on children's knowledge of nutrition and preference of foods. The multi-component effort included collaboration between the classroom and school foodservice to send a consistent message about nutrition.

Method

The ERAC lessons were taught as part of English/Language Arts classes and may be used as the educational component for the Healthier U.S. School Challenge applications.

Third grade students (n = 108) from an elementary school in Louisiana were selected for the study. The outcomes were measured using a pre and post test self-report questionnaires. One group had nutrition education lessons and the other group did not have nutrition education lessons. The main outcome measures were the impact of nutrition knowledge on behavior and preference for food items.

Results

Students who received nutrition education exhibited greater improvements in nutrition knowledge and food preferences than the students who did not receive nutrition education. For example, the percentage of children who chose buttered popcorn instead of unbuttered popcorn was statistically significant (p = .034). The number of children who chose whole milk instead of low fat milk was lower but not statistically significant (p = .099). These findings suggested that school administrators, classroom teachers, and nutrition educators should implement school nutrition education as a way to positively influence dietary habits at an early age.

Applications to Child Nutrition Professionals

The findings indicated the importance of school foodservice personnel in educating the student population about nutrition. Teachers cannot be the sole educators for nutrition. Teachers and school foodservice personnel must bridge the gap between the classroom and the cafeteria to create a consistent message to positively influence students about nutrition.

Vending Trends in Schools

Purpose/Objective

To share insights gathered from the recent Y-Pulse survey, "Vending Trends in Schools." In this survey, Y-Pulse tapped into the minds of school foodservice professionals who handle vending operations to explore their department goals for vending, and the wants and needs of youths in their schools.

Method

An online survey was sent to an email list of school foodservice professionals with vending responsibilities. The questions were designed to explore trends, concerns of consumers, and types of food and beverages requested for vending. Operators who participated in the survey serve a total of nearly 200,000 students daily.

Results

The majority of foodservice professionals felt that:

- the appearance of a machine was important to a student's vending choices.
- youngsters are concerned or very concerned about pricing.
- the method of payment is a top concern to students.
- the cashless vending trend would somewhat or to a great extent affect the design of their ideal vending operation.
- there are products that students request that are difficult to supply such as healthy beverages, flavored soft drinks and ice cream.

All participants replied that:

- the foodservice director was the key person in purchasing equipment for vending operations.
- healthy food would affect the type of vending equipment they would request somewhat or to a great extent, while almost all operators said the same thing about fresh food.

Applications to Child Nutrition Professionals

The Y-Pulse Poster session will help child nutrition professionals improve their vending operations by providing such facts as:

- foods that kids want from vending machines.
- operators' opinions of the ideal vending set-up.
- trends affecting payment methods.
- the importance of pricing to kids.
- how the freshness of food affects kids' purchasing decisions.

Investigation of the Job Functions and Training Needs of State Agency Child Nutrition Professionals

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Purpose/Objective

The objectives were to 1) investigate the job functions of child nutrition (CN) professionals in state agencies, 2) describe the educational level and employment background of the CN professionals, and 3) identify training provided to state agency staff.

Method

An electronic survey was administered to 62 state agency directors. A review and analysis of job descriptions and organizational charts submitted by state agency directors was conducted and significant themes within the job descriptions were identified.

Results

A total of 40 surveys (65%) were received. Almost all state agency directors (92.5%) reported that they had staff with an undergraduate degree in nutrition and 60% had staff with experience as a school nutrition director. During the first year of employment, most CN staff receive on-the-job training within their work unit with mentoring enhancing the process. The major sources of professional development opportunities in the first year of employment are the School Nutrition

Association, professional association conferences/workshops, United States Department of Agriculture, and the American Dietetic Association. Child nutrition professionals in state agencies perform a wide variety of tasks. Analysis of job descriptions revealed twelve commonalities that were utilized in the electronic analysis to identify significant themes within the job descriptions of child nutrition professionals employed in state agencies. Thirty significant themes were identified from the job descriptions.

