Nutrition Services and Foods and Beverages Available at School: Results From the School Health Policies and Programs Study 2006

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ABSTRACT

BACKGROUND: Schools are in a unique position to promote healthy dietary behaviors and help ensure appropriate nutrient intake. This article describes the characteristics of both school nutrition services and the foods and beverages sold outside of the school meals program in the United States, including state- and district-level policies and school practices.

METHODS: The Centers for Disease Control and Prevention conducts the School Health Policies and Programs Study every 6 years. In 2006, computer-assisted telephone interviews or self-administered mail questionnaires were completed by state education agency personnel in all 50 states plus the District of Columbia and among a nationally representative sample of school districts (n = 445). Computer-assisted personal interviews were conducted with personnel in a nationally representative sample of elementary, middle, and high schools (n = 944).

RESULTS: Few states required schools to restrict the availability of deep-fried foods, to prohibit the sale of foods that have low nutrient density in certain venues, or to make healthful beverages available when beverages were offered. While many schools sold healthful foods and beverages outside of the school nutrition services program, many also sold items high in fat, sodium, and added sugars.

CONCLUSIONS: Nutrition services program practices in many schools continue to need improvement. Districts and schools should implement more food preparation practices that reduce the total fat, saturated fat, sodium, and added sugar content of school meals. In addition, opportunities to eat and drink at school should be used to encourage greater daily consumption of fruits, vegetables, whole grains, and nonfat or low-fat dairy products.

Keywords: food service; nutrition; schools; school policy; surveys.

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Healthy eating is an essential component of a healthy lifestyle[1] and is associated with an increased life expectancy, increased quality of life, and reduced risk for many chronic diseases including cardiovascular disease,[2] cancer,[3] and diabetes.[4] Dietary habits and preferences form in childhood and become habitual over time.[5] As individuals move from childhood through adolescence and into adulthood, their dietary intake of key nutrients such as iron and calcium decreases.[6-8] These factors highlight the need for school-based nutrition education and supportive school environments to help youth eat more healthfully.

The need to promote healthy eating among youth has intensified as a result of the growing national epidemic of obesity. Obesity is essentially caused by caloric imbalance: poor dietary choices contribute to an excess of caloric intake as compared with caloric expenditure. Since 1980, the percentage of children who are obese has more than doubled, and rates among adolescents have more than tripled.[9-11] In 2004, 18.8% of 6- to 11-year-olds and 17.4% of 12- to 19-year-olds were considered obese, and an additional 20.4% of 6- to 11-year-olds and 15.3% of 12- to 19-year-olds were considered overweight.[9] (Note that these classifications of obese and overweight do not reflect the classifications used in the articles cited, but rather the June 2007 recommendations from the Expert Committee on the Assessment, Prevention, and Treatment of Child and Adolescent Overweight and Obesity convened by the American Medical Association [AMA] and cofunded by AMA in collaboration with the Health Resources and Services Administration and the Centers for Disease Control and Prevention [CDC].) Healthy eating is also important in the prevention of type 2 diabetes, the prevalence of which has increased dramatically among young people and is often associated with obesity.[12,13]

Undernutrition during childhood may have long-term consequences for the physical health and development of children.[14] Undernutrition also can have lasting effects on children's cognitive development and school performance.[15] Whereas food insufficiency and hunger are associated with poor behavioral and academic functioning in low-income children,[16] participation in school breakfast programs is associated with improved psychosocial and academic measures.[17]

Schools are in a unique position to promote healthy dietary behaviors and help ensure appropriate nutrient intake. In 2004, more than half (54%) of school-aged children in the United States received either school breakfast or school lunch, and 1 in 6 received both.[18] In addition to these sources of foods and beverages, students at many schools obtain snacks from various other venues (eg, à la carte sales, vending machines, school stores, snack bars, classroom parties, and concession stands). School nutrition services staff can promote healthy eating through the foods they make available each day in the school cafeteria and the opportunities they have to reinforce nutrition education taught in the classroom. Teachers can help promote healthy eating by including behavior-focused nutrition education in classroom curricula. School administrators and policy makers also can help by adopting and implementing policies to improve the nutritional quality of foods and beverages available at school outside of the school breakfast and lunch programs.

The nutritional quality of school meals is addressed by federal regulations. In 1994, Congress passed the Healthy Meals for Healthy Americans Act (PL 103-448), which amended the National School Lunch Act.[19] Regulations for the Act were released in 1995 by the US Department of Agriculture (USDA), which administers the reimbursable National School Lunch Program (NSLP) and the reimbursable School Breakfast Program (SBP), as part of the School Meals Initiative for Healthy Children.[20] USDA requires schools to serve meals that adhere to the recommendations of the Dietary Guidelines for Americans (DGA). When averaged over a school week, school meals must meet limits on total fat and saturated fat, and meet specific percentages of the Recommended Daily Allowances for calories, protein, calcium, iron, vitamin A, and vitamin C. National studies conducted by the USDA found meaningful and statistically significant decreases between the 1991-1992 and 1998-1999 school years in levels of fat and saturated fat relative to calorie content in the lunches offered to students.[21] However, the average total fat and saturated fat content of school breakfasts and lunches was still above DGA targets.

Many foods and beverages are available to students outside of the school meals program (ie, competitive foods) in venues throughout the school. Unlike school meals that must meet certain nutrition standards, foods and beverages sold or provided outside of the school meals program are largely exempt from federal requirements or standards.[22] These competitive foods are relatively low in nutrient density and are relatively high in fat, added sugars, and calories. The ready availability of these foods might stigmatize participation in school meal programs because only children with money can purchase competitive foods. This, in turn, might affect the viability of school meal programs because children might perceive school meals as being primarily for poor children rather than being nutrition programs for all children.[23] Competitive foods might also convey a mixed message to students. That is, when children are taught in the classroom about the value of

healthy food choices but the school environment consists of vending machines, snack bars, school stores, and à la carte sales offering options that are low in nutrient density, they receive the message that good nutrition is an academic exercise not supported by the school administration and, therefore, not important to their health or education.[23]

The only federal regulations on competitive foods and beverages prohibit the sale of ''foods of minimal nutritional value'' (ie, carbonated soft drinks, chewing gum, water ices, and certain candies made primarily from sweeteners) in the food service area during school meal periods. However, foods of minimal nutritional value may be sold outside the cafeteria at any time. Thus, federal regulations do not prohibit schools from selling carbonated soft drinks in vending machines located near but not inside the food service area throughout the school day, nor do they restrict the sale of other foods of low nutritional value such as chips, most candy bars, and noncarbonated, high-sugar drinks that are not 100% juice anywhere on campus, including the food service area.

Attention is increasingly focused on the need to establish school nutrition standards and limit access to competitive foods. School nutrition policy initiatives have been implemented at the federal, state, and local levels. The recently released Institute of Medicine report *Nutrition Standards for Foods in Schools: Leading the Way Toward Healthier Youth*[24] provides specific recommendations for foods and beverages served outside of the school meals program that schools, districts, and states should consider when developing or strengthening policies for nutrition in schools. This report concluded that while federally reimbursable school nutrition programs provide students access to foods that contribute to a healthful diet at school, many schools offer foods and beverages that compete with the school meals. Schools are encouraged to limit such opportunities. For schools that choose to make competitive foods available, they should encourage fruits, vegetables, whole grains, and nonfat or low-fat milk and dairy products that are consistent with the 2005 DGA.

Selected Federal Support and Related Research

The USDA reimbursable NSLP operates in more than 90% of all public schools with 80% of those schools also offering a school breakfast.[18] The SBP operates in more than 72,000 schools and institutions.[25] These meal programs serve more than 27 million lunches and more than 9 million breakfasts daily.[18] The USDA's Team Nutrition initiative has produced and widely disseminated numerous materials to help teachers integrate nutrition education into the school curriculum and to help nutrition services staff meet nutritional standards and reinforce classroom nutrition education.[26] Most notably, USDA has produced *Changing the Scene: Improving the School Nutrition Environment—A Local Guide to Action*, a comprehensive multimedia guide to improving the overall school nutrition environment.[27] Technical assistance materials for nutrition services staff also are available from the National Food Service Management Institute (NFSMI)[28] and the School Nutrition Association.[29]

The CDC currently funds education agencies and health departments in 23 states to support school health programs and strengthen school health education to prevent youth from establishing behaviors, including poor dietary habits, that are associated with chronic diseases. The CDC also provides funding to 28 states for developing and implementing nutrition and physical activity interventions, particularly through population-based strategies (eg, policy-level changes, environmental supports), some of which are school based. In addition, the CDC has published guidelines[30] that identify policy and programmatic strategies most likely to be effective in promoting healthy eating among young people. Tools developed to help schools implement the strategies recommended by the CDC guidelines include the CDC's *School Health Index: A Self-Assessment and Planning Guide*,[31] which helps schools identify the strengths and weaknesses of current policies and practices and develop an action plan to improve them; the National Association of State Boards of Education's *Fit, Healthy, and Ready to Learn: A School Health Policy Guide*,[32] which helps schools and local school districts establish strong policies on physical activity, nutrition, and other health issues in the context of a coordinated school health program; and *Making It Happen*,[33] a joint publication by the USDA and the CDC, which describes innovative approaches schools and school districts have used to improve the nutritional quality of foods and beverages offered or sold on school campuses outside of federal meals programs.

The USDA periodically conducts studies of the NSLP and SBP, most notably the School Nutrition Dietary Assessment (SNDA) studies. The first SNDA assessed the nutrients and foods provided by public and private schools participating in the NSLP and SBP during the 1991-1992 school year. A follow-up study, SNDA-II, did the same for public schools during the 1998-1999 school year.[21] These studies also provided information about menu planning practices and the availability of alternatives to NSLP and SBP meals, such as à la carte food sales and sales from vending machines. In 2002, the USDA released a report on the third year of implementation of the School Meals Initiative for Healthy Children assessing the extent to which the initiative had led to changes in menu planning approaches, use of nutrient

analyses, food procurement and preparation, and program costs.[34]

The US Congress recognizes that schools play a critical role in promoting student health, preventing childhood obesity, and combating problems associated with poor nutrition and physical inactivity. To formalize and encourage this role, Congress passed PL 108-265 requiring each local education agency participating in a program authorized by the federal school meals program to establish a local school wellness policy by school year 2006. The legislation also places the responsibility of developing a wellness policy at the local level, so the individual needs of each district can be addressed. According to the requirements for the Local Wellness Policy, school districts must set goals for nutrition education, physical activity, campus food provision, and other school-based activities designed to promote student wellness. Additionally, districts are required to involve a broad group of individuals in policy development and have a plan for measuring policy implementation.

