

**Special Food and Nutrition Needs of Children:
Current Issues and Training Needed by
School Nutrition Professionals**



National Food Service Management Institute
The University of Mississippi
1-800-321-3054

2008

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National Food Service Management Institute The University of Mississippi

Building the Future Through Child Nutrition

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PURPOSE

The purpose of NFSMI is to improve the operation of Child Nutrition Programs through research, education and training, and information dissemination. The Administrative Offices and Divisions of Information Services and Education and Training are located in Oxford. The Division of Applied Research is located at The University of Southern Mississippi in Hattiesburg.

MISSION

The mission of the NFSMI is to provide information and services that promote the continuous improvement of Child Nutrition Programs.

VISION

The vision of the NFSMI is to be the leader in providing education, research, and resources to promote excellence in Child Nutrition Programs.

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**SPECIAL FOOD AND NUTRITION NEEDS OF CHILDREN: CURRENT
ISSUES AND TRAINING NEEDED BY SCHOOL NUTRITION PROFESSIONALS**

EXECUTIVE SUMMARY

School nutrition (SN) programs are responsible for accommodating a wide variety of special food and/or nutrition needs. When the Rehabilitation Act of 1973 was passed, Section 504 stated if children have defined disabilities, their special needs must be met. The Individuals with Disabilities Education Act (IDEA) took the definition of disability even further and defined 13 disabilities common to children. Under both pieces of legislation, a disability was defined as a condition that had a profound impact on the daily activities of an individual (United States Department of Agriculture [USDA], 2001). With recent increases in the prevalence of food allergies and chronic conditions, such as diabetes and obesity, the definition of disability may not adequately capture all children who are in need of special services through the National School Breakfast and National School Lunch Programs. If a child receives a physician's order that states a lack of substitution or omission of foods in the diet can result in a life-threatening situation, appropriate changes must be made (USDA, 2001; American Academy of Allergy Asthma & Immunology [AAAAI], 2008b; Massachusetts Department of Education, 2002).

Since schools receive funding from the USDA to support breakfast and lunch programs, school administrators are responsible for meeting the special food and/or nutrition needs of children who attend their schools. Once a physician's order is received, the school or school district must make appropriate modifications to the menu, adjusting the foods offered to that child. Modifications could include a simple food substitution, a change in texture, the provision of tube feedings, or highly specialized, modified diets. Any changes to the menu or costs related

to purchasing and preparing the foods is the responsibility of the school or school district, not the family (Lucas, 2001).

There is little current research available that attempts to estimate the prevalence of special needs in the school setting. With the recent increases in food allergies and chronic disease, it is important to assess the most common conditions to provide SN professionals the resources needed to accommodate dietary changes. Also, research is not available on current practices and challenges encountered by SN professionals working with this population. Therefore, the purpose of this research was to identify the prevalence, barriers, and training resources needed related to serving school-aged children with special food and nutrition needs.

An expert panel discussion was utilized in Phase I of the research. This qualitative research approach was used to gather information on the prevalence of special nutrition needs, resources and training needed, barriers in preparing and serving food to children with special needs, and the role of SN professionals in accommodating special needs. The information gathered from the panel discussion was used to develop a questionnaire. During the second phase of the research, the questionnaire was mailed to 700 SN directors, representing each of the seven USDA regions. Also included in the packet was an identical questionnaire, which was to be delivered to an SN manager, for a total of 1400 questionnaires distributed. The final questionnaire contained the following sections:

- Section I: Identification and Prevalence;
- Section II: Issues Related to Serving Children with Special Food and/or Nutrition Needs;
- Section III: Training/Resources to Serve Children with Special Food and/or Nutrition Needs; and

- Section IV: Personal and Program Characteristics.

A total of 405 questionnaires were completed and returned (28.9%). Slightly more than one-third of the respondents were SN directors/assistant directors (34.5%), and only 16.1% of the respondents were SN managers. The average respondent had been in SN more than 25 years, but in his/her current position for only 1 to 5 years. Milk allergies were the most commonly reported special need (80.6%), followed by peanut allergies (76.2%). Cystic fibrosis was the least reported special need (3.6%).

Section II focused on issues related to providing special food and/or nutrition needs. Both best practices and barriers were included in this section. A three-point scale of 1 (*strongly disagree*) to 3 (*strongly agree*) was used to assess agreement with each of the statements. Participants most strongly agreed that a physician's order must be received once SN is aware of a child with special food and/or nutrition needs ($2.64 \pm .51$). This practice was followed in agreement by these practices: the SN manager ensures meals are appropriately prepared for the special needs child ($2.57 \pm .50$); specific requirements of the diet must be received ($2.54 \pm .52$); and confidentiality of the child's special needs are maintained ($2.52 \pm .52$). The respondents disagreed strongly with the following practices: teachers can request menu modifications ($1.88 \pm .52$); posting questions regarding special needs on Meal Talk Listserv ($1.84 \pm .46$); and teachers monitoring food the child brings from home ($1.75 \pm .54$).

Training and resource needs were evaluated in Section III of the questionnaire. Utilizing a four-point scale of 1 (*strongly disagree*) to 4 (*strongly agree*), participants were asked to respond to each statement twice. They first were asked to respond to each statement using the phrase, "I need training/resources on..." and then respond to each statement using the phrase, "My staff needs training/resources on..." Both district-level SN staff and SN managers rated a

personal need for training on implementing an Emergency Allergy Response Plan as the highest ($2.96 \pm .71$ vs. $3.05 \pm .75$). Items two and three were scored in the same order for both groups. District staff and managers both believed they needed training on the conditions that are considered disabilities under Section 504 ($2.85 \pm .68$ vs. $2.95 \pm .67$) and in identifying foods to avoid for specific food allergies ($2.77 \pm .80$ vs. $2.76 \pm .67$). In addition, both groups rated the same training needs in the bottom three. District staff and managers were less likely to agree that they personally needed training on reading and understanding ingredients on food labels ($2.39 \pm .75$ vs. $2.37 \pm .86$), purchasing appropriate food items ($2.34 \pm .76$ vs. $2.30 \pm .69$), and understanding confidentiality issues ($2.39 \pm .86$ vs. $2.17 \pm .84$).

In Section IV of the survey, respondents provided personal and program characteristics. SN directors/assistant directors were most likely to be responsible for planning the menus to meet special needs (58.2%), while SN staff were responsible for preparing the meals (84.8%). SN directors followed by SN managers were responsible for purchasing items for special menus (55.6% vs. 48.8%). Managers and parents were most likely to be responsible for selecting the actual food items that were to be served to the students (57.4% vs. 48.5%). Over half of the respondents reported they have an Emergency Allergy Response Plan (54.8%) for children with special needs. Only 41.7% of the respondents indicated that emergency information is provided to the feeding sites by the SN office. Nearly one-third of the schools or school districts indicated that an “allergen free” environment was supported.

INTRODUCTION

Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990 define disability as a physical or mental impairment that impacts one or more of life's daily activities. In addition, the Individuals with Disabilities Education Act (IDEA) recognized 13 disability categories for children. With the combination of these three legislations, children with special needs must be accommodated in any school setting (United States Department of Agriculture [USDA], 2001). Traditionally, disabilities in children are thought of as developmental disabilities.

According to the Centers for Disease Control and Prevention (CDC), 17% of children under the age of 18 have some type of developmental disability, thus requiring a food substitution or modification of the usual school breakfast or lunch (CDC, 2006). The condition may affect the energy needs of the child, the actual ingredient content of many of the foods normally served, how the food is prepared, or the texture of the food served such as regular, chopped, blended, or pureed.

More recently, food allergies and chronic diseases are the most prevalent accommodations that must be made in the school setting. The incidence of food allergies is rapidly increasing. Current estimations indicate more than 2.2 million school-aged children suffer with food allergies. Typical allergic reactions may include allergic rhinitis, sinusitis, and dermatitis. However, a more serious anaphylactic reaction can result when a child ingests or is even exposed to air-borne allergens. It is estimated that more than 150 individuals die each year from anaphylaxis to food. Ninety percent of all food allergies originate from eight food sources: milk, eggs, peanuts, tree nuts, wheat, soy, fish, and shellfish (American Academy of Allergy Asthma & Immunology [AAAAI], 2008a).

