The Journal of Child Nutrition & Management
Volume 30, Issue 2, Fall 2006
Published by School Nutrition Association

Perceptions of North Carolina Child Nutrition Directors Regarding the Role of Child Nutrition Programs in Childhood Overweight

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ABSTRACT

Objectives
The National School Lunch Program (NSLP) provides nutritionally balanced and affordable meals to children throughout the United States. Recently, there has been debate concerning the content of foods served in competition with the NSLP. The purpose of this research is to determine the perceptions child nutrition directors (CNDs) in North Carolina have toward childhood overweight and identify challenges to increasing the participation of child nutrition programs in the NSLP.

Methods
A four-part questionnaire was developed based on a review of the literature concerning childhood overweight. The questionnaire investigated the attitudes CNDs have toward the role that nutrition programs play in childhood overweight, identified challenges to increasing participation in the NSLP, and compiled the demographic information of the directors and their districts.

Factor analysis was conducted on the perceptions and challenges scales to determine underlying factors. For the perceptions scale, the significant factors were student food selection behavior and school food offerings. The significant factors for the challenges scale were financial stability and student selection of competitive foods. Multiple regression analyses were used to determine the relationships among variables.

Results
CNDs believed that their districts offered healthy food options in competitive food sales, although students tended to choose unhealthy foods items over healthier options. Respondents felt that the greatest challenges to increasing participation in the school lunch program were: 1) offering competitive foods that maintained financial stability; 2) student demand for food items that are less-healthful choices; and 3) a lack of support from the administration.

Application to Child Nutrition Professionals
It is apparent that CNDs need financial and administrative support in offering foods that are healthy for children. Active involvement from parents, teachers, and the community would help support this goal.

INTRODUCTION

Ensuring the health of children and maintaining nutritional standards are high national priorities, and they are primary reasons as to why school nutrition programs were created. Most recently, there has been debate over the content of school lunches and the role that they play in childhood overweight (The Center for Health and Healthcare in Schools, 2004). Each school day, approximately 800,000 students in North Carolina participate in the National School Lunch Program (NSLP) (Public Schools of North Carolina, 2004). Between 1995 and 2001, North Carolina has seen a 14.6% increase in the prevalence of overweight among children (Molloy et al., 2002). Children and youth are twice as likely to be overweight as the national average (North Carolina Department of Health and Human Services, 2004). Foods offered in competition with the NSLP are typically lower in nutritional quality (Koplan et al., 2005), and they tend to be low in nutrient density, high in fat, and include added sugars and calories. Additionally, the presence of competitive foods may be related to a decrease in fruit and vegetable consumption and an increase in calories obtained from fat (Institute of Medicine, 2004; U.S. Department of Agriculture [USDA], 2001).

During onsite General Accounting Office (GAO) reviews of school lunch activities at 22 schools in California, Kentucky, Michigan, Rhode Island, and Texas, barriers to meeting nutrition requirements for school lunches were investigated. School Food Authority (SFA) officials listed the pressure to balance their budgets as one factor affecting the food served in schools. The challenge was not thought to be in providing meals that would meet nutrition guidelines and fit within the budget, but in providing the types of meals that students would select and eat (GAO, 2003). In another study, 628 foodservice personnel were surveyed concerning the barriers they encountered when making changes to their foodservice program that ensured compliance with the latest edition of the federal *Dietary Guidelines for Americans*. The five most commonly cited barriers were: 1) poor acceptance of lower-fat and lower-sodium food items (39.8%); 2) the higher cost of lower-fat, lower-sodium, and fresh foods (31.3%); 3) an insufficient amount of time for meal preparation (18.4%); 4) an inability to include commodity food items in lower-fat and lower-sodium menus (16%); and 5) a lack of training (9.6%) (Stang et al., 1997). Further, lack of educational standards for school foodservice directors and managers has been suggested as a contributing factor in their ability to understand nutrition and health issues associated with competitive foods (USDA, 2001).