This article updates and expands on data from the 2000 School Health Policies and Programs Study (SHPPS)[35] and describes for the first time findings from SHPPS 2006 about state- and district-level policies and practices related to food service and child nutrition requirements and recommendations; menu planning, food ordering, and food preparation; professional preparation; nutrition services coordinators; staff development; program promotion; evaluation; collaboration; assistance to districts and schools; and food safety. At the school level, this article describes organization of the school nutrition services program, food ordering and food preparation, breakfast and lunch food and beverage variety and availability, à la carte food and beverage variety and availability, foods and beverages not sold through the school nutrition services program, professional preparation, school food service managers, staff development, program promotion, collaboration, and food safety. In addition, this article describes changes in key policies and practices from 2000 to 2006. While this article is primarily descriptive in nature, the CDC intends to conduct more detailed analyses and encourages others to conduct their own analyses using the questionnaires and public-use data sets available at www.cdc.gov/shpps.

METHODS

Detailed information about SHPPS 2006 methods is provided in ''Methods: School Health Policies and Programs Study 2006'' elsewhere in this issue of the *Journal of School Health.* The following section provides a brief overview of SHPPS 2006 methods specific to the nutrition services component of the study.

SHPPS 2006 assessed nutrition services and foods and beverages sold outside the school nutrition services program at the state, district, and school levels. State-level data were collected from education agencies in all 50 states plus the District of Columbia. District-level data were collected from a nationally representative sample of public school districts. School-level data were collected from a nationally representative sample of public and private elementary schools, middle schools, and high schools.

Questionnaires

The state- and district-level nutrition services questionnaires assessed school nutrition policies and practices for grades K-12. Both questionnaires assessed required staffing, staff development, collaboration between nutrition services staff and other agency and organization staff, evaluation of the nutrition services program, child nutrition requirements and recommendations, assistance to districts or schools, and the educational background and credentials of the persons who oversee or coordinate nutrition services at the state and district levels. The district-level questionnaire also assessed menu planning, food purchasing and ordering, food preparation, and the promotion of nutrition services among families of students.

The school-level questionnaire assessed nutrition services practices in elementary, middle, and high schools. Specifically, the questionnaire assessed the provision of breakfast and lunch; food variety and availability; menu planning; food ordering; food preparation; characteristics of cafeterias; food safety issues; promotion of nutrition services among families of students; collaboration between school nutrition services staff and other school and community personnel; and the educational background, credentials, and recent staff development of the person who oversees or coordinates nutrition services at the school. In addition, the SHPPS 2006 school-level healthy and safe school environment questionnaire assessed foods and beverages offered or sold outside of the school nutrition services program.

Data Collection and Respondents

State- and district-level data were collected by computer-assisted telephone interviews or self-administered mail questionnaires. Designated respondents for each of 7 school health program components (ie, health education, physical education and activity, health services, mental health and social services, nutrition services, healthy and safe school environment, and faculty and staff health promotion) completed the interviews or questionnaires. At the state level, the state-level contact designated a single respondent for each questionnaire. At the district

level, the district-level contact could designate a different respondent for each questionnaire or questionnaire module. All designated respondents had primary responsibility for, or were the most knowledgeable about, the policies and programs addressed in the particular questionnaire or module.

After a state- or district-level contact identified respondents, each respondent was sent a letter of invitation and packet of study-related materials. Each packet contained a paper copy of the questionnaire(s) so that respondents could prepare for the interview and provided a toll-free number and access code that respondents could use to initiate the interview. Respondents were told that the questionnaire(s) could be used in preparation for their telephone interview or completed and returned if self-administration was preferred. One week after packets were mailed to respondents, trained interviewers from a call center placed calls to them to schedule and conduct telephone interviews. In April 2006, telephone interviewing ceased and most of the remaining state- and district-level data collection occurred via a mail survey. All remaining respondents were mailed paper questionnaires and return envelopes; however, interviewers remained available for respondents who chose to contact the call center.

At the end of the data collection period (October 2006), 90% of the completed state-level nutrition services questionnaires had been completed via telephone interview, and 10% as paper questionnaires. The completed district-level questionnaires were completed via telephone interview 45% of the time.

School-level data were collected by computer-assisted personal interviews. During recruitment, the principal or another school-level contact designated a faculty or staff respondent for each component, who had primary responsibility for or the most knowledge about the particular component. For the nutrition services interview, the most common respondents were food service managers and other school nutrition services staff.

Response Rates

One hundred percent (n = 51) of the state education agencies completed the state-level nutrition services questionnaire. At the district level, 705 districts were eligible for the nutrition services interview, and 64% (n = 455) completed the interview. At the school level, 1338 schools were eligible for the nutrition services interview, and 71% (n = 944) completed the interview.

Data Analysis

Data from state-level questionnaires are based on a census and are not weighted. District- and school-level data are based on representative samples and are weighted to produce national estimates. Because of missing data, the denominators for each estimate vary slightly. Figures 11 and 12 in Appendix 1 in this issue of the *Journal of School Health* show the estimated standard error associated with an observed percentage from the district- and school-level nutrition services questionnaires.

To analyze changes between SHPPS 2000 and SHPPS 2006, many variables from SHPPS 2000 were recalculated so that the denominators used for both years of data were defined identically. In most cases, this denominator included all states, districts, or schools, rather than a subset of states, districts, or schools. As a result of this recalculation, percentages previously reported for SHPPS 2000[35] might differ from those reported in this article. Only estimates from 2000 and 2006 based on this same denominator should be compared.

Because state-level data are based on a census, statistical tests for differences between 2000 and 2006 are not appropriate. Therefore, this article highlights changes over time meeting at least 1 of 2 criteria: (1) the difference was greater than 10 percentage points or (2) the 2006 estimate increased by at least a factor of 2 or decreased by at least half as compared with the 2000 estimate. At the district and school levels, *t* tests were used to compare SHPPS 2000 and SHPPS 2006 prevalence estimates. However, to account for multiple comparisons, this article only highlights changes over time meeting at least 2 of 3 criteria: (1) a p value less than .01 from the *t* test, (2) a difference greater than 10 percentage points, or (3) the 2006 estimate increased by at least a factor of 2 or decreased by at least half as compared with the 2000 estimate. A p value less than .01 was used as the sole criterion for reporting on statistically significant differences based on means and medians between 2000 and 2006. Note that not all variables meeting these criteria are presented in this article.

RESULTS

Nutrition Services at the State and District Levels

Child Nutrition Requirements and Recommendations. More than one third (37.3%) of all states had adopted a policy stating that each district will have someone to oversee or coordinate nutrition services in the district. More than 1 in 5 (21.6%) states and 73.7% of all districts had adopted a policy stating that each school will have someone to oversee or coordinate nutrition services at the school.

Nationwide, 18.0% of states and 74.1% of districts had adopted a policy stating that all schools will offer breakfast to students. An additional 44.0% of states and 8.7% of districts had adopted a policy stating that some categories of schools, such as those with a certain percentage of students eligible for free

or reduced-price meals, will offer breakfast to students. Further, 26.0% of states and 20.3% of districts had adopted a policy stating that schools will encourage breakfast consumption by allowing students to eat in locations other than the cafeteria, such as a school bus or classroom. Only 14.0% of states required and 36.0% recommended a minimum amount of time students would be given to eat breakfast once they were seated. Similarly, 22.3% of districts required and 37.5% recommended a minimum amount of time students would be given to eat breakfast.

Nationwide, 44.9% of states and 95.8% of districts had adopted a policy stating that schools will offer lunch to students. Only 12.0% of states required and 52.0% recommended a minimum amount of time students would be given to eat lunch once they were seated. Similarly, 40.4% of districts required and 42.7% recommended a minimum amount of time students would be given to eat lunch. Further, 94.0% of districts had adopted a policy stating that elementary schools will maintain closed campuses (ie, students are not allowed to leave school during the school day including during lunchtime), 85.6% of districts had adopted a similar policy for middle schools, and 73.1% of districts had adopted a similar policy for high schools.

Some states had requirements or recommendations about specific foods that schools offered to students each day for breakfast and lunch. Specifically, 14.0% of all states required and 18.0% recommended that schools offer students 3 or more different types of milk (eg, 1% chocolate milk or skim unflavored milk) each day for breakfast, and 14.0% of states required and 22.0% recommended that schools offer 3 or more different types of milk each day for lunch. In addition, 4.0% of states required and 42.0% recommended that schools offer students a choice between 2 or more different fruits or types of 100% fruit juice each day for lunch, 4.0% of states required and 40.0% recommended that schools offer students a choice between 2 or more different nonfried vegetables each day for lunch, and 6.0% of states required and 50.0% recommended that schools offer students a choice between 2 or more different entrees or main courses each day for lunch.

Some districts also had requirements or recommendations about specific foods that schools offer to students each day for breakfast and lunch. Specifically, 40.7% of districts required and 26.8% recommended that schools offer students 3 or more different types of milk (eg, 1% chocolate milk or skim unflavored milk) each day for breakfast, and 49.6% of districts required and 30.4% recommended that schools offer 3 or more different types of milk each day for lunch. In addition, 23.0% of districts required and 44.6% recommended that schools offer students a choice between 2 or more different fruits or types of 100% fruit juice each day for lunch, 23.9% of districts required and 38.9% recommended that schools offer students a choice between 2 or more different nonfried vegetables each day for lunch, and 30.3% of districts required and 36.0% recommended that schools offer students a choice between 2 or more different entrees or main courses each day for lunch.

In addition to the school breakfast and lunch programs, many schools also offered foods and beverages as à la carte sales (ie, food items sold individually rather than as part of a complete meal) during breakfast or lunch, and in after-school programs, school stores or snack bars, vending machines, student parties, family meetings, staff meetings, and concession stands. Only 4.0% of states required and 8.0% recommended, and 34.6% of districts required and 10.4% recommended, that schools prohibit brand-name fast foods, such as Pizza Hut or Taco Bell, from being offered as part of school meals or as à la carte items. Similarly, only 4.0% of states required and 38.0% recommended, and 6.6% of districts required and 37.1% recommended, that schools make fruits or vegetables available to students whenever food was offered or sold (eg, at school parties or school stores). Fewer than 1 in 5 states (18.4%) and districts (17.0%) required but more states (32.6%) and districts (46.0%) recommended that schools make healthful beverages such as bottled water or low-fat milk available to students whenever beverages were offered or sold. Nationwide, 14.0% of states required and 42.0% recommended and 42.1% of districts required and 34.9% recommended that schools restrict the availability of deep-fried foods.

''Junk foods'' were defined as foods or beverages that have low nutrient density (ie, they provide calories primarily through fats or added sugars and have minimal amounts of vitamins and minerals). More than half of states required or recommended that schools prohibit junk foods as à la carte sales in the cafeteria; in school stores, canteens, or snack bars; and in vending machines (Table 1). Similarly, more than half of districts required or recommended that schools prohibit junk foods as à la carte sales in the cafeteria, at student parties, and in vending machines. Further, 46.0% of states required and 14.0% recommended, and 57.4% of districts required and 25.0% recommended, that schools restrict the times during the day that junk foods can be sold in any venue. In addition, 16.0% of states required and 34.0% recommended, and 13.8% of districts required and 37.3% recommended, that schools prohibit junk foods from being sold for fundraising purposes.