Chronic diseases are also making their way to the forefront of special needs that are accommodated in the school setting. Type 1 Diabetes Mellitus is traditionally classified as a disease of youth, and is routinely addressed in SN programs. However, with recent increases in the percentage of children who are overweight or obese, other chronic health conditions are becoming more common in the school setting. Obesity in children increases the risk of other health diseases, such as Adolescent Type 2 Diabetes Mellitus, hyperlipidemia, and hypertension. Dietary modifications are essential in the management of each of these conditions; therefore, it is expected that appropriate accommodations will be made to address the nutrition related needs for these conditions.

Any school that receives United States Department of Agriculture (USDA) funding as part of the National School Breakfast Program and the National School Lunch Program must provide children with any of the aforementioned conditions, as well as those listed in Section 504 and the IDEA legislation, appropriate dietary modifications at no additional cost to the family. In order to receive full benefits under this legislation, the child's disability must be documented by a physician. In the case of a disability, as defined by the legislation, the physician must document the child's disability, explain how the disability impacts the child's diet, explain how life activity is impacted by the disability, and provide a list of foods that must be omitted or substituted in the child's diet. Although food allergies and chronic diseases are not technically considered disabilities, dietary modifications can be made for these children if the physician can document that lack of accommodations will result in a life-threatening situation (USDA, 2001; Lucas, 2004).

Although prevalence estimates of special needs in the school setting are not available, it is expected that these numbers are increasing. Little recent research has been conducted regarding the training and resources needed to meet such needs. A study by Yadrick and Sneed

(1994) surveyed a national sample of 1800 school nutrition (SN) directors, managers, and special education program directors to determine the number of children requiring special nutrition needs, types of services provided, involvement of a registered dietitian, and the continuing education needs of SN staff. Forty-six percent of SN managers reported that they did not serve any children with special nutrition needs. Food allergy, food intolerance, diabetes, and feeding problems were the most frequently reported special nutrition needs. Services of registered dietitians were used by SN managers (23%), district school directors (21%), and special education program directors (15%). The most frequently reported continuing education topics were assessing liability, calculating macronutrient content of menus, modifying menus, and understanding physical and emotional needs of children with special needs.

As the number of children with special health care needs continues to increase in America's public school system, the need for appropriate nutrition interventions becomes more critical. As referenced in a literature review by McCary (2006), children with disabilities and special health care needs are more at risk for health-related problems that can potentially impact growth, development, and ultimately learning. These problems are not limited only to those with cognitive and developmental delays, but also can be related to those children who have highly specialized therapeutic diet needs. Without appropriate modifications, children with celiac disease, diabetes, food allergies, and a host of other medical problems can experience severe medical complications, including death, as well as delays in growth and development.

Without current research, it is difficult to identify the main barriers related to the provision of special food and nutrition services. However, three major problems may exist with the provision of specialized meals and feedings to children with special needs in the school setting. First, local education agencies may lack qualified personnel that can translate the

physician's orders into a working meal pattern for the child. Second, schools are not provided with any additional funds to aid in preparation of the sometimes highly specialized and costly meals. Finally, SN staff may be unprepared to handle the specialized dietary/feeding modifications. Additional training, equipment, or other resources may be needed to adequately meet the growing demand for specialized diets in the school setting. Therefore, the purpose of this research is to identify the prevalence, barriers, and training resources needed related to serving school-aged children with special food and nutrition needs.

Research Objectives

The objectives of this research were as follows:

- To assess the prevalence of special food and/or nutrition needs, as indicated by SN directors and managers;
- To identify resources and training needed;
- To determine barriers in preparing and serving children with special nutrition needs; and
- To identify the role of the SN director and manager in providing for special nutrition needs.

METHOD

Research Plan

This study was conducted in two phases. In Phase I, interviews and expert panel discussions were conducted with school nutrition (SN) professionals to gather qualitative information related to serving children with special food and/or nutrition needs in the school setting. The qualitative data were then used to develop a survey in Phase II of the study. A review panel evaluated the survey instrument for content validity and provided comments and suggestions that were incorporated in the final survey. The survey was formatted as a scannable survey and mailed to a national sample of SN directors and managers.

Phase I

Expert Panel Discussion

SN directors and managers were invited to serve on expert panels to assist in the development of the competency-based performance appraisal forms and accompanying guide. Five members composed Expert Panel A, which addressed the SN manager's performance appraisal, while another five participants composed Expert Panel B, which focused on the appraisal form for SN assistants/technicians. Both expert panels participated in the development of the guide. Panel members were selected from a roster of SN professionals with the education, expertise, skills, and experience needed to offer constructive and useful advice and recommendations.

Prior to conducting the expert panel discussion, two SN professionals with extensive experience in the area of special needs were interviewed to discuss issues associated with the research objectives. Discussion topics developed for the expert panel meeting were based on

research objectives, comments and suggestions from the interviews, special needs resources, and a review of previous research (Table 1).

Table 1

Expert Panel Discussion Topics

Topic

Identification and Prevalence of Special Needs

Definition of the law

Special needs versus food allergies

Dietary modifications

Sources of Information on Meeting Special Needs

Where do SN directors/managers go for nutrition information on special diets/needs for children?

How useful are these resources?

Environmental Considerations

Meal schedule changes

Space in the cafeteria

Role of School Nutrition Professionals in Meeting Special Nutrition Needs

SN managers

SN directors

(Table 1 continues)

(Table 1 continued)

Expert Panel Discussion Topics

Topic

Knowledge and Skills Needed

Diet orders

Food preparation

Training and Other Resources Needed

Modified foods

Equipment to prepare and serve specialized diets

Training for staff

Challenges Encountered by SN Professionals When Planning and Implementing Meals for
Children With Special Needs

State agency child nutrition directors were asked to provide names and contact information of SN directors and state agency staff members to serve on expert and review panels. From this pool, seven SN professionals were invited to attend a day and a half meeting to discuss issues associated with school-aged children who have special nutrition needs. The SN professionals were selected based on their expertise, the size and diversity of their school districts and SN programs, and geographic location. The expert panel was comprised of two district directors/supervisors, one SN manager, two state agency representatives, one expert in the area of special food and/or nutrition needs, and one National Food Service Management Institute, Applied Research Division (NFSMI, ARD) staff member.

The discussion session was facilitated by an NFSMI, ARD researcher with an assistant moderator capturing the participants' comments on a flip chart. The agenda was planned to address issues related to the research objectives so that the resulting discussions would support survey development. Throughout the session, the researcher used a structured approach to keep the discussion focused on the selected topics. At the end of each agenda section, the assistant moderator summarized responses and participants were invited to verify that the summary comments were an accurate depiction of the discussion.

Following the expert panel meeting, researchers summarized the discussion session. The summaries were reviewed and thematically coded into categories and survey statements developed. These themes, categories, and survey statements were used to develop the survey.

Phase II

Survey Development

A quantitative survey was developed from the qualitative data collected from the interviews and expert panel discussions. Based on the objectives of the research, questions were developed to fit one of four categories: "Identification and Prevalence of Special Needs"; "Issues Related to Serving Children with Special Food and/or Nutrition Needs"; "Training/Resources to Serve Children with Special Food and/or Nutrition Needs"; and "Personal and Program Characteristics". In the first section of the survey, participants were asked to indicate which of 29 special food and/or nutrition needs their schools or districts currently accommodate. Although some of the special needs listed do not technically qualify as a special need under Section 504 accommodations (e.g. ethnic and religious preferences), researchers were interested in dietary needs and preferences that are being accommodated. Respondents were asked to check the

special need conditions that they are currently accommodating; therefore, numbers reflect special food and/or nutrition needs that are currently being addressed in schools and school districts.

In the second section, participants were asked to indicate their level of agreement with a set of 47 statements about issues related to serving children with special needs in their school or school district. The response scale was a 3-point Likert-type scale ranging from 1 (*strongly disagree*) to 3 (*strongly agree*). The original objectives of the research were to identify barriers in preparing and serving children with special needs and to identify the role of the SN director and manager in providing special needs. In order to reduce the negative connotation that the word “barriers” can evoke, researchers reworded the barriers into positive statements and combined them with the role of SN professionals. Therefore, this section is related to current practices when serving children with special food and/or nutrition needs.