Applications to Child Nutrition Professionals

State agency staff members perform a pivotal role in ensuring that CN programs comply with government regulations and positively influencing the services provided to children in school districts and child care facilities. The results from this study can aid in determining the functions, competencies, and skills needed to perform effectively as a CN professional in a state agency. These results will form the foundation for a larger electronic survey administered nationally to CN professionals employed in state agencies.

Food Safety Training in Texas School Foodservice in Relationship to the Implementation of a HACCP Program

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Purpose/Objective

The purpose of this study was to investigate food safety training currently offered in Texas school foodservice facilities in relation to implementation of HACCP. Objectives included: (a) determine content, method, and frequency of current food safety training; (b) assess effectiveness, attitudes, and barriers concerning food safety training; and (c) investigate current food safety Standard Operating Procedures (SOPs) and HACCP programs that have been implemented.

Method

A survey instrument was developed by the researchers, validated by school foodservice professionals and pilot tested. A random sample of 505 Texas school foodservice directors were invited to participate in online and paper surveys. Data were summarized and statistically analyzed using Pearson's product moment correlation and analysis of variance.

Results

Surveys were completed by 120 school foodservice directors (24% response rate). Many (38%) directors had completed a Texas Certified Manager Program while 31 % had completed a ServSafe course. Many required their managers/ supervisors to also participate in certification; however, only 68% required certification for their foodservice employees. A majority of school foodservice directors agreed with the effectiveness and had favorable attitudes towards training. However, they had lower agreement regarding adequate time, adequate funding, language barriers, and staff motivation for food safety training. This study also concluded that most Texas school foodservice facilities have SOPs and necessary components of a HACCP program in place.

Applications to Child Nutrition Professionals

HACCP implementation and food safety training are important to ensure the health and safety of children who eat school meals. Food safety training might be improved if all foodservice employees were required to have some type of food safety certification and if food safety training sessions were offered more frequently to employees who work directly with food. Further research could focus on the effectiveness of various types of food safety training methods and various monitoring and verification techniques used for HACCP.

Ready Set Go.... Increasing School Breakfast Participation

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Purpose/Objective

Increase school breakfast consumption among elementary school students

Method

A survey was administered to the Fairview elementary school students (3-6 graders) to obtain information on barriers to eating school breakfast. This school provides free school breakfast for all students enrolled, and approximately 67% of students eat breakfast. To promote participation in the breakfast program, students were encouraged to participate in a breakfast promotion program, where they have to eat breakfast everyday for three weeks. Those who ate breakfast everyday during the promotion period were eligible for prizes. To market the promotion, SNA School Breakfast week parent brochures and promotion details were distributed to parents and the Ready Set Go breakfast poster were displayed in the cafeteria.

Results

94 students participated in the survey with an 82% response rate. Over half of the survey participants were girls (51.1%). Almost 15% of the students responded not eating breakfast at school. Some of the reason for not eating breakfast was not hungry (22.3 %) or don't like the choices (11.7%) or had breakfast at home (28.7%).

During the month of January, participation was 61%. During the promotion period the mean participation was 71%. During the first week of the promotion participation increased to 67%. During the second week participation was 70%; the third week of the promotion saw the greatest increase with a participation of 75%. This increase is a direct result of encouragement from teachers.

Applications to Child Nutrition Professionals

The promotion itself resulted in more student participation in the breakfast program however; teacher's participation and encouragement resulted in greater student participation in the school breakfast program. Teachers can play a major role in the students' decision to eat breakfast at school.

The Influence of Sodium Information on Entrée Selections by High School Students

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Purpose/Objective

Sodium intakes among American youth greatly exceed recommended levels, placing this generation at greater risk for hypertension and cardiovascular disease. Providing increased access to nutrition information has been proposed as an intervention to improve dietary intakes. This study examined whether high school students changed their food choices based on the availability of sodium information at the point of selection.

