

## Special Food and Nutrition Needs in School Nutrition Programs

**Elaine Fontenot Molaison, PhD, RD; and Mary Frances Nettles, PhD, RD**

*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.*

### ABSTRACT

#### **Purpose/Objectives**

The purpose of this research was to determine the prevalence of special food and/or nutrition needs in school nutrition programs. In addition, researchers focused on the issues surrounding these needs and the role of the school nutrition (SN) directors and managers in meeting these needs.

#### **Methods**

An expert panel was used to help develop a questionnaire to address special food and/or nutrition needs in a school setting. Based on the feedback, a survey was developed and sent to 700 SN directors and 700 SN managers throughout the seven USDA regions.

#### **Results**

A total of 405 surveys (28.9%) were used in the final analysis. Milk allergies were the most frequently reported special need (80.6%). Participants most strongly agreed that a physician's order must be received before a special needs diet can be provided and the specific requirements of the diet need to be outlined. SN directors were responsible for planning the diets, yet the SN staff was responsible for preparing the meals. Approximately one-half of the SN directors and managers reported being responsible for purchasing the items to accommodate the special dietary needs.

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

As the prevalence of special needs continues to rise, SN professionals must be prepared to accommodate these needs. There are several issues and challenges when meeting special food/or and nutrition needs. Both SN directors and managers should be prepared for the issues they will face and take ownership of their roles in meeting these needs.

### INTRODUCTION

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 those children with any physical or mental impairment that impacts one or more of life's daily activities, 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, how the disability impacts the child's diet, the life activity impacted by the disability, and the 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 (Lucas, 2004; USDA, 2001; USDA 2005).

A person with a developmental disability is considered to have a chronic condition that is due to mental and/or physical impairments. Persons with developmental disabilities have problems with

major life activities such as language, mobility, learning, self-help, and independent living, placing them at nutritional risk (Centers for Disease Control and Prevention [CDC], 2006). According to the 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. The condition may affect the energy needs of the child, the content of many of the foods normally served, preparation methods for the food, or texture of the food served.

More recently, food allergies and chronic diseases are leading the accommodations that must be made in the school setting. The incidence of food allergies is rapidly increasing. In the general population, 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). 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 (AAAAI, 2008b; Massachusetts Department of Education, 2002; USDA, 2001).

Although prevalence estimates of special needs in the school setting are not available, it is expected that these numbers are increasing. As of recent, little research has been conducted regarding the training and resources needed to meet such needs. As referenced in a literature review by McCrary (2006), children with disabilities and special health care needs are at greater risk for health-related problems that can potentially impact growth, development, and ultimately learning. Without appropriate modifications, these children may experience severe medical complications, including death, as well as delays in growth and development.

The lack of current research makes it difficult to identify the primary issues related to the provision of special food and/or nutrition services. Therefore, the purpose of this research is to assess the prevalence of special food and/or nutrition needs, as indicated by school nutrition (SN) directors and managers; to determine issues related to preparing and serving children with special food and/or nutrition needs; and to identify the role of the SN director and manager in providing for special food and/or nutrition needs.

## METHODOLOGY

In order to achieve the research objectives, this study was conducted in two phases. In Phase I, interviews and expert panel discussions were conducted with SN professionals to gather qualitative information related to serving children with special food and/or nutrition needs in the school setting. The expertise of these individuals ranged from an SN manager to a researcher in the area of special needs in children. 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 into the final survey.

