

NFSMI Research Summary

Mary Frances Nettles, PhD, RD
Director of Applied Research Division
Mary.Nettles@usm.edu

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.

NFSMI Research Summary is a continuing series of summaries reporting recently completed research funded by the National Food Service Management Institute. This research has been produced by the National Food Service Management Institute, Applied Research Division, located at The University of Southern Mississippi with headquarters at The University of Mississippi. Funding for the Institute has been provided with federal funds from the U.S. Department of Agriculture, Food and Nutrition Service, to The University of Mississippi. The mission of NFSMI is to provide information and services that promote the continuous improvement of Child Nutrition Programs, such as: School Meals Programs, Summer Food Service Program, and Child and Adult Care Food Program.

Recently Completed Research

School Nutrition Professionals' Perceptions Regarding Their Role in Supporting and Contributing to School Wellness

The purpose of this study was to investigate the perceptions of school nutrition (SN) directors and managers regarding their role in supporting and contributing to the school wellness environment. In order to investigate these perceptions, a two-phase research design was employed. In the first phase of the study, an expert panel session was conducted, and the main discussion points were summarized. In the second phase of the study, the qualitative data collected from the expert panel session were used to develop a quantitative survey instrument to assess SN directors' and managers' perceptions regarding roles in school wellness and factors that would support a greater contribution to school wellness. The survey was pilot tested and revised, and the final survey was mailed to a national sample of 1,400 SN directors and managers. A total of 462 surveys were returned and used in statistical analysis, for a response rate of 33%.

Results indicated that participants believed that SN professionals have an important role to play in school wellness and that they have a responsibility to model healthy behaviors to school children. Overall, participants rated roles related to food safety, availability of food choices, encouraging healthy diets in children, and modeling personal wellness as most important. Roles rated as least important included grant writing to fund wellness initiatives and assessing and evaluating wellness initiatives. In general, roles rated as most important were also roles in which participants reported the greatest level of involvement, although participants reported little involvement in many roles. Overall, factors perceived as promoting a greater contribution to school wellness included those related to financial support, time to devote to wellness activities, support from other involved parties, support for personal wellness, and adequate information and training.

In terms of role modeling, both health-related behaviors and weight status were perceived to be important, with weight being more of a negative issue with obese, but not overweight or underweight, SN professionals. Participants also agreed that wellness activities designed for SN professionals should be included in school wellness initiatives and that wellness initiatives encourage SN professionals to make positive changes in personal health behaviors. Although serving as a positive role model and personal lifestyle behaviors were perceived as important, many participants indicated that no wellness activities had been implemented for SN

staff. When available, the most commonly reported wellness activities for SN staff were nutrition promotions and programs.

In conclusion, participants considered all roles related to school wellness as important. However, they reported little to no involvement in many roles assessed, suggesting the potential for a much greater role for SN professionals in school wellness. Factors promoting a greater contribution to school wellness identified in this study will be helpful in expanding the roles of SN professionals in school wellness.

School Nutrition Professionals' Involvement in the Equipment Purchasing and Facility Design Process

The purpose of this study was to conduct a needs assessment to determine the current state of involvement and knowledge of SN directors in the facility design and equipment purchasing process. To accomplish this goal, researchers explored the involvement and knowledge of SN professionals in the facility design and equipment purchasing process; issues and trends influencing the layout and design of facilities and purchase of equipment in SN programs; and the skills needed for SN professionals to be viewed as credible resources for the design of SN facilities. An expert panel of SN professionals previously identified as content experts was convened to ascertain their opinions regarding the research objectives. The qualitative data gleaned from the expert panel discussions were used to develop a survey that was mailed to a random sample of 1,050 SN. A total of 351 surveys were returned and used in statistical analysis for a response rate of 33 percent.