Method

An experimental research design was used, in which twenty high schools nationwide posted nutrition labels (n = 9) for eight weeks or did not (n = 11). A t-test was used to compare the mean sodium level in lunch entrées selected by students during the intervention to the mean sodium level in entrées selected during a period eight weeks prior.

Results

The nutrition labels did not appear to influence students to choose lower sodium entrées. During the period when nutrition labels were posted, the intervention schools increased the sodium level of their menus, which made it difficult to discern the effect of the nutrition labels. Percentages of students eligible for free and reduced price lunch were similar between control and intervention schools, as were average daily á la carte sales. For all 20 schools, the mean sodium level of entrées selected by students was 801.98 ± 252.98 mg at pre-test and 812.72 ± 270.47 mg at post-test. In general, students' entrée selections were lower in sodium when lower sodium options were provided.

Applications to Child Nutrition Professionals

The finding that students were not self-motivated to choose lower sodium options when provided with nutrition information demonstrates the importance of serving foods with lower sodium in school meals. The results also suggest students may benefit from education regarding food label

use and consuming sodium in moderation. Pairing efforts to reduce sodium levels in school meals with nutrition education may result in greater acceptance of foods with lower sodium by students.

Importance of Competencies To Being a Successful School Nutrition Director

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Purpose/Objective

The purpose of this study was to determine the importance of competencies of a school nutrition (SN) director as perceived by SN directors and district administrators.

Method

Random samples of 700 SN directors and 700 district administrators stratified by USDA region were selected. Previous research identified ten functional areas and 23 competencies needed by SN directors to effectively lead their programs in the current environment. A survey was developed that asked SN directors and district administrators to rate the importance of the 23 competencies to being a successful SN director using a 4-point scale (1, not important to 4, extremely important). Statistical analyses included descriptive statistics and t-tests.

Results

Survey respondents included 352 SN directors (50%) and 274 district administrators (39%). Over one-third of SN directors reported their direct supervisor was the superintendent (35.6%), while 25.4% indicated the business administrator. Administrators (44.2%) described their job title as superintendent and 46.1% reported working with two or three SN directors throughout their administrative career, while 28.8% worked with four or more SN directors. SN directors rated all competencies 3.0 or greater and administrators rated 20 of the 23 competencies 3.0 or greater indicating a high level of agreement that the competencies are important to the success of SN directors. "Establishes policies and procedures to ensure food is prepared and served in a sanitary and safe environment" was rated the most important competency by both groups. The functional areas with highest mean ratings from both groups were food production and operation management and financial management.

Applications to Child Nutrition Professionals

Research-based competencies are important to the foundational success of SN directors. Those seeking careers as SN directors should possess knowledge and skills related to the competencies. These competencies can serve as the framework for professional development, mentoring, and other succession planning activities to prepare SN professionals for district-level responsibilities.

Technology Use in Child Nutrition Programs

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Purpose/Objective

The purpose of this study was to investigate current technology use and directors' attitudes toward the use of technology in child nutrition programs in the USDA Southwest Region of the United States (i.e. Arkansas, Louisiana, New Mexico, Oklahoma, Kansas, Colorado, and Texas).

Method

A questionnaire was developed by the researchers, validated by an expert panel using the Delphi technique, converted to an on-line format, and pilot tested. A random sample of child nutrition directors (CNDs) in the USDA Southwest Region (n=500) plus directors active in a School Nutrition Services listserv were recruited to participate via an on-line survey or by answering a mailed survey. The questionnaire included information regarding perceived computer skill level, types of technology/software applications currently used in child nutrition programs (CNP), and district/personal demographic information. Using Likert-type scales, participants also rated the effectiveness of various types of computer technology used in their department, barriers to purchasing new technology/software programs, and the importance of future technology/software

purchases. SPSS was used for statistical analyses including descriptive statistics, Pearson's correlations, and MANOVA.