Section III of the survey focused on the training and resources needed to serve children with special food and/or nutrition needs. The scale ranged from 1 (*strongly disagree*) to 4 (*strongly agree*). In addition, this section included a dual response, where the participants were asked to assess their own need for training as well as their staff’s need for training. Section IV was a personal and program characteristics section, where participants described their current position, the school/school district, and current practices related to the provision of special food and/or nutrition needs. The draft survey was converted into a scannable format so that the surveys could be transferred into a statistical program for analysis. A cover letter was drafted to describe the study and provide instructions to complete the survey.

Review Panel

A review panel was assembled to evaluate the readability and clarity of the draft survey. From the recommendations submitted by state agency directors, potential review panel members

were asked to participate in the review. Expert panel members were also asked to serve on the panel. An e-mail was sent to review panel members describing the purpose of the study and included the draft survey and the survey evaluation form to complete the review process. The panel was asked to assess each section of the draft survey and provide comments on the evaluation form. Nine panel members returned completed evaluation forms. Several comments were made to improve clarity of the questions, and additional questions were recommended. Revisions were made to the survey to reflect the review panel's comments and the survey was formatted into a scannable form for distribution.

Sample and Survey Distribution

The sample for the survey phase of the research project consisted of SN directors and SN managers in public school districts. A listing of states within each of the seven USDA regions was provided to Market Data Retrieval, a national school marketing company. The resulting random sample of 700 school districts was stratified by USDA region, with 100 school districts from each USDA region. Survey packets were mailed to this national random sample of 700 SN directors who were asked to complete a survey, as well as distribute a survey to an SN manager. The sample included 700 SN directors and 700 SN managers for a total of 1,400 surveys distributed.

A pre-notice letter was sent to each SN director in the study approximately one week before study surveys were mailed. The purpose of the pre-notice letter was to briefly describe the study and notify the study participants that they would be receiving a survey within a few days. One week later, each SN director was mailed a package containing a cover letter and survey packets for the SN director and SN manager. The SN director cover letter provided instructions on distributing a survey packet to an SN manager experienced in working with special needs

children. Included in the survey packets were an instructional cover letter, the survey, and a self-addressed, postage-paid envelope for returning the completed survey. The cover letter informed participants of the purpose of the study, asked for their participation, assured them of confidentiality of their responses, and provided researchers' contact information for questions or concerns. No identifying codes were placed on the surveys, thus preserving the anonymity of all respondents. Participants were asked to return the completed surveys within a three week time period. A reminder postcard was sent to all study participants one week after sending the initial surveys. The postcard encouraged the SN directors to complete and return their survey if they had not already done so.

Informed Consent

The protocol for Phase I and Phase II of the study were reviewed and approved by the Human Subjects Protection Review Committee (HSPRC) of The University of Southern Mississippi.

Data Analysis

Surveys were analyzed using the statistical package SPSS Version 15.0 for Windows. Descriptive statistics included means, standard deviations, and frequencies of total responses. One-way analysis of variance was used to evaluate the differences in responses based on position of the individual responding to the survey (district-level vs. manager).

RESULTS AND DISCUSSION

Phase I: Expert Panel

The expert panel discussion yielded a significant amount of information that was instrumental in preparing the survey. Using a list of questions, the panel provided information on the different types of special needs that are currently being addressed. Most of those listed were in accordance to special needs legislation, but the group also listed items such as religious and ethnic preferences. They also discussed protocol used to make accommodations and when accommodations were made without the appropriate paperwork. An attempt was made to quantify the total number of special food and/or nutrition needs in school nutrition (SN).

Participants identified several sources of information related to special food and/or nutrition needs. In addition to gathering information directly from the SN director, the panel discussed getting information from the Internet, medical professionals, and families. A registered dietitian is used occasionally, if one is available for consultation, since not all school districts employ a full-time dietitian. Information on food ingredients is gathered from the food distributors and manufacturers. Some directors will use pediatric medical groups to gather information, but most participants believed the physician only provided clarification, not specific diet information.

Environmental considerations were addressed in the panel discussion. Most believed that SN directors and managers had little input on lunch scheduling, but that they could make special accommodations if the child needs additional time for a meal or needs snacks. Issues relating to space in the cafeteria were also addressed. Participants indicated that space was needed for wheelchairs in the serving line, but most clarified that these were not issues in most of the schools. Storage space was discussed as a problem. Additional storage for specialized food

products and equipment is typically not available in some of the schools. Having a separate table for food allergies was also discussed. The panel agreed that this was a feasible option, but an allergy free school would be difficult to accommodate.

The role of the SN professional in relation to special food and/or nutrition needs was another major theme of the meeting. Some of the topics listed included the following: developing/implementing an Emergency Allergy Response Plan; identifying a point person to assure that the child does not come in contact with a food allergy; and planning of meals. In addition, the group had a detailed discussion regarding the burden of cost. Most agreed that “reasonable accommodations” was difficult to quantify. Knowledge and skills needed by directors, managers, and staff also was discussed. Most agreed that all groups needed to have a good understanding of the requirements in meeting special food and/or nutrition needs.

Training and resources needed were addressed. Participants believed that adequate training for directors and managers was not consistently available. Participants agreed that in small districts everyone needed to be trained, and the employees did not have the luxury of specializing in a specific area. In addition, most believed there was a need to improve communication skills for all groups. Support from administration was seen as a barrier. In addition, participants noted that managers, staff, and teachers need more training on specific food and/or nutrition needs to help when accommodating the child. Financial resources were also listed by the group. Some specific needs included resource information, equipment, clerical support, and consultant services. Other challenges listed included the time it takes to work with the parents (while still meeting the obligations to the parents), training of new staff, confidentiality issues, space limitations, and lack of time for the director to adequately train staff in the district.

Phase II: Survey

A total of 1,400 surveys was sent to a nationwide sample, including 700 district-level personnel and 700 SN managers. Each potential participant received an instructional cover letter, survey, and a postage-paid envelope for returning the completed survey. A total of 405 surveys was returned and used in statistical analysis, for a response rate of 28.9%.

Personal and Program Characteristics

The majority of those responding held the title of SN director or assistant director (34.5%). SN managers comprised only 16.1% of the respondents, and 15.1% of the respondents held another position at the district-level. Slightly more than 34% indicated their current job title as “other,” making it difficult to determine the exact position of all of the respondents. More than a third of the respondents were not certified (37.1%); another third, however, reported being certified by the School Nutrition Association (SNA) (33.7%). Over one-fourth of the respondents reported working in SN for more than 20 years, and that they had been in their current position for 1 to 5 years. The majority of those responding (52.6%) reported working in a school district with less than 2,799 students, while only 1% reported a school district with greater than 65,000 students. United States Department of Agriculture (USDA) regions were nearly equally represented, with slightly stronger representation from the Southeast and Southwest regions (18.8% for both regions).

Table 2

Demographics

Characteristic	Frequency	%
Current Job Title		
SN director/assistant director	133	34.5
Other	132	34.3
SN manager	62	16.1
District-level supervisor/coordinator	43	11.2
Nutritionist/dietitian	15	3.9
Enrollment of the School District		
2,799 or less	207	52.6
2,800-9,999	25	6.4
10,000-19,999	6	1.5
20,000-44,999	137	34.9
45,000-64,999	14	3.6
65,000 or greater	4	1.0
Current Credentials/Certification(s)^a		
Not certified	142	37.1
SNA certified	129	33.7
Other	75	19.6
State Department of Education certified	51	13.3
SNS credentialed	25	6.5
Registered Dietitian	38	5.7
Licensed dietitian/nutritionist	22	5.7

^a Participants allowed to check more than one option; total exceeds 100%

(Table 2 continues)

(Table 2 continued)

Demographics

Characteristic	Frequency	%
Years Working in SN		
Less than 1 year	12	3.1
1-5 years	69	18.0
6-10 years	78	20.3
11-15 years	61	15.9
16-20 years	61	15.9
Greater than 20 years	103	26.8
Years in Current Position		
Less than 1 year	32	8.3
1-5 years	97	25.3
6-10 years	46	12.0
11-15 years	123	32.0
16-20 years	48	12.5
Greater than 20 years	38	9.9
USDA Region		
Southeast	74	18.8
Southwest	74	18.8
Mountain Plains	59	15.0
Western	54	13.6
Midwest	46	11.7
Mid-Atlantic	46	11.7
Northeast	41	10.4

^a Participants allowed to check more than one option; total exceeds 100%

Identification and Prevalence

Participants were provided a list of 29 special food and/or nutrition needs that schools and school districts may currently accommodate. Although some of the special needs listed do not technically qualify as a special need under Section 504 accommodations (e.g. ethnic and religious preferences), researchers were interested in dietary needs and preferences that are being accommodated.