### **Phase I: Expert Panel Discussion**

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. Both of these individuals were Registered Dietitians and had worked in an SN program and/or participated in SN research for a number of years. 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. A total of seven individuals participated in the expert panel discussion. These participants included an SN manager, SN directors, state agency staff, and an expert on children with special needs. Expert panel topics included identification and prevalence of special needs, sources of information on meeting special needs, environmental considerations, roles of SN professionals in meeting special nutrition needs, knowledge and skills needed, and challenges encountered when planning and implementing meals

for children with special needs. Following the expert panel meeting, researchers summarized the discussion session. The summaries were reviewed and thematically coded into categories and survey statements were 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 three categories: Identification and Prevalence of Special Needs, Issues Related to Serving Children with Special Food and/or Nutrition Needs, and Personnel and Program Characteristics. In the first section, participants were asked to indicate which of the 29 special food and/or nutrition needs their schools or school districts accommodated. Although all of the items listed did not qualify as a special need accommodation (under Section 504), researchers were interested in all needs being accommodated. In the second section, participants were asked to rate their level of agreement, using a 3-point Likert-type scale ranging from 1 (*strongly disagree*) to 3 (*strongly agree*), on 47 issues related to serving children with special needs. The final section included personnel and program characteristics. A review panel was assembled to evaluate the readability and clarity of the draft survey. 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. The sample consisted of 700 school districts stratified by USDA region with 100 school districts from each of the seven USDA regions. Survey packets were mailed to a random sample of 700 SN directors who were asked to complete a survey and to distribute a separate survey to an SN manager experienced in working with children with special food and/or nutrition needs. Thus the sample included 700 SN directors and 700 SN managers for a total of 1,400 surveys distributed. Participants were given approximately six weeks to complete the survey.

Surveys were analyzed using the statistical package SPSS Version 15.0 for Windows. Descriptive statistics included means, standard deviations, and frequencies of total responses.

## **RESULTS AND DISCUSSION**

### **Program Characteristics**

A total of 405 surveys were returned and used in statistical analysis, for a response rate of 28.9%. The majority of those responding held the title of SN director or assistant director (34.5%). SN managers comprised 16.1% of the respondents, and 15.1% of the respondents held another position at the district level. USDA regions were nearly equally represented, with a slightly stronger representation from the Southeast and Southwest regions (18.8% for both regions). School districts with the lowest enrollment had the highest response rate (52.6%). These districts may be more intimately involved with their students, and more likely to answer a survey. Not all participants answered all questions; therefore, percentages presented in the text and the tables represent percent of those reporting, rather than percentage of the total respondents. All other demographic characteristics are summarized in Table 1.

Table 1. *Demographics*

<b>Characteristic</b>	<b>Frequency</b>	<b>%</b>
Current Job Title		
School nutrition director/assistant director	133	34.5
Other	132	34.3
School nutrition manager	62	16.1

District level supervisor/coordinator	43	11.2
Nutritionist/dietitian	15	3.9
Enrollment of the School District		
<2,799	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	4	1.0
Current Certification(s) <sup>a</sup>		
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
Years Working in School Nutrition		
<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
>20 years	103	26.8
Years in Current Position		
<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
>20 years	38	9.9
USDA Region		
Southeast	74	18.8
Southwest	74	18.8
Mountain Plain	59	15.0
Western	54	13.6
Midwest	46	11.7
Mid Atlantic	46	11.7
Northeast	41	10.4

<sup>a</sup> Participants were allowed to check more than one option; total exceeds 100%.

### Identification and Prevalence of Special Food and/or Nutrition Needs

Participants were provided with 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 2, 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 was not surprising to the researchers that milk and peanut allergies were the most frequently seen special food and/or nutrition needs 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 (Food Insight, 2006). In 2004, the School Nutrition Association 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 the Individuals with Disabilities Education Act (IDEA). However, if a physician indicates that the food allergy is life threatening (such as an anaphylactic reaction), the condition must then be defined as a disability, and appropriate substitutions must be made by SN staff (USDA, 2001).

Table 2. *Prevalence of Special Needs<sup>a</sup>*

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 & 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
Behavioral Issues	62	15.9
Self-Feeding Problems	58	14.8
Underweight	49	12.5
Ethnic Preferences	41	10.5
PKU & Other Metabolic Diseases	39	10.0
High Cholesterol	33	8.4
High Blood Pressure	27	6.9
Positioning Problems	27	6.9

Tube Feeding	26	6.6
Cystic Fibrosis	14	3.6
Other	38	9.7

<sup>a</sup>Participants allowed to check more than one option; total exceeds 100%.