Results

A total of 111 (22%) respondents completed the survey. The majority of participants (66%, n=73) rated themselves as advanced computer users and 36% (n=40) were employed in suburban areas (population size 2,500-50,000). Education levels of CNDs ranged from a high school degree (22%) to a master's degree or higher (32%). Education and the perceived computer skill levels of CNDs were positively correlated with current use of technology ($p<0.05$) and negatively correlated with perceived barriers to purchasing new software or technology ($p<0.05$). More specifically, CNDs with more education and higher perceived computer skills were less likely to agree that inadequate funds and outdated computers were barriers to purchasing new software or technology ($p<0.05$). CNDs in smaller districts, however, indicated a stronger agreement with inadequate funds and outdated computers as being barriers to purchasing new software and technology ($p<0.05$).

In addition, perceived computer skill levels of CNDs were positively correlated with the effectiveness of technology used to for financial and menu management related tasks, regulatory related tasks, department and district communication, and innovation (i.e. digital media, TV's, etc) (all $p<0.05$). In terms of future software/technology purchases, CNDs with higher perceived computer skills felt security cameras with intranet viewing capabilities were most important with personnel management and on-line payment systems also perceived as important. Interestingly, CNDs with longer work experiences in child nutrition felt technology was most effective in controlling food theft and did not find on-line purchasing, nutrition education, or on-line training to be important future purchases

Applications to Child Nutrition Professionals

Technology and software applications are now being used by many CNDs who perceive these applications to be effective in meeting many of their department goals. Numerous barriers to purchasing technology and software still exist, however, and additional computer training and support via professional organizations, on-line sources, vendors, or area-wide training seminars should be provided to CNDs in order to help them optimize student participation as well as operate efficient and productive child nutrition programs.

Nutrition Information at the Point of Selection in High Schools Does Not Affect Student Purchases

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Purpose/Objective

Nutrition information can be an important component of local school wellness policies. The purpose of this study was to investigate the effects of posting entrée nutrition information at the point of selection (POS) in high schools nationwide and conduct interviews with school nutrition (SN) directors from intervention schools after the intervention to determine satisfaction with and barriers to having nutrition information posted at the POS.

Method

SN directors from all USDA regions were recommended by state agency personnel. Intervention SN directors (n=9) posted nutrition labels for entrées in the high school while the control SN directors (n=11) did not. Data from the POS were analyzed using ANOVA and stepwise regression. The intervention SN directors were interviewed via telephone to determine satisfaction with and barriers to posting nutrition information at the POS.

Results

The two groups were significantly different at pre-test, with the control group schools offering fewer calories and fat but more choices. Posting nutrition labels did not seem to influence students' choices. SN directors who ensured that the entrées were healthy choices had lower levels of calories and fat in the students' purchases. The SN directors' experiences with the intervention were positive, and they reported providing nutrition labels was a service to students.

Applications to Child Nutrition Professionals

The findings indicate that attention to the levels of calories and fat in the menu offerings influenced high school student purchases. If schools provide healthy options, students will select healthful food options, therefore, eat better. While this conclusion appears simple, it is consistent with the principle of having professionally trained SN directors and registered dietitians associated with SN programs. The lack of impact of entrée nutrition labels in the intervention schools suggests that simply providing passive nutrition information is insufficient for changing lunch purchases in high schools.

Development of visuals to educate foodservice workers about safe food handling practices

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Purpose/Objective

Develop a food safety training module that involves visuals as the key training method.

With increasing diversity of the workforce, it is desirable for training and education to be conducted so that the needs of diverse audiences are met. Visuals (such as videos, charts or pictures) can be used to educate diverse audiences about food safety. Seeing the food safety concepts could help the audience better understand food safety messages, particularly if written or verbal accompaniments to the message are in a language that is not native to them. One particular population that could benefit from such type of training is the non-English speaking Hispanic population.

