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Foods served in childcare facilities participating in the Child and Adult Care Food Program: Menu match and agreement with the new meal patterns and Best Practices

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Abstract

Objective—To assess the agreement of posted menus to the foods served to 3–5 year old children attending the federal Child and Adult Care Food Program (CACFP) –enrolled facilities; and the degree to which the facilities met the new meal patterns and Best Practices

Design—On-site observations and menu-coding

Participants/setting—Nine early care and education (ECE) centers

Main outcome measures—Agreement of posted menus to the foods served; and comparison of foods served and consumed with the new CACFP meal guidelines and Best Practices

Analysis—Data were compiled for each meal (breakfast, lunch, snacks). Frequencies and percentages of agreement to the posted menu (coded matches, substitutions, additions, and omissions) were calculated for each food component in the CACFP menu guidelines; menu total match was created by summing the menu match plus the acceptable substitutions. The menus were compared to the new CACFP meal guidelines and Best Practices

Results—The match between the posted menus and foods actually served to children at breakfast, lunch and snack was high when the acceptable menu substitutions were considered (~94–100% total match). Comparing the menus to the new meal guidelines and Best Practices, the one guideline that was fully implemented was serving only unflavored milk low-fat or 1% milk; the fruit and vegetable guidelines were partially met; fruit juice was not served often, nor were legumes; the guideline for one whole grain-rich serving per day was not met; and regular beef and full fat cheese products were commonly served.

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Conclusions and implications—ECE centers enrolled in CACFP are providing meals that met the current CACFP guidelines. Some menu improvements will be needed for the centers to meet the new guidelines and Best Practices.

Keywords

CACFP menus; preschool children; foods served; new meal patterns; Best Practices

INTRODUCTION

The Child and Adult Care Food Program (CACFP), funded by U.S. Department of Agriculture (USDA), is a federal nutrition program designed to reimburse the costs of foods to the sites that are enrolled in the program and provide healthy meals and snacks to low-income children and adults receiving day care.¹ These include family day care homes, traditional early childcare education (ECE) centers, at-risk afterschool care facilities, outside school hours care facilities, adult care facilities, and emergency shelters.¹ Participating sites receive federal reimbursement for the meals and snacks they serve through the CACFP, if the program meal standards are met. In fiscal year 2016, more than 4.2 million children and 130,000 adults received CACFP meals and snacks each day with serving about 2.1 billion meals; approximately 72% of all meals were served in ECE centers, 24% in family daycare homes, and 4% in adult daycare centers at a cost of about \$3.5 billion.² Early childcare education centers and day care homes may be approved to claim up to two reimbursable meals (breakfast, lunch or supper) and one snack, or two snacks and one meal, to each eligible participant each day.¹ Child and Adult Care Food Program, which is a federal nutrition program, reimburses the centers and homes at free, reduced-price, or paid rates for these meals and snacks. Eligibility to receive CACFP benefits is based on household income;¹ a child or an adult is eligible for free meals if their gross monthly household income is at or below 130% of the US federal poverty level guidelines (i.e. at or below 1.3 times the current federal poverty level), and for reduced-price meals if their gross monthly household income is between 130% and 185% of the US federal poverty level guidelines (i.e. between 1.3 and 1.85 times the current federal poverty level).³ For e.g.: with the 2017 federal poverty level income for a family of 4 (\$24,600), if the family's gross monthly household income is at or below \$31,980 ($1.3 \times \$24,600$) then they are eligible for free meals.

The current meal patterns for the CACFP include up to 4 meal components: fluid milk, fruits/vegetables, grain/bread, and meat/meat alternates, depending on meal occasion.⁴ The minimum required amounts of the meal components and serving sizes differ by age group. For children ages 3–5 years, breakfast includes 3 meal components: one serving each of milk (6 ounces), fruit or vegetable (1/2 cup) and grain or bread (1/2 serving). Lunch and Supper meal patterns include 4 meal components: 1 serving each of milk (6 ounces), grain or bread (1/2 serving), meat/meat alternate (1.5 ounces), and 2 different servings of fruit or vegetable or a combination of fruit and vegetable (1/2 cup total). Snacks include 2 of the 4 meal components [milk (4 ounces), fruit or vegetable (1/2 cup), grain or bread (1/2 serving), or meat/meat alternate (1/2 ounce)]. Facilities may choose to serve 2 meals and a snack, or 2 snacks and a meal each day.⁴ Prior research has documented that menus from ECE centers

that participate in CACFP offered more fruit, vegetables, and milk, and fewer sugar sweetened beverages and sweet and snack foods than non-participating ECE centers.⁵