As depicted in Table 3, milk allergies were listed most frequently by respondents, with 80.6% of schools or school districts reporting this special need. Milk allergies were followed by peanut allergies (76.2%) and food intolerances (62.7%). It is not surprising that milk and peanut allergies were the most frequently seen special food need in schools. These numbers are supported by others who report that milk and peanut allergies are part of the “Big 8” allergies (peanuts, tree nuts, milk, egg, soy, fish, shellfish, and wheat), which constitute 90% of all food allergies (American Academy of Allergy Asthma & Immunology [AAAAI], 2008a). In 2004, the SNA partnered with the International Food Information Council and found that peanut allergies were most prevalent in schools, followed by milk, eggs, tree nuts and wheat (School Nutrition Association, 2007). It should be noted that food allergies or intolerances are not considered disabilities under Section 504 or IDEA. However, if a physician indicates that the food allergy is life threatening (such as an anaphylactic reaction), the condition would be defined as a disability, and appropriate substitutions must be made by SN representatives (United States Department of Agriculture [USDA], 2001).

Table 3

Prevalence of Special Needs^a

Special Need	Frequency	%
Milk Allergies	315	80.6
Peanut Allergies	298	76.2
Food Intolerances	245	62.7
Diabetes (Type 1)	229	58.6
Tree Nut Allergies	183	46.8
Diabetes (Type 2)	177	45.3
Egg Allergies	150	38.4
Vegetarian	118	30.2
Fish Allergies	114	29.2
Religious Preferences	114	29.2
Wheat Allergies	112	28.6
Obesity	111	28.4
Gluten Free	101	25.8
Chewing and Swallowing Difficulties	99	25.3
Autism	96	24.6
Shellfish Allergies	84	21.5
Latex Allergies	78	19.9
Texture Modifications	76	19.4
Soybean Allergies	69	17.6

^aParticipants allowed to check more than one option; total exceeds 100%

(Table 3 continues)

(Table 3 continued)

Prevalence of Special Needs^a

Special Need	Frequency	%
Behavioral Issues	62	15.9
Self-Feeding Problems	58	14.8
Underweight	49	12.5
Ethnic Preferences	41	10.5
PKU or Other Metabolic Diseases	39	10.0
High Cholesterol	33	8.4
High Blood Pressure	27	6.9
Positioning Problems	27	6.9
Tube Feedings	26	6.6
Cystic Fibrosis	14	3.6
Other	38	9.7

^aParticipants allowed to check more than one option; total exceeds 100%

The medical condition of Type 1 Diabetes Mellitus follows milk and peanut allergies, with 58.6% of the schools or school districts reporting this special need. It is estimated that 151,000 (or 1 in every 400 to 500) individuals under the age of 20 are affected by this chronic disease (USDHHS, 2003). Therefore, it is expected that many schools will encounter this condition in the SN setting. Although chronic medical conditions are not technically considered a disability, a physician's order or medical statement by a recognized medical authority stating the medical and dietary needs of the student is sufficient to qualify the student to receive accommodations (Lucas, 2004).

Surprisingly, 45.3% of the schools or school districts reported dealing with Type 2 Diabetes Mellitus. This form of diabetes was traditionally seen in adult populations (over 40 years old). However, with recent increases in the incidence of childhood obesity, the number of children diagnosed with this condition is rising. Schools can expect to see more children diagnosed with Type 2 Diabetes in upcoming years. Only 28.4% reported obesity as an issue that is accommodated. With more insurance companies and physicians recognizing obesity as a major health crisis, it is anticipated that this number will increase in the future, as well.

Traditional forms of special needs were not as frequently reported by respondents. Phenylketonuria (PKU) and other metabolic disorders were reported by 10% of the participants. Only 6.9% reported dealing with positioning issues, while 6.6% had tube feedings in the school or school district. Cystic Fibrosis was listed as the least commonly addressed condition (3.6%).

While not specifically covered as a disability under Section 504, 30.2% reported providing a vegetarian diet. Religious preferences were identified in 29.2% of the schools or school districts. Ethnic preferences were accommodated in 10.5% of the schools or school districts. Reasons for accommodations were not addressed as part of the survey. The expert panel discussion indicated that many directors planned menus that would accommodate a vegetarian diet and take into consideration religious/ethnic preferences, but the modifications were not made for a specific student.

Issues Related to Serving Children with Special Food and/or Nutrition Needs

Participants were provided with 47 statements regarding issues related to serving children with special food and/or nutrition needs in their school/school district and were asked to indicate their level of agreement with each statement using a scale of 1 (*strongly disagree*) to

3 (*strongly agree*). Table 4 presents the means and standard deviations for each of the 47 issues in descending order of agreement.

Table 4

School Nutrition Professionals' Opinions on Issues Related to Serving Children With Special Needs

Issue	n	Mean	SD
A physician's order must be received.	373	2.64	0.51
The SN manager ensures meals are appropriately prepared for the special needs child.	383	2.57	0.50
Specific requirements of the diet must be received.	369	2.54	0.52
Confidentiality of the child's special needs is maintained.	372	2.52	0.52
SN is responsible for maintaining confidentiality of the child's special needs.	364	2.44	0.54
Parents provide information on the child's special food and/or nutrition needs.	374	2.42	0.52
The physician provides specific recommendations for the child's special food and/or nutrition needs.	388	2.39	0.52
Parents are contacted for additional information.	392	2.38	0.52
Special foods are purchased, as needed.	366	2.38	0.53
SN meets with the school staff to discuss the child's special needs requirements.	365	2.37	0.52
The SN manager makes menu substitutions to meet the child's needs.	388	2.35	0.54
Food labels are reviewed as a primary source of information.	388	2.35	0.51

^aScale = 1 (*strongly disagree*) to 3 (*strongly agree*)

(Table 4 continues)

(Table 4 continued)

*School Nutrition Professionals' Opinions on Issues Related to Serving Children
With Special Needs*

Issue	n	Mean	SD
An annual update on the dietary prescription is provided by the recognized medical authority.	383	2.34	0.56
SN staff work with parents to accommodate the child's special needs.	391	2.34	0.50
A team approach is used to address issues related to the special needs child.	383	2.31	0.50
Assistance is provided as needed during mealtime.	366	2.30	0.51
A system is in place to aid SN staff in knowing the students with special needs.	384	2.30	0.52
Food companies are contacted to provide specific ingredient information.	386	2.30	0.53
The SN office provides information to the child/parent on foods and/or ingredients.	387	2.28	0.49
The staff in the district SN office plans menus to meet the child's needs.	387	2.26	0.50
The school/school district informs parents of district policies regarding special needs.	387	2.26	0.50
The district SN office provides the school site with information regarding the special need.	382	2.25	0.50
SN is responsible for all costs associated with providing meals to the child.	386	2.22	0.53
An initial assessment is made to identify the child's needs and services to be provided.	380	2.21	0.47
Accommodations are made for additional time needed during dining, as needed.	372	2.20	0.48

^aScale = 1 (*strongly disagree*) to 3 (*strongly agree*)

(Table 4 continues)

(Table 4 continued)

*School Nutrition Professionals' Opinions on Issues Related to Serving Children
With Special Needs*