The results demonstrate that almost all (95.3%) SN directors surveyed are actively involved in the purchase of equipment for their programs, and 80.6% had participated in renovations to or the new construction of SN facilities. The great majority of these directors have not received any formal training in either equipment purchasing (72.2%) or facility design (79.2%), and over half (51.2%) reported that they did not have enough resources or training programs to be effective with equipment purchasing and facility design projects. When SN directors were asked to rate the usefulness of resources for equipment purchasing and facility design decisions, the two resources which had the highest mean ratings for both equipment purchasing and facility design decisions were "Other SN directors" and "Other school districts." Issues impacting decisions on equipment purchasing and facility design projects that were rated as most important for both equipment purchasing and facility design projects were "Budget", "Efficiency", and "Food safety and sanitation." When asked to rate their agreement with 21 qualities related to the SN director's role, the qualities with the highest agreement ratings for both equipment purchasing and facility design projects were "Maintains integrity throughout the process"; "Conveys the needs of their SN operation"; and "Accepts responsibility." Potential challenges to the success of equipment purchasing and facility design projects with the highest agreement ratings were "Understanding local/state/federal codes"; "Lack of knowledge"; and "Planning for flexibility". Finally, SN directors rated their agreement with nine possible skills needed to execute equipment purchasing and facility design projects. All nine skills for both types of projects had a mean rating of 3.3 or greater on a 4-point scale, indicating that the study participants agreed that all skills were needed.

The findings of this research suggest that decisions related to equipment purchasing and facility design projects are more complex than simply selecting a piece of foodservice equipment. Having a clear understanding of the resources available for assistance, the issues that are important for a specific project, and the potential challenges that can be encountered are critical for the success of equipment purchasing and facility design projects. The active involvement of SN directors in equipment purchasing and facility design decisions is essential to ensure that SN facilities are financially and operationally effective and efficient for both today's students and future generations of students.

Investigation of Factors Impacting Participation of High School Students in the National School Lunch Program

The purpose of this research was to identify factors associated with the non-participation of high school students in the National School Lunch Program (NSLP). To accomplish the project goal, the research was conducted in two phases. In Phase I, focus group discussions with high school students revealed that school nutrition (SN) programs have two distinct types of high school customers: those who eat school meals frequently (at least three times a week) and those who eat infrequently (two or less times per week, or about eight times or less per month). Students who eat school lunch frequently have different concerns from students who eat less frequently, if at all. Measuring satisfaction issues addresses the concerns of the first group, while measuring factors that affect non-participation addresses the concerns of the second group.

Findings from the focus groups provided the foundation for developing a needs assessment survey that explored the reasons why non-participants chose not to eat school lunch. In Phase II, a three-stage series of pilot tests were conducted to refine and validate the survey. A total of 1,636 surveys were sent to SN directors,

944 (58%) of which were completed and returned from 16 districts (25 high schools) representing the seven regions of the United States Department of Agriculture (USDA). Factor analyses showed that low participation can be attributed to six key issues, some of which are external to the SN program. Operationally controllable issues arise mainly from food quality, staff, and access to food. Issues beyond the SN director's immediate control include dining area capacity, food from home, and schoolwork. Among these factors, students stated that they would be most likely to participate if they saw improvements in the following attributes: overall quality of the food, variety of menu items from day to day, and time spent waiting in line. Based on statistical analyses and feedback from participating SN directors, the survey instrument was finalized after three rounds of pilot tests.

The survey developed in this study specifically targets students who eat in the school cafeteria two or less times a week, thus results will be useful in helping SN professionals identify the specific issues that can be improved to increase participation. Use of the survey can assist SN directors, managers, and staff in establishing internal benchmarks for the SN. Valid and reliable data guides decision making and empowers the SN director and staff to address customer service issues in the effort to increase participation. Although planning and administering the survey may take considerable time, effort, and coordination, results provide a launching point for creating improvement plans that will focus on key factors that can influence the student's decision to start eating school meals more frequently.

Exploring Factors that Affect the School Lunch Experience of High School Students Participating in the National School Lunch Program

The purposes of this research were to develop a survey to assess the perceptions of high school students regarding their dining experience and to provide a step-by-step guide for administering the survey, interpreting results, and creating continuous quality improvement action plans to address student concerns. To accomplish the project goals, the research was conducted in three phases: High School Student Focus Groups, Survey Instrument Development, and Survey Guide Development.

In Phase I, focus groups were conducted with high school students in each of four school districts located in four geographic regions as defined by the United States Department of Agriculture (USDA). Qualitative data from Phase I was used as the foundation for drafting a survey designed to explore factors that impact the dining experience and satisfaction of high school students participating in the NSLP. A two-stage pilot test was performed with Stage 1 primarily designed to test survey protocol, assess student comprehension of the instrument, and estimate response rates. Stage 2 was designed as a validation step to statistically confirm Stage 1 results. The survey was administered to a total of 1,281 high school students from 19 high schools (15 school districts) across the seven USDA regions.