Table 1. **Percentage of All States and Districts That Required or Recommended That Schools Prohibit Junk Foods* in School Settings, SHPPS 2006**

School Setting	% of All States		% of All Districts	
	Required Schools to Prohibit Junk Foods	Recommended That Schools Prohibit Junk Foods	Required Schools to Prohibit Junk Foods	Recommended That Schools Prohibit Junk Foods
À la carte during breakfast or lunch periods	42.0	36.0	38.9	29.4
At concession stands	6.1	36.7	5.5	31.4
At meetings attended by students' family members	0.0	20.0	2.7	30.2
At staff meetings	2.0	20.0	3.4	27.6
At student parties	8.0	36.0	11.5	39.6
In after-school or extended day programs	14.0	34.0	14.7	33.8
In school stores, canteens, or snack bars	32.0	36.0	18.9	29.2
In vending machines	32.0	38.0	29.8	30.0

*Defined as foods or beverages that have low nutrient density (ie, they provide calories primarily through fats or added sugars and have minimal amounts of vitamins and minerals).

Many states and districts required that schools prohibit student access to vending machines for at least part of the school day. Nationwide, 36.7% of states required and 24.5% recommended, and 73.7% of districts required and 16.2% recommended, that elementary schools prohibit student access to vending machines for at least part of the school day. Similarly, 32.6% of states required and 22.4% recommended, and 74.2% of districts required and 16.9% recommended, that middle schools prohibit student access to vending machines; 32.6% of states required and 22.4% recommended, and 67.2% of districts required and 17.7% recommended this prohibition for high schools.

Although 44.0% of states required and 30.0% recommended, and 63.0% of districts required and 21.6% recommended, that schools restrict the times during the day that soda pop, sports drinks, or fruit drinks that are not 100% juice could be sold in any venue, 80.4% of all districts still allowed schools to sell such soft drinks. Nationwide, 64.4% of all districts received a specified percentage of the soft drink sales receipts, and 32.5% received incentives (eg, cash awards or donations of equipment, supplies, or other items) once receipts totaled a specified amount. Further, 43.0% of all districts were prohibited from selling soft drinks produced by more than 1 company.

Nationwide, 2.0% of states required and 16.3% recommended, and 24.2% of districts required and 31.6% recommended, that schools prohibit advertising for candy, fast food restaurants, or soft drinks on school property. In addition, 20.9% of districts required and 28.4% recommended that schools restrict the distribution of products promoting candy, fast food restaurants, or soft drinks to students (eg, T-shirts, hats, or book covers). About one third (35.8%) of all districts allowed soft drink companies to advertise soft drinks in school buildings, and 46.6% allowed soft drink companies to advertise on school grounds, including on the outside of school buildings and on playing fields or other areas of campus.

Nationwide, 5.9% of states and 26.1% of districts had adopted a policy prohibiting schools from using food or food coupons as a reward for good behavior or good academic performance, and an additional 45.1% of states and 20.2% of districts discouraged schools from this practice.

Menu Planning, Food Ordering, and Food Preparation. Nationwide, 94.9% of district nutrition services programs had primary responsibility for planning the menus for meals for at least some schools in their district. Among these districts, 61.0% used Food-Based Traditional Menu Planning, 19.0% used Food-Based Enhanced Menu Planning, and 16.2% used either Nutrient Standard Menu Planning or Assisted Nutrient Standard Menu Planning. Among the districts with primary responsibility for menu planning, 42.8% routinely used a computer to analyze the nutritional content of the school menus, and 79.8% of those districts used a weighted nutrient analysis (ie, more weight was given to the nutrients in foods selected frequently and less weight to those foods selected less frequently).

Nationwide, 94.0% of district nutrition services programs had primary responsibility for deciding which foods to order for at least some schools in their district. Among these districts, most had a food procurement contract that specifically addressed food safety (83.5%), cooking methods for precooked items (eg, baked instead of deep fried) (77.7%), Hazard Analysis and Critical Control Points (HACCP) (74.1%), and nutritional standards for à la carte foods (55.1%).

Some districts are responsible for the actual cooking of school meals (eg, in a central kitchen), not just the reheating of food that was previously prepared. Nationwide, in 83.4% of districts, the district nutrition services program had primary responsibility for cooking foods for at least some schools. Four groups of healthy food preparation practices were assessed: substitution techniques (ie, substituting 1 type of ingredient for another), reduction techniques (ie, reducing the amount of an ingredient), fat reduction techniques when preparing meat and poultry, and vegetable preparation techniques. Among the 83.4% of districts that had primary responsibility for cooking foods for schools, during the 30 days preceding the study more than half always or almost always used nonstick spray or pan liners instead of grease or oil; used part-skim or low-fat cheese instead of regular cheese; used skim, low-fat, soy, or nonfat dry milk instead of whole milk; drained fat from browned meat; roasted, baked, or broiled meat rather than frying it; skimmed fat off warm broth, soup, stew, or gravy; spooned solid fat from chilled meat or poultry broth; either trimmed fat from meat or used lean meat; boiled, mashed, or baked potatoes rather than frying or deep frying them; and steamed or baked other vegetables (Table 2).

Professional Preparation. State certification, licensure, or endorsement for district food service directors was offered by 27.4% of states, and state certification, licensure, or endorsement for school food service managers was offered by 21.6% of states.

Nationwide, 24.4% of districts did not require newly hired district food service directors to have a minimum level of education, but 56.6% required a high school diploma or General Educational Development (GED) credential as the minimum level of education, 5.0% required an associate's degree in nutrition or a related field, 10.6% required an undergraduate degree in nutrition or a related field, and 3.5% required a graduate degree in nutrition or a related field. Further, 15.8% of all districts required a newly hired district food service director to be certified, licensed, or endorsed by the state. In addition, 69.2% of districts had other types of training and credentialing requirements for newly hired district food service directors. Specifically, 51.6% of all districts required newly hired district food service directors to have successfully completed a school food service training program provided or sponsored by the state, 18.6% required a School Nutrition Association (SNA) certification, 11.6% required a school food service and nutrition specialist credential

Table 2. **Percentage of Districts* and Schools† That Almost Always or Always Used Healthy Food Preparation Practices,‡ SHPPS 2006**

Food Preparation Practice	% of Districts	% of Schools
Substitution technique		
Using cooked dried beans, canned beans, soy products, or other meat extenders instead of meat	2.4	8.3
Using ground turkey or lean ground beef instead of regular ground beef	40.4	41.3
Using low-fat or nonfat yogurt, mayonnaise, or sour cream instead of regular mayonnaise, sour cream, or creamy salad dressings	39.8	40.2
Using low-sodium canned vegetables instead of regular canned vegetables	14.3	15.6
Using nonstick spray or pan liners instead of grease or oil	90.3	89.8
Using other seasonings instead of salt	32.5	39.2
Using part-skim or low-fat cheese instead of regular cheese	50.3	45.9
Using skim, low-fat, soy, or nonfat dry milk instead of whole milk	77.9	64.8
Using vegetable oil instead of shortening, butter, or margarine	43.0	28.7
Reduction technique		
Reducing fats and oils in recipes or using low-fat recipes	26.4	35.6
Reducing salt in recipes or using low-sodium recipes	28.3	45.8
Reducing sugar in recipes or using low-sugar recipes	17.5	22.4
Meat preparation technique		
Draining fat from browned meat	91.4	87.4
Removing skin from poultry or using skinless poultry	49.1	54.6
Roasting, baking, or broiling meat rather than frying	86.7	83.6
Roasting meat or poultry on a rack so fat would drain	34.4	34.9
Skimming fat off warm broth, soup, stew, or gravy	64.9	60.2
Spooning solid fat from chilled meat or poultry broth	68.8	63.3
Trimming fat from meat or using lean meat	68.9	66.4
Vegetable preparation technique		
Boiling, mashing, or baking potatoes rather than frying or deep frying	74.1	72.9
Preparing vegetables without using butter, margarine, cheese, or creamy sauce	48.4	54.9
Steaming or baking other vegetables	77.7	81.9

*Among the 83.4% of districts in which the district food service program had primary responsibility for cooking foods for at least some schools in their district.
†Among the 62.7% of schools in which school staff had primary responsibility for cooking food for students.
‡During the 30 days preceding the study.

from SNA, 4.2% required a registered dietitian (RD) credential from the American Dietetic Association (ADA), and 0.8% required a registered dietetic technician (DTR) credential from the ADA. Nationwide, 9.2% of all districts required and 31.3% recommended that newly hired district food service directors participate in the Orientation to Child Nutrition Management Workshop, sponsored by the NFSMI.

Nationwide, 54.0% of all districts required newly hired district food service directors to have a food safety certification. Specifically, 26.1% of all districts required a ServSafe food protection manager certification by the National Restaurant Association Educational Foundation, 2.4% required a certified professional food manager certification by Experior Assessments LLC, 3.5% required a certified food safety manager certification by the National Registry of Food Safety Professionals, and 23.4% required a food handler's card from a state or local health agency.

Nationwide, 22.1% of all districts did not require newly hired school food service managers to have a minimum level of education, but 74.1% required a high school diploma or GED as the minimum level of education, 1.8% required an associate's degree in nutrition or a related field, 1.5% required an undergraduate degree in nutrition or a related field, and 0.5% required a graduate degree in nutrition or a related field. Further, 16.0% of all districts required a newly hired school food service manager to be certified, licensed, or endorsed by the state. In addition, 63.8% of districts had other types of training and credentialing requirements for newly hired school food service managers. Specifically, 42.5% of districts required newly hired school food service managers to have successfully completed a school food service training program provided or sponsored by the state, 9.8% required an SNA certification, 6.1% required a school food service and nutrition specialist credential from SNA, 1.7% required an RD credential, and 0.1% required a DTR credential.

Nationwide, 53.9% of all districts required newly hired school food service managers to hold a food safety certification. Specifically, 28.2% of all districts required a ServSafe food protection manager certification by the National Restaurant Association Educational Foundation, 1.4% required a certified professional food manager certification by Experior Assessments LLC, 2.7% required a certified food safety manager certification by the National Registry of Food Safety Professionals, and 22.1% required a food handler's card from a state or local health agency.

Nutrition Services Coordinators. Nationwide, 94.0% of states had a person who oversees or coordinates nutrition services for schools at the state level (eg, a state food service director or director of child nutrition), and 88.1% of districts had a person who oversees or coordinates nutrition services at the district level (eg, a district food service director).