Child nutrition directors (CNDs) within the 117 public school districts in North Carolina were surveyed to assess the extent to which they had coordinated school nutrition policies consistent with Centers for Disease Control and Prevention (CDC) recommendations. Researchers found that only 24.5% had a coordinated school nutrition policy, and none of these policies were consistent with all of the CDC guidelines. Further, only 56% of the districts had policies that addressed school foodservice a la carte and school vending machine food items (Barratt, Cross, Mattfeldt-Berman, & Katz, 2004).

Two programs have been implemented in North Carolina to ensure the nutritional quality of foods sold in schools. The first foodservice plan, the *Winner's Circle: A Healthy Eating Program*, identifies and promotes healthy menu items available to dining establishments,

including schools. Participant organizations that adopt these standards encourage the inclusion of healthy food items on school menus (North Carolina Prevention Partners, 2004). The second program, *Eat Smart, Move More...North Carolina*, addresses foods and beverages found in traditional cafeteria meals, after-school programs, school functions, a la carte lines, and vending machines. The *Eat Smart* standards can be used to craft food policies that contribute to student nutritional well-being and health (North Carolina Department of Health and Human Services, 2004). As there are no permanent state- or local-mandated funds to support child nutrition programs in North Carolina, competitive food sales have become increasingly necessary to fund program operations. The purpose of this research is to determine the perceptions CNDs in North Carolina have concerning childhood overweight and identify challenges to increasing foodservice program participation in the NSLP.

METHODOLOGY

Written Questionnaire

The questionnaire was developed based upon literature describing the sale of competitive foods in schools and their impact on children's health, including overweight. The questionnaire contained four sections. Section One investigated the CNDs' perceptions of competitive food sales in their schools and the relationship of such sales to overweight in children. A five-point rating scale (5=strongly agree; 1=strongly disagree) was used to assess respondents' level of agreement with each statement. Section Two explored the challenges the directors felt existed to increasing participation in the NSLP. This section also used the same five-point rating scale as Section One. Section Three contained open-ended questions to determine the changes they were implementing to address overweight among children in their district. This section examined the perceived feasibility of foodservice operations offering healthy food options. Section Four used close-ended questions to gather demographic information about the survey participants and their school districts.

The questionnaire was pilot tested by ten CNDs outside North Carolina who were randomly selected from a School Nutrition Association national leadership membership directory. Additionally, three child nutrition professionals from North Carolina were selected, using a convenience sample to review two questionnaire items specific to the state. The questionnaire and a cover letter explaining the purpose of the pilot test were mailed to the CNDs, and it was evaluated for clarity, appropriateness of content, ease of completion, and length. Feedback from the pilot test was used to revise the final questionnaire.

Population

The population for this study were CNDs in North Carolina public school districts (n=116), culled from a list obtained from the North Carolina Department of Public Instruction.

Data Collection

The Empliant™ online survey and form tool was employed to distribute the questionnaire online. The four-step procedure, as outlined by Salant and Dillman (2000), was used for the study. Advance correspondence was sent via E-mail to all public school CNDs in North Carolina, notifying them that they will be receiving a questionnaire to complete online. A week later, a

second E-mail was sent to participants, and it included a link to the online. Three weeks later, a follow-up E-mail was sent to all non-respondents, asking them to complete the survey, and a final E-mail was sent two weeks later, again requesting their participation. The questionnaire was taken offline a week later. To increase participation, the directors were given an incentive of being eligible to win a $100 gift certificate to the School Nutrition Association's Emporium if they completed the survey. Data collected were coded for tracking purposes and to ensure participant confidentiality. Prior to administration, the research was approved by the Institutional Review Board at Meredith College.

Analysis of Data

Data were analyzed using the SAS® System for Windows® (version 9.1). Frequencies, means, and standard deviations were calculated for all items on the perceptions and challenges scales. For demographic data, frequency of responses, means, and standard deviations were calculated. For the open-ended questions, frequencies were calculated. A principle axis factor analysis with varimax rotation was performed to determine dimensionality of feedback items offered by the participants. A Cronbach's alpha was used to estimate internal consistency for each factor identified for both scales. Multiple linear regression analyses using the forward stepwise technique determined relationships among perceptions, challenges, and demographic variables. A probability level of equal to or less than 0.05 was used for all tests of significance.