Followed by these two food allergies is Type 1 Diabetes Mellitus, 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 (United States Department of Health and Human Services, 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). A mandated physician's order for the provision of meals in the National School Lunch or Breakfast Program may be related to the high incidence of Type 1 Diabetes Mellitus reported in the survey

A total of 45.2% of the schools or school districts reported dealing with Type 2 Diabetes Mellitus. This form of diabetes was traditionally seen in older populations (over 40 years old). However, with recent increases in the incidence of childhood obesity, the number diagnosed with this condition is rising. 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 may increase in the future, as well.

Previously reported 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 issues related to positioning the child while eating, 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 in the seven USDA regions. Reasons for accommodations were not addressed as part of the survey. Yet, the expert panel discussion indicated that many directors planned menus that would fit a vegetarian diet or 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 3 presents the means and standard deviations for each of the 47 issues in descending order of agreement.

Table 3. *School Nutrition Professionals' Opinions on Issues Related to Serving Children with Special Needs<sup>a</sup>*

<b>Issue</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>
A physician's order must be received	373	2.64	0.51
	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
	364	2.44	0.54
Parents provide information on the child's special food/nutrition needs	374	2.42	0.52
Parents are contacted for additional information	392	2.39	0.52
	388	2.39	0.52
Special foods are purchased, as needed	366	2.38	0.53
	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
	383	2.34	0.56
	391	2.34	0.50
	383	2.31	0.50
Assistance is provided as needed during meal time	366	2.30	0.51
	384	2.30	0.52
	386	2.30	0.53
	387	2.28	0.49
	387	2.26	0.50
	387	2.26	0.50
	382	2.25	0.50
	386	2.22	0.53
	380	2.21	0.47
	372	2.20	0.48
	386	2.19	0.46
	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
	354	2.14	0.46
Questions are answered through networking with other SN peers	377	2.12	0.47
	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
	390	2.12	0.52
	362	2.09	0.41
Information is gathered from the Internet	377	2.08	0.42
	381	2.06	0.58
	352	2.05	0.49
	359	2.04	0.65
	375	1.99	0.42
The teacher monitors foods the child brings from home	376	1.99	0.49
	384	1.97	0.47
	373	1.91	0.46
Teachers can request menu modifications	382	1.88	0.52
	357	1.84	0.46
The SN staff monitors foods the child brings from home	383	1.75	0.54

Note. SN= School Nutrition.

<sup>a</sup>Scale = 1 (*strongly disagree*) to 3 (*strongly agree*).

The issues that received the highest level of agreement were: a physician's order must be received prior to making accommodations for a special need (2.64 + .51); 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). In comparison the following issues received the lowest level of agreement: monitoring food the child brings from home (1.75 + .54); posting questions regarding special needs on Meal Talk Listserv (1.84 + .46); and making modifications based on teacher requests (1.88 + .52).

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). Thus, it is encouraging that respondents were aware that they must have a physician's order before modifications can be made.

Parents and medical professionals serve as an invaluable source of information when accommodating a child's special needs. 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 + .52), parents are contacted for additional information (2.39 + .52), the physician provides specific recommendations for the child's special food and/or nutrition needs (2.39 + .52), and SN staff should work with parents when accommodating the child's needs (2.34 + .50). They were less likely to agree that parents can request menu modifications not related to a defined special need (2.12 + .48).

Many resources are available to assist those working with children with special food and/or nutrition needs. Contacting food companies to provide specific ingredient information (2.30 + .53) and obtaining information from the SN district office to the school site (2.25 + .50) were the most commonly used resources. Participants also agreed that SN personnel should meet with school staff to discuss the child's special needs requirements (2.37 + .52).

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 meal time (2.30 + .51), making additional time accommodations during mealtime (2.20 + .48), or addressing adequate space issues in the cafeteria (2.15 + .47). In addition, some school districts recommend "peanut free tables" to assure 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 + .58).