Among the 94.0% of states with a state-level nutrition services coordinator, 67.4% had that person serve as the respondent to the state-level nutrition services questionnaire. One hundred percent of these respondents worked for the state education agency. Nearly all (96.8%) of these respondents had an undergraduate degree. Among those with an undergraduate degree, 33.3% majored in home economics or family and consumer sciences, 26.7% majored in nutrition or dietetics, 16.7% majored in food service administration or management, 16.7% majored in education, and 16.7% majored in business. Seventy percent of respondents with an undergraduate degree had an undergraduate minor, and among those with minors, 33.3% had a minor in education, 28.6% in business, 9.5% in food service administration or management, 9.5% in nutrition or dietetics, and 4.8% in home economics or family and consumer sciences. About three fourths of these respondents (74.2%) had a graduate degree. Among those with a graduate degree, 27.3% had that degree in nutrition or dietetics, 22.7% in food service administration or management, 18.2% in education, 18.2% in home economics or family and consumer sciences, and 13.6% in business.

Among the respondents to the state-level nutrition services questionnaire, 24.1% held an RD credential, 17.2% were certified food safety managers, 10.3% had earned the school food service and nutrition specialist credential from SNA, and 3.4% were certified dietary managers. In addition, 31.0% had other food service certifications from a state agency or state-level professional group.

Among the 88.1% of districts with a nutrition services coordinator, 90.0% had that coordinator serve as the respondent to the district-level nutrition services questionnaire. Among these respondents, 93.1% worked for the school district and 8.4% worked for a food service management company. Among these respondents, 40.6% had an undergraduate degree. Among those with an undergraduate degree, 23.2% majored in nutrition or dietetics, 19.7% majored in food service administration or management, 17.6% majored in education, 14.8% majored in business, and 14.7% majored in home economics or family and consumer sciences. Forty-three percent of respondents with an undergraduate degree had an undergraduate minor, and among those, 17.4% had a minor in education, 14.2% in business, 8.9% in food service administration or management, 7.4% in nutrition or dietetics, and 5.4% in home economics or family and consumer sciences. Among respondents to the district-level nutrition services questionnaire, 19.8% had a graduate

degree. Among them, 46.5% had their graduate degree in education, 16.2% in nutrition or dietetics, 13.1% in business, and 7.0% in food service administration or management, and 3.8% in home economics or family and consumer sciences.

Among the respondents to the district-level nutrition services questionnaire, 47.9% were certified food safety managers, 24.2% had earned the school food service and nutrition specialist credential from SNA, 13.0% were certified dietary managers, 5.4% held an RD credential, and 1.7% held a DTR credential. In addition, 40.4% had other food service certifications from a state agency or state-level professional group, and 30.6% had completed the Orientation to Child Nutrition Management Workshop offered by NFSMI.

Staff Development. Staff development was defined as workshops, conferences, continuing education, graduate courses, or any other kind of in-service on health topics or teaching methods. During the 2 years preceding the study, 100% of states and 96.3% of districts provided funding for staff development or offered staff development for nutrition services staff on at least 1 of the topics listed in Table 3. Specifically, more than three fourths of all states provided funding for staff development or offered staff development for nutrition services staff on competitive food policies to create a healthy food environment, customer service, financial management, food safety, food service for students with special dietary needs, healthy food preparation methods, implementing the DGA in school meals, increasing the percentage of students participating in school meals, making school meals more appealing, menu planning for healthy meals, using HACCP, and using the cafeteria for nutrition education (Table 3). More than three fourths of all districts provided funding for staff development or offered staff development for nutrition services staff on food safety, healthy food preparation methods, making school meals more appealing, menu planning for healthy meals, personal safety for food service staff, and using HACCP.

Program Promotion. During the 12 months preceding the study, many districts promoted the school nutrition services program among students and their families. For example, 98.7% of districts gave menus

Table 3. **Percentage of All States and Districts That Provided Funding for Staff Development or Offered Staff Development for Nutrition Services Staff,* and Percentage of School Food Service Managers† Who Received Staff Development* and Who Wanted Staff Development, SHPPS 2006**

Staff Development Topic	% of All States That Provided Funding or Offered Staff Development	% of All Districts That Provided Funding for or Offered Staff Development	% of School Food Service Managers Who Received Staff Development	% of School Food Service Managers Who Wanted Staff Development
Competitive food policies to create a healthy food environment	90.2	60.3	51.2	22.2
Cultural diversity in meal planning	56.9	35.9	38.2	23.6
Customer service	80.4	66.9	61.7	18.5
Emergency preparedness	66.0	72.2	60.4	23.7
Facility design and layout, including equipment selection	34.0	32.7	30.6	18.2
Financial management	80.4	52.4	46.1	21.0
Food biosecurity (ie, prevention of intentional contamination of food to cause illness)	46.0	55.1	49.8	30.3
Food safety	100.0	91.0	83.9	25.8
Food service for students with special dietary needs	86.3	69.7	55.8	25.5
Healthy food preparation methods	86.3	83.9	77.4	26.5
Implementing the DGA in school meals	92.2	74.5	66.0	25.6
Increasing the percentage of students participating in school meals	78.4	66.6	65.5	30.0
Making school meals more appealing	90.2	77.0	73.3	32.0
Menu planning for healthy meals	96.1	82.2	72.2	30.1
Personnel management	58.8	53.2	56.0	21.5
Personal safety for food service staff	51.0	80.4	75.4	22.7
Procedures for food-related emergencies (eg, choking or severe food allergy reactions)	60.0	68.5	63.0	29.7
Procedures for responding to food recalls	74.0	67.8	63.4	21.8
Selecting and ordering food	72.5	74.3	67.2	18.5
Using HACCP	98.0	81.6	75.4	27.2
Using the cafeteria for nutrition education	86.0	55.4	45.4	28.9

*During the 2 years preceding the study.

†Among the 88.2% of schools that had a food service manager who served as the respondent to the school nutrition services questionnaire.

DGA, Dietary Guidelines for Americans; HACCP, Hazard Analysis and Critical Control Points.

to students, 98.2% gave menus to students' families, 81.8% provided families with information on the school nutrition services program, 49.4% provided students with information on the nutrient and caloric content of foods available to them, and 39.8% provided families with this information.

Evaluation. Many states and districts evaluated their school nutrition services program during the 2 years preceding the study. All states (100%) and 85.0% of districts evaluated district or school nutrition services staff compliance with government regulations and recommendations. In addition, 98.0% of states and 85.9% of districts evaluated the nutritional quality of school meals, 92.2% of states and 83.6% of districts evaluated student participation in the nutrition services program, 90.2% of states and 92.5% of districts evaluated food safety procedures, 86.0% of states and 82.5% of districts evaluated nutrition services management practices, and 70.6% of states and 76.3% of districts evaluated nutrition services staff development or in-service programs. About one third (34.0%) of states and 51.7% of districts evaluated the amount of plate waste.

Collaboration. During the 12 months preceding the study, state-level and district-level nutrition services staff worked with others in the same state- or district-level agency on school food service or nutrition activities. Specifically, state nutrition services staff worked with state health education staff in 94.1% of states, with state health services staff in 82.4% of states, with state physical education staff in 78.4% of states, and with state mental health and social services staff in 53.1% of states. State nutrition services staff also worked with the state-level SNA in 98.0% of states, with a food commodity organization such as the Dairy Council or state produce growers association in 94.1%, with Action for Healthy Kids in 94.1%, with colleges or universities in 94.1%, with a state-level health organization (eg, the American Heart Association or American Cancer Society) in 76.5%, with a state-level school nurses' association in 68.6%, with the state department of agriculture in 64.7%, with businesses in 62.7%, and with a state-level physicians' organization (eg, the American Academy of Pediatrics) in 56.9%.

District nutrition services staff worked with health education staff in 59.9% of districts, with health services staff in 55.1%, with physical education staff in 44.3%, and with mental health and social services staff in 23.3%. In addition, district nutrition services staff worked with a food commodity organization in 45.2% of districts, with a local health department in 45.2%, with a county cooperative extension office in 32.3%, with local businesses in 19.9%, with a local health organization in 16.8%, with local colleges or universities in 11.8%, with a local hospital in 11.7%, and with a mental health or social services agency in 8.5%.

Assistance to Districts and Schools. During the 12 months preceding the study, many states and some districts provided ideas to districts or schools to help improve student nutrition or healthy eating. Specifically, 84.0% of states and 44.0% of districts provided ideas on how to involve school nutrition services staff in classrooms to teach students about nutrition or healthy eating; 82.0% of states and 51.4% of districts provided ideas on how to use the cafeteria as a place where students might learn about food safety, food preparation, or other nutrition-related topics; and 88.0% of states and 51.3% of districts provided ideas for nutrition-related special events to teach students about nutrition or healthy eating. Also, during the 12 months preceding the study, 75.2% of districts provided assistance to schools in planning menus for students with chronic health conditions that require dietary modification (eg, diabetes), and 73.5% of districts provided assistance to schools in planning menus for students with food allergies. In addition, during the 2 years preceding the study, 86.0% of states provided model policies to districts or schools on how to promote healthy eating among students. These model policies might have addressed nutrition education, nutrition services, or other foods available at school. Model policies were defined as an example of what an actual policy on a particular topic or issue might address. The content might be based on scientific evidence, best practices, or state law or policy. Model policies are recommendations, not mandates.

Food Safety. Food safety was defined as the prevention of unintentional contamination of food that can cause illness. Nearly one third (32.0%) of states required and 30.0% of states recommended that districts or schools implement food safety practices school wide (ie, both inside and outside the cafeteria). Nationwide, 38.8% of districts required and 44.7% of districts recommended that schools implement food safety practices school wide. Further, 58.2% of districts required and 26.9% recommended that schools have written plans for implementation of a risk-based approach to food safety, such as a HACCP-based program, and 49.2% required and 33.2% recommended that schools have written plans for feeding students with severe food allergies. HACCP-based recipes—which include critical control points, such as cooking, and associated critical limits, such as time and temperature, in their directions—are designed to reduce the risk of food contamination and bacterial growth that could lead to food-borne illness. During the 30 days preceding the study, 69.0% of districts almost always or always used HACCP-based recipes.

Irradiated meat is meat that has been exposed to a controlled amount of radiant energy to reduce the risk of food-borne illness by destroying harmful bacteria and other organisms. During the 30 days preceding the survey, only 2.2% of districts almost always or always used irradiated meat, and 87.2% of districts never used irradiated meat. Among the districts that never used irradiated meat, 47.5% indicated irradiated meat was not available, 27.9% indicated it was not necessary to use irradiated meat, 20.5% indicated public perception was that irradiated meat is unsafe, and 9.2% indicated irradiated meat was too expensive. Only 4.3% of all districts provided information about irradiated meat to students and families during the 12 months preceding the study.