Issue	n	Mean	SD
The school/school district educates school professionals involved with the child, as needed.	386	2.19	0.46
The school nurse can request special food and/or nutrition modifications.	388	2.16	0.50
Adequate space issues in the cafeteria are addressed.	385	2.15	0.47
Information is sought from the USDA.	360	2.14	0.47
Questions are answered through networking with other school district peers.	354	2.14	0.46
Questions are answered through networking with other SN peers.	377	2.12	0.47
The state agency is contacted to provide information on special food and/or nutrition needs.	381	2.12	0.46
Parents can request menu modifications.	391	2.12	0.48
Specialized equipment is purchased, as needed.	362	2.12	0.55
Teaching staff observe mealtime to see if special needs child consumes appropriate food items.	390	2.12	0.52
Information is sought from the American Dietetic Association Web site.	362	2.09	0.41
Information is gathered from the Internet.	377	2.08	0.42
A separate dining table is available for children with severe food allergies.	381	2.06	0.58
Information is sought from the Food Allergy and Anaphylaxis Network.	352	2.05	0.49

^aScale = 1 (*strongly disagree*) to 3 (*strongly agree*)

(Table 4 continues)

(Table 4 continued)

*School Nutrition Professionals' Opinions on Issues Related to Serving Children
With Special Needs*

Issue	n	Mean	SD
A Registered Dietitian is available to plan menus and provide information.	359	2.04	0.65
Information is gathered from the National Food Service Management Institute Web site.	375	1.99	0.42
The teacher monitors foods the child brings from home.	376	1.99	0.49
SN staff observes mealtime to see if the special needs child consumes appropriate food items.	384	1.97	0.47
The local health department is contacted to provide information on special food needs.	373	1.91	0.46
Teachers can request menu modifications.	382	1.88	0.52
Questions regarding special food and/or nutrition needs are posted to the Meal Talk Listserv.	357	1.84	0.46
The SN staff monitors foods the child brings from home.	383	1.75	0.54

^aScale = 1 (*strongly disagree*) to 3 (*strongly agree*)

Participants most strongly agreed that a physician's order must be received prior to making accommodations for a special need (2.64 ± .51). It was also more strongly agreed that the SN manager ensures meals are appropriately prepared for the special needs child (2.57 ± .50), specific requirements of the diet must be received (2.54 ± .52), and confidentiality of the child's special needs are maintained (2.52 ± .52). The respondents disagreed strongly with the following practices: teachers can request menu modifications (1.88 ± .52); posting questions regarding special needs on Meal Talk Listserv (1.84 ± .46); and teachers monitoring food the child brings from home (1.75 ± .54).

It is positive that respondents most strongly agreed that they must have a physician's order before food modifications can be made. According to USDA regulations, a physician's statement must be in place before substitutions in foods can be made. The physician's statement must identify the disability, how the disability impacts the diet, and list the foods to be omitted or substituted (Lucas, 2004; USDA, 2001). The USDA states that under no circumstances are SN staff allowed to make modifications to diet prescriptions (USDA, 2001).

Schools are not required to provide meals at a time that meals are not provided to the rest of the student body. However, schools or school districts are required to absorb any additional costs in providing special food and/or nutrition needs (USDA, 2001). Participants more strongly agreed with the statement that special foods are purchased as needed for these children ($2.38 \pm .53$) than with statements that SN purchases specialized equipment as needed ($2.12 \pm .55$), or that the SN is responsible for all costs associated with providing meals to the child ($2.22 \pm .53$).

Parents and medical professionals serve as an invaluable source of information when accommodating a child's special need. Survey respondents more strongly agreed that parents can serve as a source of information on the child's special food and/or nutrition needs ($2.42 \pm .52$); the physician provides specific recommendations for the child's special food and/or nutrition needs ($2.39 \pm .52$); parents are contacted for additional information ($2.38 \pm .52$); and that SN staff should work with parents when accommodating needs ($2.34 \pm .50$). They were less likely to agree that parents can request menu modifications ($2.12 \pm .48$). Participants also were less likely to agree that nurses can request menu modifications ($2.16 \pm .50$) or to agree that teachers can request menu modifications ($1.88 \pm .52$).

Many resources are available to assist those working with children with special food and/or nutrition needs. The following mean scores were calculated for resources used when

meeting special needs: contacting food companies to provide specific ingredient information (2.30 \pm .53); the district SN office providing the school site with information (2.25 \pm .50); seeking information from the USDA (2.14 \pm .47); networking with school district peers (2.14 \pm .46); contacting state agencies for information on specific special needs (2.12 \pm .46); networking with SN peers (2.12 \pm .47); seeking information from the American Dietetic Association Web site (2.09 \pm .41); gathering information from the Internet (2.08 \pm .42); seeking information from the Food Allergy and Anaphylaxis Network (2.05 \pm .49); gathering information from the NFSMI Web site (1.99 \pm .42); contacting the local health department for information on special needs (1.91 \pm .46); and posting questions regarding special food and/or nutrition needs to the Meal Talk Listserv (1.84 \pm .46).

The use of a team is common when meeting the needs of children. The team approach is beneficial in making recommendations to improve intake, suggesting interventions, assisting families, and coordinating services. Based on comments during the expert panel discussion, the team may consist of an SN representative, speech-language pathologist, physical/occupational therapist, nurse, social worker, and/or physician. Participants agreed that SN representatives should meet with school staff to discuss the special needs requirements (2.37 \pm .52). Lower mean scores were reported for completing an initial assessment to identify the child's needs and services to be provided (2.21 \pm .47) and having a registered dietitian available to plan menus and provide information (2.04 \pm .65).

Although the school is not responsible for physically feeding a child with a disability, the school is responsible for providing the foods needed to feed the child (USDA, 2001). The participants in this study did not strongly agree that they were responsible for providing assistance during mealtime (2.30 \pm .51), making additional time accommodations during

mealtime ($2.20 \pm .48$), or addressing adequate space issues in the cafeteria ($2.15 \pm .47$). In addition, some school districts recommend “peanut free tables” to ensure that a student is not exposed to a potential allergen. Participants in this study did not strongly agree that a separate dining table was available for children with severe food allergies ($2.06 \pm .58$).

Factor analysis of the 47 issue statements was attempted but no interpretable structure was produced. The survey statements were initially categorized based on responses of the expert panel. These statements were cognitively grouped based on these initial categories and were analyzed for reliability. Table 5 presents the categories, the statements loading on each category, and the Cronbach’s alpha for each category. Three of the four categories demonstrated adequate internal consistency, with Cronbach’s alphas ranging from .81 to .86. One category had a Cronbach’s alpha below the commonly used standard of .70, with a Cronbach’s alpha of .60, which the researchers recognize as a limitation. The first category, “District/School Accountability,” included 16 statements related to the school and/or school district’s accountability and responsibility to the child and/or family in meeting the special need. The second category, “Information Resources,” included 15 statements encompassing the resources used to gather information on managing and responding appropriately to special food and nutrition issues. Resources were identified as print media, Web media, or professional experience. The third category, “Environmental Considerations,” included five statements focused on the physical environment where the food is prepared and/or served, and any accommodations that may be needed. The fourth category, “SN Responsibility,” initially included 11 statements, but one was excluded to improve reliability statistics. This category included issues related to the responsibility of the SN program and SN staff in meeting the special food and/or nutrition needs of children.