Through the Healthy, Hunger-Free Kids Act of 2010, USDA made the first major changes in the CACFP meal and snack menu patterns since the program began in 1968.⁶ As of October 2011, only non-fat and low-fat (1%) unflavored milks were to be served to children 2 years and older attending ECE centers receiving CACFP reimbursements.⁷ Updated CACFP nutrition standards were implemented in October, 2017. These provide a greater variety of vegetables and fruit, more whole grains, and less added sugar and saturated fat in snacks and meals.⁸ There are also optional Best Practices that will enable ECE centers and day care homes to further improve meal quality.⁸ These build on the CACFP meal patterns and highlight areas where centers may take additional steps to further improve the nutritional quality of the meals they serve and reflect recommendations from the Dietary Guidelines for Americans⁹ and the National Academy of Medicine (formerly known as the Institute of Medicine)⁶ to further help increase participants' consumption of vegetables, fruits, and whole grains, and reduce the consumption of added sugars and saturated fats.⁸

Whether the posted menus match the foods served to the children attending CACFP-enrolled ECE centers is an important question, particularly with the eminent meal pattern changes. Only a few studies have examined the match between posted menus in ECE centers and the foods and beverages actually served to the children.^{10,11} Another concern is the amount of menu changes that the centers will have to make to meet the new guidelines.¹² The paper presents results from a study that assessed 1) the agreement of posted menus to the foods served to 3–5 year old children attending CACFP-enrolled facilities; and 2) how closely the facilities met the new meal patterns and Best Practices.

METHODS

Early childhood education centers operating in the Houston, Texas, area enrolled in the CACFP participated in this study which included on-site observations and menu coding. This study was approved by the IRB of Baylor College of Medicine.

Sample Recruitment

A convenience sample of 12 ECE centers operating in Houston, Texas, were invited to participate in the study. These centers were invited since at the time of recruitment, they were not participating in any other projects that required changes in menu. Nine ECE centers agreed to participate in this study. Four were day care centers with a mean of 52 3–5 year old children per center (range 14–70). These were recruited through their sponsor, Food For Kids Inc. Five were Head Start centers with a mean of 99 3–5 year old children per center (range 40–132). These were recruited with the help of the Nutrition Director of the Head Start Program at the Harris County Department of Education. Two of the day care centers served meals catered by a private company and 2 prepared meals in their kitchens. The Head Start Centers also prepared meals in their kitchens. The ECE centers were located across the different parts of Houston and served children from different ethnic groups - about 55% Hispanic, 39% African-American, 3% White, and 3% other (Asian, American Indian/Alaska Native, Native Hawaiian/Pacific Islander).

Procedures

The posted menus were obtained from each center. To assess foods actually served to the children, trained observers visited each center to conduct anonymous observations during breakfast, lunch, and snack meal service from February through May of 2016.

The observers were trained for conducting dietary observations using the protocol developed by Ball and colleagues¹³ to assess food intake of young children in child care using visual portion size estimation, and used in previous studies.^{13,14} The observers attended a one-day training to review protocol and observation form, and to classify the foods into correct categories. Each observer conducted two practice observations, with the research coordinator also recording consumption. Inter-rater reliability was assessed and practice continued until there was acceptable (90%) agreement.

Each center was observed 6/8 times by the same observer on different weekdays. One classroom was observed each day, following an observation protocol used in previous studies.^{13,14} The research coordinator conducted quality control checks with each observer once a month for quality control.

A meal observation form was created that provided space for the posted menu items and deviations from the posted menu. If the posted menu items was served, it was considered a match. Deviations from the posted menu included substitutions - items served in place of a posted menu item; additions - items served that were not on the posted menu; and omissions - foods on the menu but not served. Substitutions that were not acceptable, i.e., not in the same food component, were also coded.