Some districts required or recommended that school nutrition services programs have a written plan for crisis response in the event of natural disasters, such as blizzards or tornados (54.6% required and 24.4% recommended), water, gas, or electrical outages (47.9% required and 31.5% recommended), equipment failure such as refrigerator or freezer breakdown (42.6% required and 35.6% recommended), food biosecurity (ie, the prevention of intentional contamination of food to cause illness) breaches (37.9% required and 27.5% recommended), other terrorist events such as a bomb threat (52.7% required and 24.3% recommended), suspected food-borne illness outbreak (49.3% required and 30.9% recommended), and a food recall (50.4% required and 30.5% recommended).

Changes Between 2000 and 2006 at the State and District Levels. Between 2000 and 2006, many changes were detected in requirements and recommendations related to competitive foods. Specifically, increases were detected in the percentage of states and districts that required that schools be prohibited from offering junk foods as à la carte selections during breakfast and lunch periods (from 20.0% to 42.0% among states and from 23.1% to 38.9% among districts); at concession stands (from 2.0% to 6.1% among states and from 1.4% to 5.5% among districts); in school stores, canteens, or snack bars (from 6.0% to 32.0% among states and from 3.9% to 18.9% among districts); at student parties (from 2.0% to 8.0% among states and from 1.4% to 11.5% among districts); and in vending machines (from 8.0% to 32.0% among states and from 4.1% to 29.8% among districts). Increases also were detected in the percentage of districts that required that schools be prohibited from offering junk foods in after-school or extended day programs (from 7.3% to 14.7%) and at staff meetings (from 0.4% to 3.4%). Similarly, increases were detected in the percentage of states and districts that recommended that schools be prohibited from offering junk foods in after-school or extended day programs (from 18.0% to 34.0% among states and from 11.4% to 33.8% among districts); as à la carte selections during breakfast or lunch periods (from 20.0% to 36.0% among states and from 15.3% to 29.4% among districts); at concession stands (from 8.0% to 36.7% among states and from 7.8% to 31.4% among districts); at meetings attended by students' family members (from 4.0% to 20.0% among states and from 9.3% to 30.2% among districts); in school stores, canteens, or snack bars (from 6.0% to 36.0% among states and from 8.9% to 29.2% among districts); at staff meetings (from 4.0% to 20.0% among states and from 8.1% to 27.6% among districts); at student parties (from 8.0% to 36.0% among states and from 9.9% to 39.6% among districts); and in vending machines (from 10.0% to 38.0% among states and from 7.9% to 30.0% among districts). In addition, the percentage of states that discouraged schools from using food or food coupons as a reward increased from 13.0% to 45.1%, and the percentage of districts prohibiting this practice increased from 11.3% to 26.1%.

Between 2000 and 2006, increases were detected in the percentage of districts almost always or always using the following healthy food preparation practices during the 30 days preceding the study: using low-fat or nonfat yogurt, mayonnaise, or sour cream instead of regular mayonnaise, sour cream, or creamy salad dressings (from 26.8% to 39.8%); using part-skim or low-fat cheese instead of regular cheese (from 34.1% to 50.3%); using skim, low-fat, soy, or nonfat dry milk instead of whole milk (from 67.4% to 77.9%); removing skin from poultry or using skinless poultry (from 36.9% to 49.1%); and steaming or baking vegetables other than potatoes (from 59.5% to 77.7%). Also, the percentage of districts requiring a minimum time for students to eat lunch once they were seated increased from 21.9% to 40.4%.

Collaboration between nutrition services staff at the state and district level and other staff in their own agency increased between 2000 and 2006. Specifically, increases were detected in the percentage of states and districts in which nutrition services staff worked on nutrition services activities with health education staff (from 78.4% to 94.1% among states and from 25.9% to 59.9% among districts), mental health and social services staff (from 38.0% to 53.1% among states and from 8.7% to 23.3% among districts), and physical education staff (from 48.0% to 78.4% among states and from 13.9% to 44.3% among districts). An increase also was detected in the percentage of districts in which nutrition services staff worked on nutrition services activities with health services staff (from 23.9% to 55.1%). In addition, the percentage of states in

which nutrition services staff worked with businesses increased from 49.0% to 62.7%, and the percentage of districts in which this occurred increased from 8.8% to 19.9%.

Two increases between 2000 and 2006 were detected in evaluation activities at the state level. During the 2 years preceding the study, the percentage of states that evaluated the amount of plate waste increased from 14.6% to 34.0%, and the percentage that evaluated the number of students participating in the school nutrition services program increased from 80.0% to 92.2%.

Some changes also occurred in professional preparation and staff development. Between 2000 and 2006, the percentage of districts that required newly hired food service managers to have at least a high school diploma or GED increased from 49.4% to 74.1%. Also, the percentage of states that provided funding for staff development or offered staff development, during the 2 years preceding the study, on procedures for food-related emergencies increased from 34.7% to 60.0%, but the percentage that provided funding for staff development or offered staff development on selecting and ordering food decreased from 84.3% to 72.5%.

Finally, increases also were observed in the percentage of districts providing schools with ideas on how to involve school nutrition services staff in classrooms to teach students about nutrition or healthy eating (from 32.7% to 44.0%), ideas on how to use the cafeteria as a place where students might learn about food safety, food preparation, or other nutrition-related topics (from 36.9% to 51.4%), and ideas for nutrition-related special events (from 38.6% to 51.3%).

Nutrition Services at the School Level

Organization of the School Nutrition Services Program. Nationwide, 68.6% of schools offered breakfast to students, 63.0% participated in the USDA reimbursable SBP, and 11.9% offered other breakfast meals to students. Among the 68.6% of schools that offered breakfast, 97.2% served it in the cafeteria, 4.5% served it in classrooms, and 0.2% served it on school buses. In addition, 15.4% allowed students to bring breakfast into the classroom. Nationwide, 99.3% of schools offered lunch to students, 84.2% participated in the USDA reimbursable NSLP, and 25.6% offered other lunch meals to students.

In 24.4% of all schools that offered breakfast or lunch, an outside food service management company operated (ie, had primary responsibility for planning menus and deciding which foods to order) the school nutrition services program. A food service management company provided breakfast meals in 12.4% of all schools, à la carte breakfast items in 9.7% of all schools, lunch meals in 22.4% of all schools, and à la carte lunch items in 14.4% of all schools. Some schools (11.7% of elementary schools, 19.0% of middle schools, and 23.5% of high schools) offered brand-name fast foods from companies such as Pizza Hut, Taco Bell, or Subway. During a typical week, 94.7% of these schools offered brand-name fast foods to students for breakfast meals 1 day per week or less often; 2.2% offered them 2, 3, or 4 days; and 2.9% offered them 5 days. In addition, 88.2% of these schools offered brand-name fast foods as à la carte breakfast items 1 day per week or less often; 2.1% offered them 2, 3, or 4 days; and 9.7% offered them 5 days. During a typical week, 74.5% of these schools offered brand-name fast foods for lunch meals 1 day per week or less often; 17.2% offered them 2, 3, or 4 days; and 8.2% offered them 5 days. Finally, 67.9% of these schools offered these foods as à la carte lunch items 1 day per week or less often; 16.2% offered them 2, 3, or 4 days; and 15.4% offered them 5 days.

Nationwide, 95.3% of schools had a cafeteria. During peak meal time, the cafeteria was less than 50% full in 10.6% of these schools, 50-75% full in 35.9%, 76-100% full in 51.0%, and over the maximum seating capacity in 2.5%.

On average, students had 21.1 minutes to eat breakfast once they were seated and 22.8 minutes to eat lunch. Further, 93.4% of schools gave students at least 10 minutes to eat breakfast once they were seated, and 79.0% of schools gave students at least 20 minutes to eat lunch once they were seated. One fourth (25.4%) of schools started serving lunch before 11:00 AM, 62.6% started serving lunch between 11:00 AM and 12:00 PM, and 12.0% started serving lunch after 12:00 PM. Ninety-four percent of elementary schools, 96.0% of middle schools, and 73.1% of high schools implemented a closed-campus policy (ie, students are not allowed to leave school during the school day, including during lunchtime).

Food Ordering and Food Preparation. Nationwide, in 37.6% of schools, staff working at the district nutrition services office had primary responsibility for deciding which foods to order; in 21.9% of schools, food service management company staff had this responsibility; and in 37.0% of schools, school staff had this responsibility.

Among the schools in which staff at the school level had responsibility for deciding what food to order, during a typical school week 21.3% ordered at least some whole milk, 57.9% ordered at least some 2% or reduced fat milk, 45.6% ordered at least some 1% or low-fat milk, and 34.0% ordered at least some skim or nonfat milk. Further, 23.6% of these schools ordered only 1 of these types of milk, 42.2% ordered 2 of these types, 23.9% ordered 3 of

these types, and 6.6% ordered all 4 of these types of milk. More than three fourths (77.4%) of these schools included either 1% low-fat milk or skim milk in their orders, and 36.3% included both of these types of milk. On average, 41.1% of all milk ordered was 1%, 34.3% was 2%, 14.0% was skim milk, and 9.3% was whole milk. On average, 56.3% of all milk ordered was chocolate or flavored milk. Most of the chocolate or flavored milk ordered was either 1% milk (48.1% of all chocolate or flavored milk ordered) or 2% milk (26.8% of all chocolate or flavored milk ordered). Most of the white milk ordered was either 2% milk (46.4% of all white milk ordered) or 1% milk (32.4% of all white milk ordered). In addition, 2.1% of schools ordered at least some buttermilk during a typical school week, 2.0% ordered at least some soy milk, and 1.1% ordered at least some lactose-free milk.

Nationwide, in 23.9% of schools, staff working at the district nutrition services office had primary responsibility for cooking foods (not counting the reheating of prepared foods) for students; in 11.8% of schools, food service management company staff had this responsibility; and in 62.7% of schools, school staff had this responsibility.

Among the schools in which school staff had responsibility for cooking foods for students, during the 30 days preceding the study more than half almost always or always used nonstick spray or pan liners instead of grease or oil; used skim, low-fat, or nonfat dry milk instead of whole milk; drained fat from browned meat; removed skin from poultry or used skinless poultry; roasted, baked, or broiled meat rather than frying it; skimmed fat off warm broth, soup, stew, or gravy; spooned solid fat from chilled meat or poultry broth; trimmed fat from meat or used lean meat; boiled, mashed, or baked potatoes rather than frying or deep frying; prepared vegetables without using butter, margarine, cheese, or creamy sauce; and steamed or baked other vegetables (Table 2).