The Hispanic population in the United States is rapidly increasing; this increase has been seen in Iowa. The Latino population is the largest minority population in the state of Iowa representing 4% of the total state population, and increasing.

Method

Visuals containing food safety messages pertaining to proper handwashing and proper glove use methods were developed.

Participants who were non/limited-English speaking Hispanic foodservice workers attended a one-hour training session conducted in Spanish.

All participants completed a questionnaire before and after the training intervention. A minimal-text questionnaire written in Spanish and containing graphics depicting food handling practices was developed and used in this preliminary study.

Results

- N = 15 participants completed the training (Male = 13, Female = 2).
- Participants were unsure about water temperature for handwashing, if they should be wiping hands their hands on aprons, and if they should wear gloves with Ready-To-Eat foods.
- Challenges were experienced in recruiting participants for the study owing to the voluntary nature of participation and possibly fear among participants about visibility of their immigrant status.
- Participants expressed that the visuals helped them easily understand the food safety concepts.

Applications to Child Nutrition Professionals

Child Nutrition Professionals can use similar visuals to train staff about safe food handling practices. Limited text visuals are easy to use with individuals whose native language is not English.

Comparison of Cooperative and Noncooperative Purchasing in School Foodservice

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Purpose/Objective

The purpose of this study was to compare food cost and public school foodservice directors' satisfaction between districts participating in school foodservice cooperatives or group purchasing arrangements and districts purchasing independently. It also assessed the prevalence of purchasing cooperatives in school foodservice and various bid purchasing methods used in school foodservices to solicit and award competitive contracts for food.

Method

A random sample (N=1650) of school foodservice directors, stratified by United States Department of Agriculture (USDA) region, was surveyed electronically regarding satisfaction with current purchasing methods, food prices currently paid for selected items, and participation in cooperative or group purchasing. Data from completed surveys (n=453) were analyzed using t-tests and Analysis of Variance (ANOVA).

Results

Study results showed half of respondents indicated participation in purchasing cooperatives. The majority of cooperative members was from districts with fewer than 5,000 students. Line-item bids were reported as used most frequently. There was no significant difference in overall satisfaction with purchasing outcomes between cooperative members and nonmembers. Primary reasons identified by district foodservice directors for joining a cooperative were lower costs, increased competition, and reduced paperwork. For eight selected foods, cooperative members reported significantly ($p=.05$) lower prices on three items.

Applications to Child Nutrition Professionals

Foodservice directors could use data from this study to evaluate their current competitive purchasing. Data from this study could be useful to program directors and school officials in decision making regarding joining a cooperative or purchasing group. Further research is needed to determine factors that influence participation of vendors in school foodservice competitive bids.

Implementation of Food Safety Programs Based on HACCP Principles in School Nutrition Programs

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Purpose/Objective

The purpose of this study was to assess the extent to which school nutrition (SN) programs have implemented food safety programs based on Hazard Analysis and Critical Control Point (HACCP) principles.

Method

A survey instrument was developed based on the United States Department of Agriculture (USDA) guidelines for developing school food safety programs, with input provided by USDA and state agency representatives. The population of SN directors participating in school nutrition programs was asked to participate in an online survey administered by SurveyMonkey. Survey invitation letters were mailed to SN directors, who distributed surveys to SN managers in their districts, resulting in a total of 29,696 surveys. Statistical analyses included descriptive statistics and exploratory factor analysis.

Results

A total of 2,716 surveys (9%) were completed by 1,610 SN directors and 1,106 SN managers representing all USDA regions. The majority of directors (93%) and managers (96%) reported that all schools in their districts or their schools, respectively, had implemented HACCP-based food safety programs. However, additional analyses indicated that the implementation process was incomplete in 26% and 19% of districts and schools, respectively. Both SN directors and managers rated time associated with developing, implementing, and training employees on the food safety programs as top barriers to development and implementation of HACCP-based food safety programs. Both directors and managers identified ensuring ill employees do not work with food and serving as a positive role model with respect to food safety as factors important in developing and implementing HACCP-based food safety programs.