Results of the study showed that 21 key indicators impacting the dining experience of high school students factor into three dimensions, namely, food quality, program reliability, and staff responsiveness and empathy. Results indicated that food quality had the greatest effect on the students' evaluation of their overall dining experience.

The survey is appropriate for school nutrition (SN) programs that already have high rates of participation in the high school level and would like to retain students by increasing customer satisfaction. In addition, the survey is suitable for SN programs that have low potentials for growth (e.g., the cafeteria is not equipped to support a large increase in participation, but would like to keep students who already participate). Lastly, the survey would also be useful to SN programs that have large percentages of paying students at the high school level.

The specific objective of Phase III was to develop an accompanying resource to guide SN professionals in administering and interpreting results from *The School Lunch Experience Survey* as well as *The Non-Participation Survey*. An expert panel of SN directors assisted in developing the resource. Expert panel members were asked to provide comments and/or suggestions by answering structured, open-ended questions regarding each section of the guide. Data collected and gaps identified by the panel were summarized and utilized to revise the survey guide prior to Web release.

The High School Satisfaction and Non-Participation Survey Guide: Internal Benchmarking for School Nutrition Programs contains seven sections that are designed to guide the SN director and/or manager through planning and administering the survey, tabulating and interpreting the results, and developing action plans. Use of the Web-based resource and implementation of the survey will aid SN professionals in establishing performance benchmarks and improving their programs based on customer feedback. The results of the survey can help SN directors focus improvement efforts on key factors that can influence the students' perception of, and satisfaction with, their school lunch experience.

Developing a Best Practice Guide for Increasing High School Student Participation and Satisfaction in the National School Lunch Program

The primary objective of this project was to use a modified best practices research model to identify and confirm best practices and/or quality indicators for increasing participation rates and improving high school student satisfaction in school nutrition (SN) programs operating under the regulations of the National School Lunch Program. To accomplish the project goal, two panels of exemplary SN professionals participated in a work group session and a national review panel to systematically identify, describe, and combine best practices for dissemination to other SN professionals.

Four practice areas that affect high school student participation and satisfaction were identified based on results of NFSMI, ARD's *The Non-Participation Survey* and *The School Lunch Experience Survey*. Draft best practice statements framed around the practice areas, "Food Quality," "Staff," "Program Reliability," and "Other Factors," were developed based on previous NFSMI, ARD research findings and pertinent foodservice, SN, and marketing literature. Eight SN professionals participated in an expert panel work group session to accomplish the following: review the wording of each best practice statement; classify statements under the appropriate research-based practice area; and group similar statements into goals. Using a guided evaluation form, expert panel members reviewed the results of the work group session. Then, members confirmed the list of best practice statements; the renaming of the practice area from "Other Factors" to "Marketing and Communications"; the definitions of key words; and the formatting of the resource.

The best practice guide was drafted using suggestions from the expert panel with regards to definitions of key terms, instructions for using the guide, and evaluation scales. A final guided evaluation was completed by a review panel composed of SN directors previously involved in pilot testing *The Non-Participation Survey* and *The School Lunch Experience Survey*. The review panel (N=11) evaluated the following: appropriate grouping of best practice statements into goals and practice areas; ease of use of assessment scales; formatting; and general content validity of the resource.

The resulting best practice guide, *NFSMI Best Practice Guide for Increasing High School Student Participation and Satisfaction in the National School Lunch Program*, contains 75 best practice statements grouped into 13 goals that support the four practice areas ("Food Quality," "Staff," "Program Reliability," and "Marketing and Communications"). There are two components to the guide, the "Baseline Assessment" and the "Progress Review." This best practice guide provides SN professionals a research-based tool to evaluate operational practices for program improvement. Use of the best practice guide can help SN directors focus improvement efforts on best practices that will produce the most impact on high school students' participation in the NSLP and satisfaction with their school lunch experience.

Exploring Nutrition Literacy and Knowledge Among School Nutrition Managers

The objectives of this three-phase national research study included the following: (1) to define nutrition literacy within the context of the school nutrition (SN) environment; (2) to describe the nutrition literacy levels and nutrition knowledge of SN managers and determine if these variables differed significantly by demographic characteristics; and (3) to explore if barriers to seeking SN information, perceived roles in school wellness, and confidence in SN decision making/scenarios varied by nutrition literacy and knowledge scores.

In Phase I, an expert panel of seven SN professionals discussed issues associated with nutrition literacy in the SN environment. The expert panel offered insightful views for defining the constructs of nutrition literacy as it relates to the school environment and identifying school outcomes which may be associated with the nutrition literacy skills of SN managers.