Breakfast and Lunch Food and Beverage Variety and Availability. Each day for breakfast, 61.7% of the 68.6% of schools that offered breakfast offered students 3 or more different types of milk. The percentage of schools offering 3 or more different types of milk was lower among elementary schools (54.1%) than among middle schools (68.4%) and high schools (72.5%). Each day for lunch, 63.4% of the 99.3% of schools that offered lunch offered students 3 or more different types of milk (61.1% of elementary schools, 63.0% of middle schools, and 70.5% of high schools). Each day for lunch, 58.7% of elementary schools, 70.8% of middle schools, and 77.4% of high schools that offered lunch offered a choice between 2 or more different fruits or types of 100% fruit juice; 64.0% of elementary schools, 69.3% of middle schools, and 81.4% of high schools offered a choice between 2 or more entrees or main courses; and 55.8% of elementary schools, 66.8% of middle schools, and 76.7% of high schools offered a choice between 2 or more different nonfried vegetables. The sale of deep-fried foods at lunch either as part of a meal or as à la carte items also varied by school level: 82.6% of elementary schools, 70.4% of middle schools, and 48.6% of high schools did not sell any fried foods as part of school lunch; 14.5% of elementary schools, 22.6% of middle schools, and 26.2% of high schools sold deep-fried foods at lunch, but fewer than 5 days per week; and 2.1% of elementary schools, 6.7% of middle schools, and 24.0% of high schools sold deep-fried foods each day at lunch. When salad dressing was offered, 80.1% of schools offered students a low-fat dressing.

In 10.0% of elementary schools, 14.1% of middle schools, and 19.2% of high schools, students could get butter or margarine only by asking for it (ie, it was not available in the cafeteria serving line or on the tables). In 34.5% of elementary schools, 46.3% of middle schools, and 47.6% of high schools, students could get butter or margarine in the cafeteria serving line or on the tables. In 12.8% of elementary schools, 15.8% of middle schools, and 10.2% of high schools, students could get salt only by asking for it (ie, it was not available in the cafeteria serving line or on the tables). In 14.4% of elementary schools, 34.1% of middle schools, and 60.6% of high schools, students could get salt in the cafeteria serving line or on the tables.

À La Carte Food and Beverage Variety and Availability. Schools were asked whether certain foods and beverages were sold as à la carte items. These à la carte items did not include items sold in vending machines. During a typical week, more than two thirds of all elementary schools offered fruit; lettuce, vegetable, or bean salads; and other vegetables as à la carte items (Table 4). More than two thirds of all middle schools offered 100% fruit juice or 100% vegetable juice; bread sticks, rolls, bagels, pita bread, or other bread products; fruit; lettuce, vegetable, or bean salads; other vegetables; and pizza, hamburgers, or sandwiches as à la carte items. More than two thirds of all high schools offered 100% fruit juice or 100% vegetable juice; bread sticks, rolls, bagels, pita bread, or other bread products; fruit; lettuce, vegetable, or bean salads; other vegetables; cookies, crackers, cakes, pastries, or other baked goods that were now low in fat; and pizza, hamburgers, or sandwiches as à la carte items.

Foods and Beverages Not Sold Through the School Nutrition Services Program. Foods and beverages are readily available at school in places other than the cafeteria, such as at student parties, in afterschool or extended day programs, and at concession

Table 4. **Percentage of All Schools That Offered a la Carte Foods and Beverages to Students During a Typical Week, by School Level, SHPPS 2006**

À la Carte Food or Beverage	% of All Elementary Schools	% of All Middle Schools	% of All High Schools
Low in fat			
100% fruit juice or 100% vegetable juice	62.6	66.6	79.8
Bread sticks, rolls, bagels, pita bread, or other bread products	61.6	68.3	80.2
Fruit	74.7	80.0	87.2
Lettuce, vegetable, or bean salads	66.3	79.1	80.9
Low-fat cookies, crackers, cakes, pastries, or other low-fat baked goods	40.7	43.7	50.1
Low-fat or fat-free ice cream, frozen yogurt, or sherbet	31.2	39.4	39.3
Low-fat or nonfat yogurt	46.3	49.5	62.2
Other vegetables	66.9	73.7	76.6
Salty snacks that are low in fat (eg, pretzels, baked chips, or other low-fat chips)	46.8	57.4	64.4
Vegetables with low-fat dip	46.1	60.9	58.8
High in fat, sodium, or added sugars			
Chocolate candy	2.3	7.7	13.4
Cookies, crackers, cakes, pastries, or other baked goods that are not low in fat	44.8	56.1	68.2
Deep-fried potatoes	9.1	21.0	41.7
Frozen water ices or slushees that do not contain juice	7.0	10.9	13.6
Ice cream or frozen yogurt that is not low in fat	24.8	35.1	42.5
Other kinds of candy (nonchocolate)	3.5	9.4	11.9
Oven-baked French fried potatoes	52.6	64.5	56.8
Pizza, hamburgers, or sandwiches	61.8	73.9	82.6
Salty snacks that are not low in fat (eg, regular potato chips or cheese puffs)	25.4	41.2	48.0
Soda pop or soft drinks that are not 100% juice	10.9	21.6	37.8
Sports drinks (eg, Gatorade)	12.8	33.7	50.0
Sweetened iced tea	10.3	24.3	39.9

stands. Nationwide, 22.4% of schools had adopted a policy stating that fruits or vegetables would be among the foods served in after-school or extended day programs, 17.2% of schools had adopted this policy for student parties, and 6.2% of schools had adopted it for concession stands. In addition, 20.4% of all schools had adopted a policy prohibiting junk foods from being offered in after-school or extended day programs, 12.2% of schools had adopted this policy for student parties, and 4.8% of schools had adopted it for concession stands.

Nationwide, 21.1% of elementary schools, 62.4% of middle schools, and 85.8% of high schools had 1 or more vending machines from which students could purchase food or beverages. Among schools with vending machines, 19.3% did not allow students to purchase foods or beverages from any vending machine during school hours, 47.0% had 1-3 vending machines from which students could purchase food or beverages during school hours, and 33.7% of schools had 4 or more that were available to students during school hours.

In addition, 16.7% of all elementary schools, 33.0% of all middle schools, and 50.1% of all high schools had a school store, canteen, or snack bar where students could purchase food or beverages. Nationwide, 5.2% of elementary schools, 24.1% of middle schools, and 46.4% of high schools had 1 or more vending machines and a school store, canteen, or snack bar; 32.7% of elementary schools, 71.3% of middle schools, and 89.4% of high schools had either a vending machine or a school store, canteen, or snack bar where students could purchase food or beverages.

Nationwide, in at least 1 in 5 elementary schools students could purchase bottled water from a vending machine or in a school store, canteen, or snack bar (Table 5). In at least half of all middle schools, students could purchase bottled water and sports drinks such as Gatorade in these venues. In at least half of all high schools, students could purchase 100% fruit juice; bottled water; salty snacks that were low in fat; cookies, crackers, cakes, pastries, or other baked goods that were not low in fat; non-chocolate candy; salty snacks that were not low in fat; soda pop or fruit drinks that were not 100% juice; and sports drinks.

Nationwide, 11.9% of all elementary schools, 25.4% of all middle schools, and 48.0% of all high schools allowed students to purchase foods and beverages high in fat, sodium, or added sugars from a vending machine or in a school store, canteen, or snack bar during school lunch periods. In addition, 5.8% of elementary schools, 14.6% of middle schools, and 49.6% of high schools allowed students to purchase these foods and beverages before classes began in the morning, and 4.4% of elementary schools, 12.2% of middle schools, and 41.1% of high schools allowed students to purchase these items during any school hours when meals were not being served.

Table 5. **Percentage of All Schools in Which Students Could Purchase Foods and Beverages From Vending Machines or in a School Store, Canteen, or Snack Bar, by School Level, SHPPS 2006**

Food or Beverage	% of All Elementary Schools	% of All Middle Schools	% of All High Schools
Low in fat			
1% or skim milk	4.2	12.9	20.2
100% fruit juice	16.8	41.1	64.7
100% vegetable juice	3.4	7.6	18.3
Bottled water	21.9	63.2	85.8
Bread sticks, rolls, bagels, pita bread, or other bread products	3.0	7.4	20.3
Fruits or vegetables	4.2	8.7	17.9
Low-fat cookies, crackers, cakes, pastries, or other low-fat baked goods	9.7	25.5	49.3
Low-fat or fat-free ice cream, frozen yogurt, or sherbet	2.6	7.5	15.4
Low-fat or nonfat yogurt	2.0	5.2	12.2
Salty snacks that are low in fat (eg, pretzels, baked chips, or other low-fat chips)	11.3	30.9	58.0
High in fat, sodium, or added sugars			
2% or whole milk	7.1	15.4	30.6
Chocolate candy	8.7	24.7	49.6
Cookies, crackers, cakes, pastries, or other baked goods that are not low in fat	12.0	27.6	58.3
Frozen water ices or slushees that do not contain juice	4.8	11.6	20.9
Ice cream or frozen yogurt that is not low in fat	7.0	11.0	22.0
Other kinds of candy (nonchocolate)	10.8	26.2	54.2
Salty snacks that are not low in fat (eg, regular potato chips or cheese puffs)	11.6	30.4	61.4
Soda pop or fruit drinks that are not 100% juice	16.4	45.0	76.8
Sports drinks (eg, Gatorade)	12.4	51.7	75.0

Nationwide, 17.5% of all elementary schools, 39.1% of all middle schools, and 64.3% of all high schools allowed students to purchase foods and beverages low in fat from a vending machine or in a school store, canteen, or snack bar during school lunch periods. In addition, 11.0% of elementary schools, 33.8% of middle schools, and 67.6% of high schools allowed students to purchase these foods and beverages before classes began in the morning, and 10.0% of elementary schools, 26.2% of middle schools, and 54.3% of high schools allowed students to purchase these items during any school hours when meals were not being served.

Students could buy soda pop, fruit drinks that were not 100% juice, and sports drinks during the lunch period in 12.9% of all elementary schools, 28.7% of all middle schools, and 58.2% of all high schools. In addition, 7.3% of elementary schools, 27.7% of middle schools, and 64.0% of high schools allowed students to purchase these beverages before classes began in the morning, and 6.6% of elementary schools, 20.6% of middle schools, and 51.3% of high schools allowed students to purchase these beverages during any school hours when meals were not being served.

During the 12 months preceding the study, organizations (eg, student clubs, sports teams, or the Parent Teacher Association [PTA]) in 76.0% of elementary schools, 78.1% of middle schools, and 83.9% of high schools sold foods and beverages at school or in the community to raise money. Specifically, 49.8% of all elementary schools, 56.2% of all middle schools, and 67.1% of all high schools sold chocolate candy; 49.1% of elementary schools, 55.8% of middle schools, and 66.6% of high schools sold cookies, crackers, cakes, pastries, or other baked goods that were not low in fat; 40.2% of elementary schools, 42.6% of middle schools, and 64.3% of high schools sold other candy; 20.9% of elementary schools, 30.3% of middle schools, and 36.4% of high schools sold soda pop or fruit drinks that were not 100% juice; and 11.1% of elementary schools, 24.0% of middle schools, and 31.1% of high schools sold sports drinks to raise money. Students could purchase these items before classes began in the morning in 13.8% of all schools, during any school hours when meals were not being served in 14.3% of schools, and during school lunch periods in 23.4% of schools. Nationwide, 24.8% of schools held fund raiser nights at fast food restaurants, where a portion of the sales made on a particular night benefited the school.