RESULTS AND DISCUSSION

Demographic Characteristics

Sixty-nine CNDs participated in the study for a response rate of 59%. Table 1 provides the demographic characteristics of the respondents, the majority of which were female and between the ages of 46-65 (52 of 69 respondents). Of the respondents, 57 of 69 had an undergraduate degree, graduate degree or some graduate coursework. The number of years in foodservice or school foodservice varied, although most had 16 or more years of experience in the profession. Only 7 of 69 were registered dietitians, most foodservice programs were self-operated (65 of 69), and the majority of respondents (50 of 69) stated they participated in the *Winner's Circle* program. Nearly 40of the 69 participants stated that their districts were located in rural areas and 30 of 69 were located in urban areas. A district was considered urban and coded for such if it had at least 200 people per square mile (North Carolina State Data Center, 2002).

Table 1. Demographic characteristics of child nutrition directors in North Carolina (n=69)	
Demographic Variable	***n***
Age	
Under 25	0
25-35	10
36-45	7
46-55	36
56-65	16
Over 65	0
Gender	
Male	11
Female	57
Education Level	
Less than high school	0
High school	1
Some college	9
Bachelor's degree	26
Graduate courses	10
Graduate degree	21
Years employed in foodservice	
5 or less	6
6-10	15
11-15	10
16-20	13
21-25	12
Over 25	12
Registered Dietitian	
Yes	7
No	62
Type of food service operation	
Self-operated	65
Contract	3
Other	1
Participation in "Winner's Circle Healthy Dining Program"	
Yes	50
No	19
Rural/Urban	
Rural	39
Urban	30
Note: All categories do not equal 69 due to omitted responses.	

Perceptions of Child Nutrition Directors

Table 2 displays the perceptions that CNDs have concerning competitive food sales and the relationship of those sales to childhood overweight. Even though 41 of 69 of the respondents agreed that the *Eat Smart* standards would result in healthier dietary habits of school children, they were uncertain as to whether they could realistically implement these standards. Of the 69 participants, 43 agreed that competitive food sales are a contributing factor to childhood overweight, but only 25 of 69 felt that offering only healthy food choices would cause a

reduction in the rate of the disease. A majority (57 of 69) of the respondents believed that the incidence of childhood overweight predominately lies in factors outside the school's influence. A vast majority of responders (66 of 69) stated that students can select healthy options from among the a la carte items currently being offered, and 46 of 69 stated that students can select healthy items from vending machines. Only 39 of 69 respondents agreed that students frequently select healthy items from their a la carte lines, however, 36 of 69 did not perceive that students frequently selected those healthy items from vending machines. These results suggest that CNDs feel their school foodservice programs offer items that incorporate healthy choices, but that the students frequently do not select them.

Table 2. Responses to the attitudes scale from child nutrition directors in North Carolina (n=69)

	1	2	3	4	5[1]	Mean ± SD[2]
Students can select healthy items from a la carte food choices	1	0	2	38	28	4.3 ± 0.7
The incidence of childhood overweight predominately lies in factors outside of the school's jurisdiction	2	5	4	30	27	4.1 ± 1.0
Students can select healthy items from vending machine sales	2	13	6	35	11	3.6 ± 1.1
Competitive food sales are a contributing factor to childhood overweight	2	9	15	32	11	3.6 ± 1.0
Implementation of the "Eat Smart School Standards" will result in healthier dietary habits of school children	3	9	16	34	7	3.5 ± 1.0
Students frequently select healthy items from a la carte food choices	2	19	9	34	5	3.3 ± 1.0
The "Eat Smart School Standards" are realistic to implement	6	12	16	35	0	3.2 ± 1.0
If competitive food sales only offered healthy food choices this would contribute to a reduction in childhood overweight	2	23	19	19	6	3.1 ± 1.0
Students frequently select healthy items from vending machines	6	30	12	20	1	2.7 ± 1.0