Table 5

Category Descriptions for Issues Related to Serving Children with Special Food and/or Nutrition Needs

Category and Statements Included	Cronbach's Alpha
<p>District/School Accountability</p> <p>Confidentiality of the child's special need is maintained.</p> <p>SN meets with the school staff to discuss the child's special needs requirements.</p> <p>A physician's order must be received.</p> <p>Specific requirements of the diet must be received.</p> <p>Parents are contacted for additional information.</p> <p>A system is in place to aid SN staff in knowing the students with special needs.</p> <p>Parents can request menu modifications.</p> <p>An annual update on the dietary prescription is provided by the recognized medical authority.</p> <p>Teaching staff observe mealtime to see if the special needs child consumes appropriate food items.</p> <p>Teachers can request menu modifications.</p> <p>The school/school district informs parents of district policies regarding special needs.</p> <p>A team approach is used to address issues related to the special needs child.</p> <p>The school nurse can request special food and/or nutrition modifications.</p> <p>An initial assessment is made to identify the child's needs and services to be provided.</p> <p>The teacher monitors foods the child brings from home.</p> <p>The school/school district educates school professionals involved with the child as needed.</p>	<p>0.86</p>

(Table 5 continues)

(Table 5 continued)

*Category Descriptions for Issues Related to Serving Children with Special Food
and/or Nutrition Needs*

Category and Statements Included	Cronbach's Alpha
Information Resources	0.81
A Registered Dietitian is available to plan menus and provide information.	
Information is sought from the Food Allergy and Anaphylaxis Network (FAAN).	
Parents provide information on the child's special food and/or nutrition needs.	
Questions are answered through networking with other school district peers.	
Information is sought from the United States Department of Agriculture (USDA).	
Information is sought from the American Dietetic Association Web site.	
Food companies are contacted to provide specific ingredient information.	
The state agency is contacted to provide information on special food and/or nutrition needs.	
Questions are answered through networking with other SN peers.	
Questions regarding special food and/or nutrition needs are posted to the Meal Talk Listserv.	
Food labels are reviewed as a primary source of information.	
The physician provides specific recommendations for the child's special food and/or nutrition needs.	
Information is gathered from the National Food Service Management Institute Web site.	
Information is gathered from the Internet.	
The local health department is contacted to provide information on special food needs.	

(Table 5 continues)

(Table 5 continued)

*Category Descriptions for Issues Related to Serving Children with Special Food
and/or Nutrition Needs*

Category and Statements Included	Cronbach's Alpha
<p>Environmental Considerations</p> <p style="padding-left: 40px;">Assistance is provided as needed during mealtime.</p> <p style="padding-left: 40px;">Specialized equipment is purchased, as needed.</p> <p style="padding-left: 40px;">Accommodations are made for additional time needed during dining, as needed.</p> <p style="padding-left: 40px;">Adequate space issues in the cafeteria are addressed.</p> <p style="padding-left: 40px;">A separate dining table is available for children with severe food allergies.</p>	0.60
<p>SN Responsibility</p> <p style="padding-left: 40px;">The SN manager ensures meals are appropriately prepared for the special needs child.</p> <p style="padding-left: 40px;">Special foods are purchased, as needed.</p> <p style="padding-left: 40px;">SN is responsible for maintaining confidentiality of the child's special need.</p> <p style="padding-left: 40px;">The staff in the district SN office plans menus to meet the child's needs.</p> <p style="padding-left: 40px;">The SN manager makes menu substitutions to meet the child's needs.</p> <p style="padding-left: 40px;">The SN office provides information to the child/parent on foods and/or ingredients.</p> <p style="padding-left: 40px;">SN is responsible for all costs associated with providing meals to the child.</p> <p style="padding-left: 40px;">SN staff work with parents to accommodate the child's special needs.</p> <p style="padding-left: 40px;">The district SN office provides the school site with information regarding the special need.</p> <p style="padding-left: 40px;">SN staff observes mealtime to see if the special needs child consumes appropriate food items.</p>	0.83

In addition to calculating Cronbach’s alpha levels for each of the statement categories, means and standard deviations were calculated for each category (Table 6). The means represent how strongly the participants agreed with the statements in each category. The mean category scores indicate that participants had the strongest agreement with SN responsibility, followed by district/school accountability.

Table 6

Means and Standard Deviations for Issues Related to Serving Children with Special Food and/or Nutrition Needs Category Scores

Category	N	Mean^a	SD	Number of Items
District/School Accountability	381	2.27	0.30	16
Information Resources	382	2.14	0.26	15
Environmental Considerations	379	2.17	0.34	5
SN Responsibility	382	2.31	0.33	10

^a Scores range from 1 (*strongly agree*) to 3 (*strongly disagree*)

One-way analysis of variance was conducted to determine if any differences in mean scores existed between SN professional groups. All individuals who worked in district-level positions were placed into one group described as “district-level SN professionals.” SN managers’ responses were analyzed as one group. Surveys with the current job title indicated as “other” were excluded from this analysis. Data were analyzed utilizing the four issue categories: “District/School Accountability”; “Information Resources”; “Environmental Considerations”; and “SN Responsibility.” Due to the low alpha level for environmental considerations, individual statements for that category were compared. Results indicated no significant difference in mean

category scores for the groups or individual statements related to environmental consideration between the two SN professional groups.

Training and Resources to Serve Children with Special Food and/or Nutrition Needs

Not all schools or school districts face the challenge of serving children with special needs. Even if a situation exists, the number of children who need special accommodations may be small, so SN professionals at the district-level and school-level may not be adequately prepared to handle the various situations that arise when working with this population. In Section III of the survey, participants were provided with 20 statements designed to assess training needs or resources needed to serve children with special food and/or nutrition needs and were asked to indicate their agreement with each statement using a scale of 1 (*strongly disagree*) to 4 (*strongly agree*). Participants were asked to respond to each statement twice. They first were asked to respond to each statement using the phrase “I need training/resources on...” and then respond to each statement using the phrase “My staff needs training/resources on...”

When analyzing the data, all individuals who worked in district-level positions were placed into one group described as “District-Level Professionals.” SN managers’ responses were analyzed as one group, “SN Managers.” Surveys with the position indicated as “other” were excluded from this analysis. Mean ratings for the participants’ need for training and their staff’s need for training were calculated for the two groups of SN professionals. None of the training needs were scored very high by either group, with only a small number of statements with mean ratings above 3.0 (*agree*). Overall, district-level SN professionals reported slightly lower means than managers, and both groups had lower means for self-training than staff training.

Table 7 presents the mean level of agreement relating to the training needs of the respondents, as well as the perceived training needs of their staff. Both district-level

professionals and SN managers rated a personal need for training on implementing an Emergency Allergy Response Plan as the highest ($2.96 \pm .71$ vs. $3.05 \pm .75$). Both district-level SN professionals and SN managers reported that they need training on the conditions that are considered disabilities under Section 504 ($2.85 \pm .68$ vs. $2.95 \pm .67$) and identifying foods to avoid for specific food allergies ($2.77 \pm .80$ vs. $2.76 \pm .67$). In addition, both groups rated the same training needs in the bottom three. The lowest mean scores on the need for training for district-level SN professionals and managers were reading and understanding ingredients on food labels ($2.39 \pm .75$ vs. $2.37 \pm .86$); purchasing appropriate food items ($2.34 \pm .76$ vs. $2.30 \pm .69$); and understanding confidentiality issues ($2.39 \pm .86$ vs. $2.17 \pm .84$).

Table 7

Training Needs of Respondents and School Nutrition Staff

I need training on...	District-Level Professionals			School Nutrition Managers		
	n	Mean^{a,b}	SD	n	Mean^{a,b}	SD
Implementing an Emergency Allergy Response Plan.	175	2.96	0.71	56	3.05	0.75
Understanding what conditions are considered disabilities under Section 504.	172	2.85	0.68	57	2.95	0.67
Identifying foods to avoid for specific food allergies.	170	2.77	0.80	55	2.76	0.67
Understanding USDA/State Agency regulations on special needs.	174	2.75	0.75	56	2.59	0.80
Performing and interpreting nutrient analysis.	171	2.74	0.77	54	2.76	0.73
Developing/interpreting school district policies on special needs.	167	2.66	0.71	56	2.59	0.76

^a Scale = 1 (*strongly disagree*) to 4 (*strongly agree*)

^b Statements are reported in descending order based on means for district-level professionals
(*Table 7 continues*)

(Table 7 continued)

Training Needs of Respondents and School Nutrition Staff

I need training on...	District-Level Professionals			School Nutrition Managers		
	n	Mean^{a,b}	SD	n	Mean^{a,b}	SD
Understanding specific special food and/or nutrition needs.	165	2.64	0.76	56	2.63	0.59
Planning menus to meet special food and/or nutrition needs.	173	2.60	0.75	58	2.66	0.66
Understanding the roles of health professionals, such as Registered Dietitians and Registered Nurses.	166	2.55	0.80	56	2.57	0.89
Preparing meals to meet special food and/or nutrition needs.	169	2.54	0.77	53	2.47	0.64
Understanding cross-contaminations related to special needs.	172	2.54	0.91	53	2.42	0.75
Understanding physicians'/medical professionals' orders.	174	2.53	0.80	58	2.35	0.78
Providing nutrition information on the menu.	171	2.51	0.80	57	2.63	0.75
Using a team approach to serve children with special needs.	166	2.49	0.77	55	2.44	0.86
Understanding the importance of accommodating special needs.	172	2.47	0.81	55	2.39	0.87
Identifying special equipment to prepare meals.	173	2.42	0.72	56	2.55	0.76
Understanding space/dining issues necessary for special needs children.	166	2.42	0.72	56	2.45	0.74
Understanding confidentiality issues.	166	2.39	0.86	54	2.17	0.84
Reading and understanding ingredients on food labels.	179	2.39	0.75	57	2.37	0.86
Purchasing appropriate food items.	173	2.34	0.76	56	2.30	0.69