In addition, 20.9% of all schools sold fruits or vegetables; 20.5% sold low-fat cookies, crackers, cakes, pastries, or other low-fat baked goods; and 11.4% sold 100% fruit juice or 100% vegetable juice to raise money. Students could purchase these items before classes began in the morning in 7.8% of all schools, during any school hours when meals were not being served in 6.6% of schools, and during school lunch periods in 11.0% of schools. Faculty and staff at 16.6% of all schools were prohibited from using food or food coupons as a reward for good behavior or good academic performance, and

19.3% of all schools discouraged faculty and staff from using food or food coupons as a reward for good behavior or good academic performance.

Nationwide, 34.0% of all elementary schools, 51.4% of all middle schools, and 73.5% of all high schools received a specified percentage of soft drink sales receipts. Further, 8.8% of all elementary schools, 13.8% of all middle schools, and 24.7% of all high schools received incentives once receipts totaled a specified amount, and 29.5% of all elementary schools, 37.9% of all middle schools, and 56.6% of all high schools were prohibited from selling soft drinks produced by more than 1 company.

Soft drink companies advertised at some schools. Specifically, 51.3% of all schools allowed soft drink companies to advertise soft drinks on vending machines; 16.4% allowed soft drink advertisements on school grounds, including on the outside of the school building, on playing fields, or other areas of campus; 2.0% allowed these advertisements on school buses or other vehicles used to transport students; and 9.2% allowed them elsewhere in the school building. In 5.0% of all schools, candy, meals from fast food restaurants, or soft drinks were promoted through the distribution of products (eg, T-shirts, hats, and book covers) to students.

Professional Preparation. Nationwide, 12.3% of all schools did not require newly hired school food service managers to have a minimum level of education, but 77.6% of all schools required a high school diploma or GED as the minimum level of education for newly hired food service managers, 5.5% required an associate's degree, 4.4% required an undergraduate degree, and 0.2% required a graduate degree. Further, 59.5% of schools had training and credentialing requirements for newly hired school food service managers. Specifically, 57.0% of all schools required newly hired school food service managers to have successfully completed a school food service training program provided or sponsored by the state, 16.3% of schools required SNA certification, 7.3% of schools required school food service and nutrition specialist credentialing, 2.0% of schools required an RD, and 1.4% of schools required a DTR credential.

School Food Service Manager. Nationwide, 93.6% of schools had a school food service manager or someone who oversees or coordinates nutrition services at the school. Among these schools, 88.2% had that person serve as the respondent for the school nutrition services interview. Among these respondents, 56.9% worked for the school district, 39.2% worked for the school, 16.8% worked for a food service management company, and 0.1% worked for a fast food company. For 4.1% of respondents, the highest grade or year of education they had completed was less than high school, 49.3% had no more than a high school diploma or GED, and 44.8% had an undergraduate degree. Among those with an undergraduate degree, 21.9% majored in food service administration or management, 20.7% in business, 14.7% in nutrition or dietetics, 11.3% in education, and 5.9% in home economics or family and consumer sciences. In addition, 42.4% of respondents with an undergraduate degree had an undergraduate minor, with 28.4% of those respondents minoring in business, 8.9% in education, 7.4% in nutrition, 5.7% in home economics or family and consumer sciences, and 4.5% in food service administration or management. Further, 21.4% of respondents with an undergraduate degree also had a graduate degree, most commonly in education (37.9%) and business (23.9%).

Among the respondents, 20.8% had earned the school food service and nutrition specialist credential from SNA, 2.9% held an RD, and 1.2% held a DTR. Further, 15.5% were certified dietary managers and 63.5% were certified food safety managers. Among the certified food safety managers, 53.1% held a ServSafe food protection manager certification by the National Restaurant Association Education Foundation, 48.1% had a food handler's card from a state or local health agency, 6.9% held a food safety manager certification from the National Registry of Food Safety Professionals, and 3.1% held a professional food manager certification by Experior Assessments LLC. In addition, among the respondents, 26.8% had other food service certifications from a state agency or state-level professional group, and 20.7% had completed the Orientation to Child Nutrition Management Workshop sponsored by NFSMI.

Staff Development. During the 2 years preceding the study, 92.7% of respondents received staff development on at least 1 of the topics listed in Table 3. In addition, at least three fourths of the respondents received staff development on food safety, healthy food preparation methods, personal safety for food service staff, and using HACCP (Table 3). In addition, more than one fourth wanted to receive staff development on customer service, food biosecurity, food safety, food service for students with special dietary needs, healthy food preparation methods, implementing the DGAs in school meals, increasing the percentage of students participating in school meals, making school meals more appealing, menu planning for healthy meals, procedures for food-related emergencies, procedures for responding to food recalls, using HACCP, and using the cafeteria for nutrition education.

Program Promotion. During the 12 months preceding the study, schools did many things to encourage students to eat school meals and to make healthy dietary choices. Specifically, 95.6% of all

schools provided menus to students during the 12 months preceding the study; 82.7% placed posters or other materials promoting healthy eating habits on display in the cafeteria; 68.0% included articles about the school nutrition services program in a school newsletter, newspaper, Web site, or other publication; 60.1% collected suggestions from students about the school nutrition services program; 57.4% of all schools collected suggestions from school staff about the school nutrition services program; and 53.3% included nutrition services topics during school announcements. In addition, 45.0% provided students with information on the nutrient and caloric content of foods available to them, 42.1% collected suggestions from family members about the school nutrition services program, 40.3% conducted taste tests with students, 37.2% placed posters or other materials promoting healthy eating habits on display in parts of the school besides the cafeteria, and 10.0% conducted taste tests with family members. About one fourth (24.9%) of all schools had a committee that included students who provided suggestions for the school nutrition services program.

During the 12 months preceding the study, 24.9% of the 95.3% of schools with a cafeteria had students visit the cafeteria to learn about food safety, food preparation, or other nutrition-related topics. During this same time period, school nutrition services staff talked or taught about good nutrition, healthy eating habits, or food safety as part of a health education lesson in 26.3% of all elementary schools and talked or taught about good nutrition, healthy eating habits, or food safety to a health education class in 16.9% of all middle and high schools and to some other class in 13.5% of all middle and high schools.

Nearly half (47.6%) of schools participated in the USDA's Team Nutrition initiative. During the 12 months preceding the study, 38.3% of all schools used Team Nutrition posters, 29.5% used Team Nutrition recipes, 29.4% used Team Nutrition teaching materials, 16.0% participated in Team Nutrition special events, and 14.4% used Team Nutrition materials for parents.

Collaboration. During the 12 months preceding the study, school nutrition services staff worked on school food service or nutrition activities with health services staff in 32.3% of all schools, health education staff in 22.2% of schools, physical education staff in 18.2% of schools, and mental health and social services staff in 12.1% of schools. During this same period, school nutrition services staff worked on school food service or nutrition activities with a local health department in 28.2% of all schools, a food commodity organization in 26.4%, a county cooperative extension office in 13.7%, a health organization in 11.6%, local businesses in 7.5%, a local hospital in 6.5%, a local college or university in 6.3%, and a local mental health or social services agency in 2.9%.

Food Safety. All food service staff in 86.7% of all schools received basic food safety training before they were allowed to prepare or serve food. Among the 60.3% of schools in which food safety training was needed in a language other than English, 64.8% provided this training in another language. A certified food safety manager was present while food was being prepared in 83.1% of all schools and while it was being served in 82.6% of all schools. During the 12 months preceding the study, the health department inspected the cafeteria more than 2 times in 19.7% of all schools, 2 times in 42.8% of schools, 1 time in 32.7% of schools, and never in 4.7% of schools. During the 30 days preceding the study, a school food service staff member conducted a formal food safety self-inspection of the cafeteria, for example, using the USDA's Manager Self-Inspection Checklist, in 56.9% of all schools.

Most school nutrition services programs had a written plan for crisis response in the event of a food recall (72.9% of schools); natural disasters (71.7%); equipment failure (69.6%); suspected food-borne illness outbreak (69.4%); water, gas, or electrical outages (66.6%); other terrorist events (eg, a bomb threat) (60.1%); and food biosecurity breaches (53.0%). Nationwide, 71.4% of school nutrition services programs had a written plan for implementation of a risk-based approach to food safety (eg, an HACCP-based program). During the 30 days preceding the survey, 63.0% of schools almost always or always used HACCP-based recipes that included critical control points, such as cooking, and associated critical limits, such as time and temperature, in their directions. A hand-washing facility or hand-sanitizing station was available for students to use in 47.2% of school cafeterias.

During the 30 days preceding the study, 90.9% of schools never used irradiated meat. These schools gave several reasons as to why they did not use irradiated meat including: not available (47.5% of these schools), not necessary (20.9%), public perception that irradiated meat is unsafe (19.2%), and too expensive (5.7%).

Nationwide, 76.9% of all school nutrition services programs had a written plan for feeding students with severe food allergies. About half (50.5%) of all schools offered a la carte foods containing peanuts or peanut butter. During the 12 months preceding the study, 15.4% of all schools with a cafeteria provided a separate, allergen-free (eg, peanut-free) table in the cafeteria where students with severe food allergies could eat. Among the 88.3% of schools that had students with food allergies, 84.0% made changes in the foods offered to these students; among the 79.6% of schools with students with chronic health

conditions (eg, diabetes), 75.3% made changes in the foods offered to these students; and among the 78.8% of schools with students who were vegetarians, 66.0% made changes in the foods offered to them.

Changes Between 2000 and 2006 at the School Level. Between 2000 and 2006, the availability of low-fat à la carte foods increased. Specifically, increases were detected in the percentage of schools that offered bread sticks, rolls, bagels, pita bread, or other bread products (from 50.8% to 67.1%); lettuce, vegetable, or bean salads (from 52.6% to 72.8%); low-fat salty snacks (from 38.2% to 53.2%); low-fat or nonfat yogurt (from 35.5% to 50.3%); and vegetables other than potatoes (from 51.0% to 70.8%). Further, the percentage of schools in which students could select a low-fat salad dressing increased from 66.0% to 80.1%, and the percentage of schools that offered deep-fried potatoes to students decreased from 40.0% to 18.8%.

Although no increases were detected between 2000 and 2006 in the average amount of nonfat or low-fat milk schools ordered during a typical school week, decreases were detected in the mean number of half-pints of 2% milk (from 351 to 225), whole white milk (from 230 to 62), and whole chocolate milk (from 115 to 37) ordered.

Between 2000 and 2006, healthful changes were made in many food preparation practices. Increases were detected in the percentage of schools during the 30 days preceding the study that almost always or always used part-skim or low-fat cheese instead of regular cheese (from 31.0% to 45.9%), reduced the amount of salt called for in recipes or used low-sodium recipes (34.1% to 45.8%), trimmed fat from meat or used lean meat (from 56.2% to 66.4%), removed skin from poultry or used skinless poultry (from 40.2% to 54.6%), and steamed or baked vegetables other than potatoes (from 67.0% to 81.9%).