#### **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 4). SN directors/assistant directors were most likely to be responsible for planning the menus to meet special needs (58.2%), while SN staff was 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). Only 13% reported that a Registered Dietitian was included in planning the meals. This may be due to the perceived additional cost of a dietitian in the SN setting. 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 those that either prefer to prepare the food items for the children with special needs or prepare food items for children that do not qualify for special accommodations.

Table 4. *Program Characteristics Related to the Provision of Special Food and/or Nutrition Needs*

<b>Question</b>	<b>Frequency</b>	<b>%</b>
Who is responsible for planning menus for special needs of children? <sup>a</sup>		
School nutrition director/assistant director	226	58.2
School nutrition manager	137	35.5
School nutrition area supervisor/coordinator	55	14.2
Full time Registered Dietitian	51	13.1

School nutrition management company	13	3.4
Part time/as needed registered dietitian	12	3.1
Who is responsible for preparing the meals to meet the special needs of the children? <sup>a</sup>		
School nutrition staff	331	84.8
School nutrition manager	224	57.1
Parents	50	12.8
Who is responsible for purchasing the food items to meet the special needs of the children? <sup>a</sup>		
School nutrition director/assistant director	215	55.6
School nutrition manager	189	48.8
School nutrition area supervisor/coordinator	57	14.7
Parents	45	11.6
School nutrition staff	26	6.7
Purchasing agent	21	5.4
Who is responsible for selecting the food items that will be served to the children with special needs? <sup>a</sup>		
School nutrition managers	225	57.4
Parents	190	48.5
School nutrition director	165	42.1
Physician	117	29.8
School nutrition staff	90	23.0
Registered dietitian	67	17.1
School nutrition area supervisor/coordinator	52	13.3
Teacher	48	12.2
Child	48	12.2
School nutrition assistant director	20	5.1
Teacher's aide	20	5.1

In your school/school district, what health professionals are on staff to address issues related to special needs of children? <sup>a</sup>		
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
Yes	211	54.8
No	24	6.2
Don't know	150	39.0
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
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

Note. SN = School Nutrition.

<sup>a</sup>Participants were allowed to check more than one option; total exceeds 100%.

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 a 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 schools 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.

## CONCLUSIONS AND APPLICATION

Based on the results of the research, it appears that accommodating special needs is becoming more prevalent in SN programs. Allergies tend to be most common 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 regulations governing the provision of special food and/or nutrition services. As the prevalence of food allergies continue to increase, both district level and school level SN employees will need to be trained on appropriate foods to be avoided.

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. 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. Services also are 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 schools and school districts to meet these needs.

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 (which may include a dietitian or nutritionist), speech-language pathologist, physical/occupational therapist, nurse, social worker, and/or physician. Most of the respondents indicated that they use information from the food companies and 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 at the state agency level. District level professional staff planned the menus, while SN managers were most likely to be responsible for purchasing the special foods needed for the children with the disability. SN staff (not managers) were responsible for preparing the food items based on recommendations from the district-level SN professionals.

Based on these findings, schools and school districts need to find ways to accommodate the ever increasing number of special food and/or nutrition needs. 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), and training is needed on special diets and/or modifications, as well as procedures for emergency situations. Resources for training the SN professional should be topic specific with activities that support easy implementation in SN programs.

This research shows evidence of an awareness of the challenges in meeting special food and/or nutrition needs in the school setting. In addition, use of this research can serve as a foundation to conduct research to identify best practices or quality indicators in serving children with special nutrition needs. Identification of these best practices could be developed into a resource guide to assist SN professionals in serving children with special food and/or nutrition needs. Further research also needs to 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. However, the cost of providing appropriate accommodations for special food and/or nutrition needs as well as the feasibility of providing an “allergen free” environment needs to be investigated.

The lower than desired response rate is a primary limitation of the study. Neither group included in the study received an incentive for participation in the research. Both the overall low response rate and the low response of SN managers may cause concern for the generalizability of the results of the research. 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 manager.

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 outside of school.