Note: All categories do not equal 69 due to omitted responses.
[1]For this scale, 1=strongly disagree; 2=disagree; 3=neutral; 4=agree; 5=strongly agree
[2]SD=standard deviation

Challenges to Increasing Participation in the NSLP

Table 3 shows the perceived challenges that CNDs have when trying to increase participation in the NSLP. A majority of respondents agreed that offering competitive foods items is a necessary step in financially supporting the program. Respondents were divided as to whether the popularity of a la carte menu items would lead to a decreased level of participation in the NSLP, but 42 of 69 of participants disagreed that the cost of purchasing school lunch meals would lead to reduced participation. They also disagreed over the assumption that students chose competitive foods over NSLP meals because they taste better (49 of 69). Respondents were uncertain as to whether the image of the NSLP as "not cool" would lead to a decrease in participation in the program. A solid majority (47 of 69) of the CNDs agreed or was neutral as to whether vending machine sales would lead to reduced participation. Respondents overwhelmingly believed that more support from their school administration would help enhance the availability of healthier food items (63 of 69). These results suggest that CNDs recognize the fact that selling competitive food items, while necessary to financially support the NSLP, may be decreasing student participation in the federal program.

Table 3. Responses to the challenges to participation in the NSLP scale from child nutrition directors in North Carolina (n=69)						
	1	2	3	4	5[1]	Mean ± SD[2]
Increased school administrative support would help to enhance the offering of healthier food items	1	2	3	33	30	4.3 ± 0.8
Competitive food sales are necessary to financially support the NSLP	1	8	4	22	33	4.1 ± 1.1
Generating enough revenue to cover the cost of the NSLP requires the offering of competitive foods	1	5	7	26	30	4.1 ± 1.0
Vending machine sales lead to a reduced participation in the NSLP	3	19	10	29	8	3.3 ± 1.1
The image of the NSLP as "not cool" leads to reduced participation by students	6	15	13	28	7	3.2 ± 1.2
The popularity of a la carte menu items leads to reduced participation in the NSLP	4	21	15	27	2	3.0 ± 1.0
The cost to students for purchasing school lunch meals reduces the participation in the NSLP	14	28	15	9	3	2.4 ± 1.1
Students choose competitive food options over NSLP meals because they taste better	12	37	17	3	0	2.2 ± 0.8
Note: All categories do not equal 69 due to omitted responses. [1]For this scale, 1=strongly disagree; 2=disagree; 3=neutral; 4=agree; 5=strongly agree [2]SD=standard deviation						

The questionnaire results are consistent with a report published by the General Accounting Office (2003), which conducted onsite reviews of lunch activities in 22 schools in California, Kentucky, Michigan, Rhode Island, and Texas. In this study, researchers found that the SFAs, foodservice managers, principals, and teachers cited pressure to balance the budget as a factor affecting the types of foods served in schools. The challenge was not in providing meals that met federal nutrition guidelines, but in serving meals that the students would select and eat.

Factor Analysis for the Perceptions and Challenges Scales

Two factors were identified for the perceptions scale: student food selections (a =0.66) and school food offerings (a =0.68). Although means and standard deviations were calculated for Question Six on the attitudes scale, it was removed from the factor analysis because it increased the alpha with the elimination of the question. Two factors also were identified for the challenges scale: child nutrition program revenue (a =0.91) and the purchase of competitive foods by children (a =0.59). Multiple linear regression analyses were performed for each factor on the

perceptions and challenges scales. Independent variables were gender, age, education level, years in school foodservice, rural/urban district, being a dietitian, and participation in the *Winner's Circle*. There were no significant independent variables identified for the perceptions or challenges scales.