Applications to Child Nutrition Professionals

Although the majority of districts and schools reported implementation of food safety programs based on HACCP principles, the implementation process was not always complete. Barriers to program implementation and factors contributing to program implementation identified in this study will assist in ensuring broader implementation of HACCP-based food safety programs in school nutrition programs.

Team Nutrition (TN) School Leaders Perceived Usefulness of Team Nutrition Resources

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Purpose/Objective

TN is a comprehensive plan developed by USDA for improving the health of American school children by changing eating behaviors and promoting food services and physical activities. This online survey was designed to assess the usage of specific TN resources and perceptions of usefulness by TN school leaders.

Method

An online survey was developed. TN school leaders (6,638) received an invitation letter and follow-up post card. Five hundred forty-five participants completed the survey.

Results

Approximately 60% of TN school leaders were cafeteria manager, and 58% received high school education or associate degree. Of 545 TN school leaders, 55% received "MyPyramid for Kids," 22% "Nutrition Essentials," 15% "Empowering Youth with Nutrition and Physical Activity," and 20% "Team Up at Home." Only 10.6% to 17.2% reported frequent use of TN resources in their school. Approximately two-thirds and half of the schools used TN resources in "health" and "physical education" classes, respectively. Two-thirds or more perceived that the lessons were well organized, instructional design allowed teachers to customize the lesson to the specific needs of students, graphics appealed to students, and information and activities were appropriate for different grade levels and helped engage students in learning. About two-thirds reported they distributed TN resources to teachers while nearly 10% did not. TN school leaders suggested that more visual, hands-on, and poster material are needed. Major barriers for using resources included "having no time" and "lack of interest or cooperation."

Applications to Child Nutrition Professionals

This study shows a large proportion of TN school leaders did not receive resources, and 25% of those who received resources never or rarely used them. However, the large majority of users perceived that TN resources were useful. Suggestions from leaders are helpful to future development of resources. Findings indicate TN agencies, school districts, and TN schools need to work together and overcome barriers for using resources.

Exploring Nutrition Literacy and Knowledge Among School Nutrition Managers

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Purpose/Objective

The purpose of this national study was to describe nutrition literacy/awareness levels and nutrition knowledge among school nutrition (SN) managers, explore barriers to seeking SN information, perceived role in school wellness, and confidence in SN decision making varied by nutrition literacy and knowledge scores.

Method

An expert panel of seven SN professionals contributed to the development of the survey instrument. A random sample totaling 700 SN directors, equally stratified by USDA region, was selected as the primary contacts. A total of 199 SN directors responded to the request for participation by

administering the survey to 728 SN managers'. Chi-square, one-way ANOVA, MANCOVA and Pearson Correlation tests were used to examine survey data.

Results

The majority of SN managers (72.2%) had adequate nutrition literacy skills as measured by an adapted version of a previously validated instrument based on interpreting a food label. For the 10 nutrition knowledge statements, results indicate that knowledge was more compromised including 22.7% with low nutrition knowledge (0-5 questions correct), 45.0% with limited nutrition knowledge (6-7 questions correct), and 32.3% with adequate nutrition knowledge (8-10 questions correct). Nutrition literacy/knowledge scores varied by the type of school and years worked in current position. SN managers working in elementary schools and in current position for greater than 20 years reported lower nutrition literacy/knowledge scores. No meaningful significant relationships were identified among knowledge and literacy scores and the barriers, roles, confidence scales.

Applications to Child Nutrition Professionals

This study provides a foundation to explore the causes and consequences associated with nutrition literacy/awareness within the context of school nutrition programs. Since SN managers make daily decisions regarding the provision of food to students, it is critical to assure training opportunities are provided for these managers to develop the knowledge and skills necessary to locate, comprehend, and apply complex nutrition information for the students they serve.