A random sample totaling 700 SN directors was selected for Phase II of this study. A total of 199 SN directors responded to the SN director questionnaire, for a response rate of 28%. When asked to rate their SN managers on nutrition knowledge/awareness related topics, "use of appropriate portion control tools" rated the highest and "skills to locate trustworthy nutrition information" was the lowest. The SN directors were also asked to rate the perceived nutrition knowledge of the SN managers employed in the school district, using a 10-point scale (1=*poor*; 10=*very good*). The average response was 6.8 (SD=1.8). The final question rated by SN directors included, "From your perspective, rate your level of agreement regarding the following statement: "On-site SN managers in our school district are regarded as nutrition experts." The mean response of 5.5 (SD=2.3) on a 10-point scale (1=*strongly disagree*; 10=*strongly agree*) was relatively neutral.

Each SN director who replied to Phase II and agreed to participate in Phase III was sent the requested number of SN manager surveys. For Phase III, 167 survey packets were mailed to SN directors containing a total of 1,665 surveys. SN directors were instructed to provide oversight when administering the surveys to the SN managers. This step ensured the managers did not receive assistance from others or utilize available resources, and was necessary to promote accuracy of the nutrition knowledge and label reading questions. A total of 763

were returned for a response rate of 45.8%. Excluding surveys with greater than 30% missing data reduced the sample size by 35, resulting in a total of 728 included in the Phase III analyses.

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 developed through this research process, 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).

For the perceived barriers regarding nutrition information, the overall scale mean 3.33 (SD=1.15) and individual statements were between neutral and somewhat agree. As indicated by a mean score of 4.57 (SD = 0.68), respondents felt strongly that they played an important role in school wellness; however, the mean confidence rating 3.76 (SD = 0.72) for making nutrition related decisions was notably lower. These findings imply that SN managers may desire to play a positive role in school wellness programs, but may lack the training and confidence to contribute.

This study provides a foundation to explore the causes and consequences associated with nutrition literacy within the context of child nutrition programs. In today's SN program environment, nutrition excellence is mandatory. While the traditional SN manager continues to have responsibilities related to food production and the quality of services, the role has also expanded to include the expectation that the SN manager is a key resource for the nutritional quality related to children. Therefore, it is critical that state agencies, the USDA, and other training professionals reduce the barrier associated with locating and comprehending complex nutrition information and explore ways of making reliable sources of nutrition information easily accessible and pertinent to the needs of SN managers and the children and teachers they serve.

Identification of Best Practices for Serving Students with Special Food and/or Nutrition Needs in School Nutrition Programs

The purpose of this research project was to identify goals and to establish best practices for SN programs that serve students with special food and/or nutrition needs. This project builds on a recent study conducted by the National Food Service Management Institute, Applied Research Division (NFSMI, ARD) that investigated the prevalence, barriers, and training resources needed to serve school-aged children with special food and/or nutrition needs. Four practice categories were identified: (1) District/School Accountability; (2) School Nutrition Responsibility; (3) Information Resources; and (4) Environmental Considerations.

This research project was conducted in two phases. In Phase I, an expert panel of SN directors, a school nurse, and representatives from state agencies and the USDA Food and Nutrition Services (FNS) identified goal themes and best practice statements, grouped similar statements within the four practice categories, and provided formatting suggestions for the best practice resource. Based on recommendations from the expert panel, the preferred format of the resource was a checklist which would include two 3-point scales, one scale for current status and one for priority level, and a plan of action section. In Phase II, a national review panel comprised of SN directors and representatives from state agencies, the American Dietetic Association (ADA) School Nutrition Services (SNS) practice group, and NFSMI evaluated the best practice statements, goal statements, and draft resource. Panel members provided feedback on the content, scales, format, and usefulness of the resource as a self-assessment tool for SN professionals.

The NFSMI Best Practices for Serving Students with Special Food and/or Nutrition Needs in School Nutrition Programs resource consists of eight goals and 137 best practice statements within the four practice categories. The best practice resource is a self-assessment tool for SN professionals to assess their operation based on the identified best practices using the two 3-point scales, current status (*fully addressed, partially addressed, and not addressed*) and priority level (*high priority, medium priority, and low priority*). Upon assessing the current status and priority level of the best practices, a plan of action can be established for addressing and prioritizing those best practices identified as needing attention.