## ACKNOWLEDGEMENTS

This manuscript 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 contents of this publication do not necessarily reflect the views or policies of The University of Mississippi or the U.S. Department of Agriculture, nor does mention of trade names, commercial products, or organizations imply endorsement by the U.S. Government.

The information provided in this manuscript is the result of independent research produced by NFSMI and is not necessarily in accordance with U.S. Department of Agriculture Food and Nutrition Service (FNS) policy. FNS is the federal agency responsible for all federal domestic child nutrition programs including the National School Lunch Program, the Child and Adult Care Food Program, and the Summer Food Service Program. Individuals are encouraged to contact their local child nutrition program sponsor and/or their Child Nutrition State Agency should there appear to be a conflict with the information contained herein, and any state or federal policy that governs the associated Child Nutrition Program. For more information on the federal Child Nutrition Programs please visit [www.fns.usda.gov/cnd](http://www.fns.usda.gov/cnd).

## REFERENCES

American Academy of Allergy Asthma & Immunology. (2008a). *Allergy statistics*. Retrieved May 6, 2008, from [http://www.aaaai.org/media/resources/media\\_kit/allergy\\_statistics.stm](http://www.aaaai.org/media/resources/media_kit/allergy_statistics.stm)

American Academy of Allergy Asthma & Immunology. (2008b). *Position statement*. Retrieved May 6, 2008, from [http://www.aaaai.org/media/resources/academy\\_statements/position\\_statements/ps34.asp](http://www.aaaai.org/media/resources/academy_statements/position_statements/ps34.asp)

Centers for Disease Control and Prevention. (2006). *Developmental disabilities*. Retrieved January 2, 2007, from <http://www.cdc.gov/ncbddd/dd/ddsurv.htm>

Food Insight. (2006). *On today's menu: Back to school with food allergies*. Retrieved December 16, 2009, from <http://foodinsight.staging.r2integrated.com/Portals/0/pdf/julaugfi406.pdf>

Lucas, B. L. (Ed.). (2004). *Children with special health care needs: Nutrition care handbook*. Chicago: American Dietetic Association.

Massachusetts Department of Education. (2002). *Managing life threatening food allergies in schools*. Retrieved August 25, 2008, from <http://www.doe.mass.edu/cnp/allergy.pdf>

McCary, J. M. (2006). Improving access to school-based nutrition services for children with special health care needs. *Journal of the American Dietetic Association*, 106, 1333-1336.

Position of the American Dietetic Association. (2004). Providing nutrition services for infants, children, and adults with developmental disabilities and special health care needs. *Journal of the American Dietetic Association*, 104, 97-106.

School Nutrition Association. (2007). *Much ado about allergies*. Retrieved June 25, 2007, from <http://www.schoolnutrition.org>

United States Department of Agriculture. (2001). *Accommodating children with special dietary needs in the school nutrition programs: Guidance for school foodservice staff*. Washington, DC: U.S. Government Printing Office.

United States Department of Agriculture. (2005). *Non-discrimination statement*. Washington, DC. Retrieved January 9, 2007, from [http://www.usda.gov/wps/portal/!ut/p/\\_s.7\\_0\\_A/7\\_0\\_10B?navtype=FT&navid=NON\\_DISCRIMINATION](http://www.usda.gov/wps/portal/!ut/p/_s.7_0_A/7_0_10B?navtype=FT&navid=NON_DISCRIMINATION)

United States Department of Health and Human Services. (2003). *Helping the student with diabetes succeed: A guide for school personnel*. Retrieved August 25, 2008, from [http://ndep.nih.gov/media/Youth\\_NDEPSchoolGuide.pdf](http://ndep.nih.gov/media/Youth_NDEPSchoolGuide.pdf)

## BIOGRAPHY

**Molaison** is Associate Professor and Director of the Dietetics Programs for the Department of Nutrition and Food Systems at The University of Southern Mississippi in Hattiesburg, MS. **Nettles** is Director of the Applied Research Division of the National Food Service Management Institute located at The University of Southern Mississippi.