Between 2000 and 2006, improvements also were detected in the availability of healthy foods and beverages not sold through the school meals program. The percentage of schools in which students could purchase bottled water in vending machines or at school stores, canteens, or snack bars increased from 29.7% to 46.2%. However, decreases were detected in the percentage of schools in which students could purchase cookies, crackers, cake, pastries, or other baked goods not low in fat (from 38.4% to 25.3%); ice cream or frozen yogurt not low in fat (from 21.3% to 11.0%); salty snacks not low in fat (from 38.5% to 26.5%); and whole milk (from 27.2% to 13.9%). In addition, the percentage of schools that sold cookies or other baked goods not low in fat as part of fund-raising for any school organization decreased from 67.3% to 54.3%. Further, decreases were detected in the percentage of schools in which competitive foods and beverages were sold to students during school lunch periods—from 34.2% to 22.6% for junk food sold in vending machines or at school stores, canteens, or snack bars; from 38.7% to 23.4% for junk food sold as part of fund-raising; and from 68.4% to 47.7% for soda pop, sports drinks, or fruit drinks that were not 100% juice.

One change was detected in professional preparation expectations for newly hired school food service managers. Between 2000 and 2006, the percentage of schools requiring successful completion of a school food service training program provided or sponsored by the state increased from 45.9% to 57.0%.

In addition, the percentage of schools in which nutrition services staff worked on food service or nutrition activities with physical education staff increased between 2000 and 2006 from 8.9% to 18.2%, and the percentage in which nutrition services staff worked with health services staff increased from 17.9% to 32.3%.

DISCUSSION

Foods available in schools fall into 3 categories: the federal school lunch and breakfast programs, a la carte food items available in the school cafeteria, and foods available in vending machines and other venues outside the school cafeteria. Although improvements in the nutritional quality of school meals have been documented, SHPPS 2006 data indicate that nutrition services program practices in many schools continue to need improvement. Similar to the SHPPS 2000 findings,[35] SHPPS 2006 provides a disconcerting picture of the continued, widespread availability of foods and beverages high in fat, sodium, and added sugars as à la carte choices, in vending machines, and in school stores. Students at 86% of high schools, 62% of middle schools, and 21% of elementary schools have access to foods and beverages at school through vending machines. Nearly one third of elementary schools allow students to purchase food and beverages through either vending machines or a school store, canteen, or snack bar. When students are taught in the classroom about good nutrition and healthy food choices but are surrounded by a variety of venues offering primarily low nutritive foods, they receive an inconsistent message about healthy and safe food choices.[23] While many schools sell bottled water and 100% fruit or vegetable juice through vending machines or school stores, schools also sell items that are high in fat, sodium, and added sugars (eg, high-fat cookies, salty snacks, and sugary soft drinks). Further, although the percentage of schools in which students could purchase baked goods not low in fat, ice cream, and salty snacks not low in fat decreased between 2000 and 2006, about three fourths of high

schools still sell soda pop and sports drinks, and a majority sells salty snacks not low in fat, in their vending machines or school stores. More than one fifth of schools allow students to buy food and beverage items from vending machines or school stores during the lunch period, thereby providing an obvious disincentive for participation in the school lunch program. Some elementary and middle schools and almost half of high schools also allow students to buy food and beverages from these venues before classes start in the morning and at any time during the school day.

The foods and beverages most likely to be sold à la carte tend to be healthier than those sold through vending machines or school stores, canteens, or snack bars. For example, more than three fourths of schools offer fruits à la carte, but fewer than 1 in 10 schools offer fruits or vegetables in vending machines or school stores, canteens, or snack bars. An increase between 2000 and 2006 was observed in the percentage of schools that offered healthier food choices as à la carte items: bread products (eg, bread sticks, rolls, bagels, pita bread, or other such products), salad (eg, lettuce, vegetable, or bean salads), low-fat or nonfat yogurt, and vegetables other than potatoes. Of particular note, the percentage of schools that offered deep-fried potatoes to students decreased by more than half.

Still, a majority of schools offer cookies and other baked goods that are not low in fat in both à la carte and vending machines or school stores, and many sell ice cream or frozen yogurt that is not low in fat as well as beverages high in added sugars. When student clubs, sports teams, or the PTA are allowed to sell food to raise money, the products typically sold are high in fat and added sugars, such as chocolate candy or cookies and other baked goods not low in fat. Nearly one fourth of schools allow students to buy fund-raising food items during lunch periods.

Soft drinks, which are a major contributor to added sugar consumption for students,[36] are widely available and advertised in schools. Many schools, including more than half of high schools, have a contract that prohibits the school from selling soft drinks produced by more than 1 company. Many schools earn a specified percentage of the soft drink sales receipts. Some contracts give companies the right to advertise brand-name soft drinks on vending machines, in the school building, and on school grounds. Public health experts have raised concern about exposure of children to promotion of foods high in calories and low in nutrient density,[37] and soft drinks, in particular, because they are associated with higher energy intake.[38] One potential strategy may be to replace soft drinks with bottled water. In particular, between 2000 and 2006, the percentage of schools in which students could purchase bottled water increased.

Only 9 of 22 specific food preparation practices that had been recommended by nutritionists as strategies for reducing the total fat, saturated fat, sodium, and added sugar content of school meals were implemented almost always or always by more than half of districts and schools. Encouraging to note, however, were some increases observed between 2000 and 2006 in particular healthy food preparation practices at both the district and school levels. Examples include using part-skim or low-fat cheese instead of regular cheese, removing skin from poultry or using skinless poultry, and steaming or baking vegetables other than potatoes.

School nutrition services experts recommend providing students with a variety of healthy choices,[39] and most schools followed this recommendation. About two thirds of schools offered students a daily choice between 2 or more types of fruit or 100% fruit juice, between 2 or more entrees or main courses, and between 2 or more vegetables. Most schools offered either low-fat milk or skim milk, and more than one third offered both of these healthy choices. Further, less than half of all milk ordered by schools was high in fat (ie, whole or 2% milk). Although no increase occurred between 2000 and 2006 in the average amount of nonfat or low-fat milk that schools ordered, orders for 2% milk, whole white milk, and whole chocolate milk all decreased.

One of the greatest challenges for improving school nutrition services programs is increasing the professional qualifications of the individuals who manage them. The responsibilities of district and school food service managers continue to expand as the USDA increases pressure to comply with new nutrition standards and school administrators demand increased program revenue. Despite this need for highly skilled individuals to manage these programs, a majority of districts and schools required only a high school diploma or GED as the minimum educational requirement for newly hired food service managers. Individuals who seek skill-building and certification opportunities may lack incentives such as full-time employment, a visible career ladder for advancement, or a higher rate of pay or salary. However, a majority of districts and schools did require some kind of professional certification, and the percentage of schools requiring successful completion of a school food service training program provided or sponsored by the state for newly hired food service managers increased between 2000 and 2006. State-level agencies and boards in most states can influence local school practices by establishing professional certification requirements. However, most states do not offer certification, licensure, or

endorsement for district food service coordinators or school food service managers.

Approximately one third of states and districts require that schools implement food safety practices schoolwide (ie, both inside and outside the cafeteria), and about half require written plans for students with food allergies or other types of crisis response plans. At the school level, almost all nutrition services staff receive basic food safety training before they are allowed to prepare or serve food. Three fourths of schools report having had a public health department inspection of the cafeteria once or twice during the year. Crisis response plans for natural disasters, equipment failure, and food recalls are more common than those for food biosecurity or other terrorist events. Training programs may be needed to increase motivation to implement such preventive measures.

Scheduling of school meals with regard to when meals are offered as well as having adequate time to eat is associated with student participation in school meals.[40] Most schools give students the amount of time recommended for breakfast and lunch,[39] and most schools do not schedule lunch at unreasonable times. However, more than one fifth of schools do not give students 20 minutes or more to eat lunch, and about one fourth of schools start serving lunch before 11:00 AM.

Changes in school food policies suggest that environmental change can lead to individual dietary change; however, such policy changes need to be implemented in all food environments so that students cannot change their source of foods and thereby avoid dietary changes.[41] Nearly all states and most districts do not provide much policy support on behalf of a healthy school nutrition environment. For example, few states and districts require a minimum amount of time for students to eat breakfast or lunch; few states and less than one third of districts require schools to offer students choices between 2 or more vegetables, 2 or more fruits, and 2 or more entrees; and few states and districts establish policies on the nutritional quality of foods offered in settings outside the school breakfast and lunch programs. Still, between 2000 and 2006 the percentage of states and districts that required or recommended that schools be prohibited from offering junk foods in certain settings increased for all settings assessed on the SHPPS questionnaire. In addition, the percentage of states that discouraged schools from using food or food coupons as a reward more than tripled, and the percentage of districts that prohibited this practice more than doubled.

A potential challenge regarding a clear interpretation of the impact of local wellness policies is that the SHPPS 2006 data were collected as most districts were developing and adopting their local wellness policies. Therefore, this report cannot be used as a baseline representing policies and programs prior to the mandate nor can it be used as an early measurement vis-à-vis the mandate. However, the mere existence of the Local Wellness Policy mandate should provide impetus for nutrition services policies and programs to experience improvements in coming years.

Given the increased interest in addressing the rise in childhood obesity and the specific requirements of the Local Wellness Policy mandate, it may not be surprising to observe an increase in collaboration occurring among nutrition services staff, health education staff, and physical education staff at all levels. Between 2000 and 2006, nutrition services staff at both the state and district levels reported increased collaboration with both health education and physical education staff. At the school level, the percentage of schools in which nutrition services staff worked on nutrition services activities with physical education staff doubled between 2000 and 2006. This increase in collaboration should enable schools to create consistent messages throughout school environments regarding the importance of healthy eating and physical activity.

Many states, districts, and schools are making improvements in menu planning, food purchasing, and meal preparation practices to meet these standards. Results of this study, however, indicate room exists for further improvement; likewise, a need exists to improve the qualifications of the professional staff charged with implementing these practices. Moreover, states, districts, and schools should examine their food-related policies and consider policies to decrease access to foods and beverages that are low in nutrients and high in fats and sugars, and they should also consider strategies for making healthier alternatives more accessible and attractive to students in terms of appearance, taste, and cost.[42]

Given the wide availability of foods and beverages, schools should encourage greater daily consumption of fruits, vegetables, whole grains, and nonfat or low-fat dairy products whenever students have opportunities to eat and drink. The recommendations in *Nutrition Standards for Foods in Schools: Leading the Way Toward Healthier Youth*[24] are intended to ensure that offerings in these venues are consistent with the DGA and, in particular, to help children and adolescents meet the guidelines for consumption of fruits, vegetables, whole grains, and nonfat or low-fat dairy products.

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