Responses to the Open-ended Questions

For the first open-ended question in Section Three, 37 of 69 of the CNDs believed that removing all "unhealthy" food choices from competitive food sales would hurt the program, either financially or through decreased student participation. Other responses included that the program would improve children's eating habits and/or health (21 of 69), have no effect (8 of 69), wasn't offered at their school (3 of 69), and "other" (8 of 69).

When asked how healthier food items could be offered more easily to students, the most common response was an increase in money or funding for child nutrition programs (23 of 69). Administrative and teacher support, as well as parental support (13 of 69), were also among the top responses. Additional feedback included the acceptance of students and their demand for "healthier" foods (10 of 69), more nutrition education in the classroom (8 of 69), "healthier" items are already being offered (6 of 69), absence of competitive foods (4 of 69), and "other" (4 of 69).

In response to the question concerning steps child nutrition programs currently are taking to decrease the incidence of childhood overweight, the most common responses included participation in the *Winner's Circle* (31 of 69) and monitoring food offerings (31 of 69). Altering food preparation methods was cited by 18 of 69 of the respondents. Other answers focused on implementing the *Eat Smart* standards (7 of 69), offering physical activity opportunities (8 of 69), educating students in the importance of healthy eating (8 of 69), forming a student and school health advisory committee (4 of 69), and "other" (8 of 69).

CONCLUSIONS AND APPLICATIONS

The perceptions that CNDs have concerning competitive foods are valuable to the development of local policies that create higher nutrient standards for the sale of these items (Koplan, 2005). Results of this research indicate that if the opinions of directors are to be utilized in this effort, they will need to believe that they are able to implement effective changes in their foodservice programs and help reduce the number of overweight children. Unfortunately, the results of this study do not support the hypothesis that directors see themselves in this crucial role. It would be wise to educate and support them as agents of potential change. The results of this study also suggest a lack of consensus among CNDs concerning items that constitute competitive foods. Some respondents defined competitive food as any item sold outside the school foodservice program, but this definition does not include a la carte and vending food items sold within the foodservice program, which are competitive foods according the USDA definition. Others described competitive food as all items that are sold outside of the NSLP. Multiple definitions are clearly problematic when developing guidelines for competitive foods sold in schools.

As CNDs must operate programs that are financially self-supporting, maintaining participation rates is essential. Survey results indicate that directors believe sales external to school lunch must be of equal, if not greater importance, in generating revenue for the school nutrition program. These same directors are now being challenged to offer healthier food items to help reduce the incidence of overweight among children, as well as provide a healthful learning environment. However, these CNDs are concerned that offering healthier food options may reduce NSLP participation. They believe that students prefer foods that are perceived to taste good and that they will choose unhealthy food items offered by competitive food sales over more nutritious items offered by the school's foodservice program. This certainly need not be the case, but it is a matter of perception that crosses all levels of education and foodservice experience, and it must be addressed before school foodservice programs can successfully contribute to reducing childhood overweight.

CNDs will need to have a clear understanding of how competitive food sales affect children's health and be convinced that they are in a position that can influence change in their school's foodservice program. A significant majority (58 of 69) of the directors surveyed believed that the incidence of childhood overweight is caused by factors outside of the school foodservice program. Many believe that competitive food sales contribute to childhood overweight and about half profess that implementation of the *Eat Smart* standards would result in healthier dietary habits of school children. CNDs need to perceive that they have the power to make a difference in childhood overweight, realizing that this will require both the responsibility to implement change in school meal programs and the tools to so. If they can recognize the opportunities available to promote healthy eating habits in children, they will be able to provide even more nutritious menu items and influence student food choices and behaviors. Once this step is achieved, administrators, educators, and parental groups must support these changes and become advocates for the decrease in the incidence of childhood overweight.

ACKNOWLEDGEMENTS

The authors wish to acknowledge the Child Nutrition Foundation for funding this research through the Lincoln Foodservice Grant for Innovations in Foodservice. They also wish to acknowledge the CNDs who supported this research and to thank Lei Gao for providing his statistical expertise.

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BIOGRAPHY

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