^a Scale = 1 (*strongly disagree*) to 4 (*strongly agree*)

^b Statements are reported in descending order based on means for district-level professionals

(Table 7 continues)

(Table 7 continued)

Training Needs of Respondents and School Nutrition Staff

My staff needs training on...	District-Level Professionals			School Nutrition Managers		
	n	Mean^{a,b}	SD	n	Mean^{a,b}	SD
Implementing an Emergency Allergy Response Plan.	167	2.96	0.68	57	3.05	0.79
Identifying foods to avoid for specific food allergies.	169	2.95	0.71	59	2.93	0.74
Understanding conditions covered under Section 504.	167	2.86	0.66	59	3.00	0.72
Performing and interpreting nutrient analysis.	167	2.82	0.71	59	3.07	0.76
Understanding specific special food and/or nutrition needs.	171	2.80	0.67	59	2.86	0.68
Understanding cross-contamination issues related to special needs.	170	2.72	0.91	59	2.71	0.77
Understanding USDA/State Agency regulations on special needs.	166	2.72	0.72	58	2.72	0.83
Reading and understanding ingredients on food labels.	173	2.67	0.77	60	2.67	0.75
Preparing meals to meet special food and/or nutrition needs.	168	2.63	0.74	59	2.83	0.77
Using a team approach to serve children with special needs.	167	2.60	0.79	58	2.60	0.79
Understanding the importance of accommodating special needs.	165	2.58	0.79	58	2.64	0.87
Developing/interpreting school district policies on special needs.	164	2.58	0.68	57	2.47	0.83
Understanding confidentiality issues.	165	2.56	0.89	59	2.46	0.88

^a Scale = 1 (*strongly disagree*) to 4 (*strongly agree*)

^b Statements are reported in descending order based on means for district-level professionals

(Table 7 continues)

(Table 7 continued)

Training Needs of Respondents and School Nutrition Staff

My staff needs training on...	District-Level Professionals			School Nutrition Managers		
	n	Mean^{a,b}	SD	n	Mean^{a,b}	SD
Understanding the roles of health professionals, such as Registered Dietitians and Registered Nurses.	163	2.55	0.75	59	2.63	0.87
Understanding physicians' orders.	165	2.55	0.76	58	2.59	0.75
Providing nutrition information on the menu.	167	2.51	0.76	58	2.57	0.73
Planning menus to meet special food and/or nutrition needs.	168	2.50	0.72	55	2.73	0.76
Understanding space/dining issues necessary for special needs children.	164	2.47	0.71	59	2.53	0.73
Identifying special equipment to prepare meals.	165	2.45	0.74	58	2.69	0.78
Purchasing appropriate food items.	161	2.45	0.76	57	2.37	0.75

^a Scale = 1 (*strongly disagree*) to 4 (*strongly agree*)

^b Statements are reported in descending order based on means for district-level professionals

When assessing the training needs of staff, both district-level professionals and SN managers reported staff needing training in similar areas. The top three training areas district-level SN professionals identified as areas for training needed for managers included performing and interpreting nutrient analysis ($3.07 \pm .76$); implementing an Emergency Allergy Response Plan ($3.05 \pm .79$); and understanding the conditions that are considered disabilities under Section 504 ($3.00 \pm .72$). It is interesting to note that these items constitute three of the four training resources needed that scored above 3.0. Purchasing appropriate food items received

the lowest agreement rating for staff training by both district-level SN professionals and managers ($2.45 \pm .76$ vs. $2.37 \pm .75$).

Given the fact that students must qualify under Section 504 to receive accommodations for meal changes and substitutions, it appears that most of the respondents perceive a need to better understand these regulations. However, some of the schools and school districts reported accommodating vegetarian diets as well as ethnic and religious preferences, which are not covered by Section 504. In addition, one of the major job responsibilities of most district-level SN professionals is planning the modified menus; however, this was not strongly seen as an area for personal training by these SN professionals ($2.60 \pm .75$).

With the recent increase in food allergies and the potential for severe anaphylactic reactions, it seems apparent that district-level SN professionals and managers would report a need for training on implementing an Emergency Allergy Response Plan for themselves as well as their staff. Due to the possible fatal results of food allergies, many organizations are recognizing the need for an emergency plan to respond to ingestion or exposure to food allergens. Due to the large number of variables that exist in the school setting, it is likely that a child may have his/her first allergic reaction in the school setting (Massachusetts Department of Education, 2002). It is the position of the American Academy of Allergy Asthma & Immunology (AAAAI) that school personnel should identify a system of identifying children with life-threatening allergies. In addition, all school personnel should be made aware of these children, and any staff that interact directly with these children should be trained on the proper treatment of an allergic reaction (American Academy of Allergy Asthma & Immunology [AAAAI], 2008b).

Even without an Emergency Allergy Response Plan, schools and school districts can take smaller steps to prevent possible interaction between students and allergens. Avoiding cross-contamination in the food preparation and service areas is one method. The AAAAI suggests that SN personnel be trained on how to prevent cross-contamination during the handling, preparation, and serving of foods (AAAAI, 2008b). However, training on this was not perceived as highly needed by district-level professionals or managers ($2.54 \pm .91$ vs. $2.42 \pm .75$). One possible explanation for the low level of agreement on this topic may be that SN directors are training on food safety methods, which includes the topic of cross-contamination. However, it may be interesting to evaluate if SN staff understand food allergen cross-contamination issues (School Nutrition Association, 2007). All other training needs are summarized in Table 7.

Program Characteristics Related to the Provision of Special Food and/or Nutrition Needs

Several questions were included to assess characteristics of the school district and the schools as they related to meeting special food and/or nutrition needs (Table 8). SN directors/assistant directors were most likely to be responsible for planning the menus to meet special needs (58.2%), while SN staff were responsible for preparing the meals (84.8%). SN directors, followed by SN managers, were responsible for purchasing items for special menus (55.6% vs. 48.8%). Managers and parents were most likely to be responsible for selecting the actual food items served to the students (57.4% and 48.5%, respectively). In addition to selecting food items to be served, slightly over 11% of the respondents indicated that parents were responsible for preparing and purchasing the food items needed by the children. By law, if a student has a qualifying disability, the food is to be purchased and prepared by the school at no additional cost to the parents. However, this percentage of parents may represent either those

who prefer to prepare the food items or those who prepare food items for children who do not qualify for special accommodations.

When asked what health professionals are on staff to address issues related to special needs, 90.8% of respondents indicated that their district had a school nurse; 40.1% had a speech pathologist; 28.3% had an occupational therapist; and 24.0% had a Registered Dietitian or nutritionist. Over half of the respondents reported they have an emergency response plan (54.8%) for children with special needs. However, over one-third (39.0%) did not know if such plan existed. This number may be of concern in schools or school districts where special needs exist. Even if a plan is in place, the appropriate personnel may not be able to react in an appropriate manner if school staff members do not know about the plan. When asked if emergency information is provided to the feeding sites by the SN office, 41.7% of respondents indicated that the district SN office did provide this information. Nearly one-third (32.1%) of respondents indicated that their schools or school districts supported an “allergen free” environment. Since special needs are not a required component of the Local Wellness Policy, it is notable that 46.8% of the respondents indicated that their policy addressed procedures to accommodate children with special needs. Only 15.4% of the schools or school districts reported having a Web site that provided information on special needs.

Table 8

Program Characteristics Related to the Provision of Special Food and/or Nutrition Needs

Question	Frequency	%
In your school district, who is responsible for planning the menus to meet the special needs of children? ^a		
SN director/assistant director	226	58.2
SN manager	137	35.5
SN area supervisor/coordinator	55	14.2
Full time Registered Dietitian	51	13.1
Foodservice management company	13	3.4
Part time/as needed Registered Dietitian	12	3.1
In your school district, who is responsible for preparing the meals to meet the special needs of children? ^a		
SN staff	331	84.8
SN manager	224	57.1
Parents	50	12.8
In your school district, who is responsible for purchasing special food items to meet the special needs of children? ^a		
SN director/assistant director	215	55.6
SN manager	189	48.8
SN area supervisor/coordinator	57	14.7
Parents	45	11.6
SN staff	26	6.7
Purchasing agent	21	5.4

^aParticipants allowed to check more than one option; total exceeds 100%

(Table 8 continues)

(Table 8 continued)

Program Characteristics Related to the Provision of Special Food and/or Nutrition Needs

Question	Frequency	%
In your school district, who is responsible for selecting the food items that will be served to the children with special needs? ^a		
SN manager	225	57.4
Parent	190	48.5
SN director	165	42.1
School nurse	138	35.2
Physician	117	29.8
SN staff	90	23.0
Registered Dietitian	67	17.1
SN area supervisor/coordinator	52	13.3
Teacher	48	12.2
Child	48	12.2
SN assistant director	20	5.1
Teacher's aide	20	5.1

^aParticipants allowed to check more than one option; total exceeds 100%

(Table 8 continues)

(Table 8 continued)

Program Characteristics Related to the Provision of Special Food and/or Nutrition Needs

Question	Frequency	%
In your school/school district, what health professionals are on staff to address issues related to special needs of children? ^a		
Nurse	356	90.8
Speech pathologist	157	40.1
Occupational therapist	111	28.3
Registered Dietitian/Nutritionist	94	24.0
Other	46	11.7
Don't know	25	6.4
Does your school/district have an emergency response plan for children with special needs?		
Yes	211	54.8
No	24	6.2
Don't know	150	39.0
Does the district SN office provide information regarding emergency procedures and contact information to SN sites feeding children with special needs?		
Yes	163	41.7
No	115	29.4
Don't know	113	28.9
Does your school/district support an "allergen free" environment?		
Yes	125	32.1
No	137	35.1
Don't know	128	32.8

^aParticipants allowed to check more than one option; total exceeds 100%

(Table 8 continues)

(Table 8 continued)

Program Characteristics Related to the Provision of Special Food and/or Nutrition Needs

Question	Frequency	%
Does your school/district Local Wellness Policy address procedures to accommodate children with special needs?		
Yes	183	46.8
No	117	29.9
Don't know	91	23.3
Does your school/district offer special needs information on their Web site?		
Yes	61	15.4
No	200	50.8
Don't know	133	33.8

^aParticipants allowed to check more than one option; total exceeds 100%

CONCLUSIONS AND RECOMMENDATIONS

Limitations to the Research Study

The lower than desired response rate is a primary limitation of the study. Both the overall low response rate and the low response of school nutrition (SN) managers may cause concern for the generalizability of the results. It is difficult to determine if some SN professionals did not return the survey because they did not have any special needs children in the school or school district. If special needs were not addressed in that district, it would be interesting to note the demographic characteristics of that individual as well as the school or school district. In addition, reliance on the SN director to disseminate the second survey to a manager may have resulted in the low response rate of the managers.

Another potential limitation is the lack of a school's ability to identify a child with a special need. Typically, this information is gathered at the district-level. However, if the parent decides not to report the special need, the school may never know about the situation and cannot comment on accommodations that are made for that student.

Research Study Conclusion

Based on the results of the research, it appears that accommodating special needs is becoming more prevalent in SN programs. Allergies tend to be predominant among the special needs, with the traditional special needs ranking lower in the overall prevalence. Chronic diseases such as diabetes, obesity, and high blood pressure are also appearing in the school-aged child, so schools and school districts need to be prepared to take action in providing foods necessary to meet dietary requirements. However, these needs are less prevalent than food allergies. It is interesting to note that many of the special needs that are currently being accommodated are not included as part of the regulations governing the provision of special food

and/or nutrition services. It was surprising to find that obesity did not rank high on the list of special needs currently being accommodated. However, it may be assumed that a physician may hesitate to request this special need if it is difficult to make a case that the overweight status is an acute life-threatening condition. Services are also being provided by SN programs beyond what is required by regulations. Food intolerances, vegetarianism, and ethnic/religious preferences were reported as being accommodated in the school setting; yet, current policies do not mandate that schools and school districts must meet these needs.

District-level SN professionals and managers do not appear to vary in their opinions regarding the issues addressed in the survey. These two groups had similar responses in all areas: SN Responsibility, District/School Accountability, Environmental Considerations, and Information Resources. District-level SN professionals and managers strongly agreed on four issues relating to the provision of special food and/or nutrition services. They recognized the need for official documentation of the disability for the provision of accommodations, such as a physician's order. They also strongly agreed that the SN managers needed to assure that the foods and meals were being prepared appropriately, that specific requirements of the child's diet needed to be outlined in the order from the physician or other health professional, and that the confidentiality of the child's special need must be maintained. A team approach was a common strategy to effectively meet the special food and/or nutrition needs of children, while parents and medical professionals served as invaluable sources of information.

Most of the respondents indicated that they use information from the food companies and the United States Department of Agriculture (USDA) when interpreting orders for special food and/or nutrition needs. Information from food companies was supplemented with information from the USDA, SN peers, and individuals within the state agency. District-level professional

staff planned the menus, while SN managers were most likely to be responsible for purchasing the special foods needed by these children. SN staff members (not managers) were responsible for preparing the food items based on recommendations from district-level SN professionals. School districts were most likely to employ school nurses to address the special needs (91%), followed by speech pathologists (40%), occupational therapists (28%), and registered dietitians (24%).

Anticipated barriers such as cost, space, and highly specialized food items were not strongly agreed upon as issues faced by the schools or school districts. There was not strong agreement that specific training or resources were needed to meet the special food and/or nutrition needs of the children. Overall, the district-level respondents reported a higher mean for their staff needing training than the mean reported by the staff themselves. Most of the respondents did not express a strong interest in any type of training for themselves or their staff on issues related to special food and/or nutrition to school children, with the exception of the implementation of an Emergency Allergy Response Plan. When evaluating program characteristics, there is no consistency in the delegation of responsibility for planning, purchasing, or preparing menus and food items for the child with special needs.

Overall, it appears that the prevalence and variety of special needs that need to be accommodated are increasing. SN professionals can expect to consistently encounter a variety of special food and/or nutrition needs of children. This research shows evidence of an awareness of the challenges in meeting special food and/or nutrition needs in the school setting. In addition, providing training for staff on issues related to special food and/or nutrition in children is critical.

Education and Training Implications

- As the prevalence of food allergies continues to increase, both district-level and school-level SN employees will need training on the appropriate foods to avoid.
- Schools and school districts need to be prepared to make accommodations for chronic diseases such as diabetes and obesity, even though these diseases do not typically qualify under Section 504.
- The development of Emergency Allergy Response Plans is crucial in the current environment of food allergies and potentially fatal anaphylactic reactions.
- Training information needs to be directed to staff positions (SN assistants/technicians). Training is needed on special diets and/or modifications, as well as procedures for emergency situations.
- Training resources are needed for just-in-time access by SN professionals. These resources should be topic specific with activities that support easy implementation in SN programs.

Research Implications

- Using this project as the foundation, conduct research to identify best practices or quality indicators in serving children with special nutrition needs. Best practices could be developed into a resource guide to assist SN professionals in serving children with special food and/or nutrition needs.
- Conduct an assessment of the knowledge of specific dietary modification of feeding site managers and staff as it relates to special needs and food allergies.
- Explore options to provide information on specific special food and/or nutrition needs to those schools or school districts with small numbers of special needs children.

- Investigate the cost of providing appropriate accommodations in special needs. Costs should include food, equipment, labor, and space.

Investigate the feasibility of providing an “allergen free” environment in a school.

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Item number R-134-08 (GY 07)