Data Analyses

A spreadsheet was created in Microsoft Excel (Version 3, Chicago, 2013) for each meal (breakfast, lunch, snacks). For each day of observation, each food item was recorded and agreement to the posted menu was then coded as a match, substitution (acceptable), substitution (unacceptable), omission, or addition. The menus and spreadsheets were reviewed twice for accuracy, then uploaded into IBM SPSS for Windows (version 24, NY) for analyses. The menu match, the number of days and percent of the total days observed when there was no deviation from the posted menu for each meal, was calculated. Then the frequencies and percentages of matches, substitutions, additions, and omissions were calculated for each food component in the CACFP menu guidelines: milk, yogurt/cheese, fruit, 100% fruit juice, vegetables, grains, and protein foods, and for desserts. The menu total match was created by summing the menu match plus the acceptable substitutions. Finally, the menus were compared to the new CACFP meal guidelines and Best Practices⁸ for each food component and were categorized as “fully met”, “partially met”, or “not met” and the changes needed for the menus to conform to the new meal guidelines and Best Practices were identified.

RESULTS

Breakfast meals were observed on 37 days at 5 facilities. There were no deviations from the posted menu on 22 days (59.6%), and no unacceptable substitutions, omissions, or additions

(Table 1). Non-fat or 1% milk was served on all days. Based on analysis of the menus, 100% of the menus as served to the children met all the CACFP guidelines. Fruit juice was not served at any breakfast meal.

Lunch meals were observed on 69 days at 9 facilities. On 2 days, the posted menu for the day was Cook's Choice, so these days were not coded or included in the analyses. All posted menu and food components served matched on 36 days (53.7%) (Table 1). Non-fat or 1% milk was served on all days. There were no unacceptable substitutions but there were 4 omissions of fruit. Based on these results, the menu total match was 95.5%. The CACFP guidelines were met for all food components except fruit (95.2%). There were 5 additions (2 yogurt/cheese and 2 vegetable food components, and 1 dessert serving). A fruit and a vegetable serving were offered on 61 of the days (91%) and 2 servings of vegetables were offered on 6 days (9%).

Snacks were observed on 66 days at the 9 facilities. All posted menu and food components served matched on 50 days (75.8%) (Table 1). There were no unacceptable substitutions but there were 4 omissions (2 fruit, 2 vegetables) reducing the menu match of fruit to 89.4% and 84.7% for vegetables. The menu total match was 93.9%. There were 13 additions (2 milk, 1 yogurt/cheese, 1 fruit, 1 100% fruit juice, 1 vegetable, and 1 protein food components, and 4 water and 2 dessert servings).

A comparison of the new menu changes and the 2016 menus is found in Table 2. Serving a greater variety of fruit and vegetables at lunch was partially met; on 61 of 66 days both a fruit and a vegetable serving were offered. Juice was limited to once per day and only served at snack on 19 of 66 days observed. However, 1 center did offer 100% fruit juice for every snack. Whole grain foods were offered, but not at least once per day. A meat/meat alternate was offered for breakfast 2 or fewer times per week. Some of the yogurt and breakfast cereals did not meet the lower limit for sugar per serving. All centers served only nonfat or 1% milk. No flavored milk was offered.

The only optional Best Practices that was fully met was serving only unflavored milk (Table 3). The fruit and vegetable Best Practices were partially met. Of the 66 snack days observed, a fruit or vegetable was served on 52 days: [vegetable - 13 days, a fruit - 20 days (8 fresh, 1 dried, 4 frozen and 7 canned), and 100% fruit juice - 19 days]. There was a variety fruit and vegetables. At lunch, fruit was served on 57 days; 33% fresh and 52% canned. Of the vegetables offered for lunch during the observation days, 23 (34%) were red-orange, 7 (10%) dark green, 28 (42%) other, 4 (6%) legumes and 5 (8%) starchy. However, the weekly posted menus did not offer at least 1 serving of the different types of vegetables during the menu cycle except for other (1.2 to 2.2 servings) and red-orange vegetables (1.2 to 2.2 servings). The mean weekly servings of legumes offered ranged from 0.2 to 1.8; 0.8 to 3.2 for red-orange vegetables, 0 to 0.8 servings for dark green vegetables, and 0.6 to 1.4 for starchy vegetables.

Providing only lower fat meat and meat alternates, limiting processed meats to less than 1 serving per week, and serving only natural cheeses and choosing low-fat or reduced fat cheeses were not met. Limiting pre-fried foods to 1 servings per week was partially met, as

was avoiding sources of added sugar like sweet toppings. No sugar sweetened beverages were offered.

DISCUSSION

In this study with 9 ECE centers participating in CACFP, the match between the posted menus and foods actually served to children was high when the acceptable menu substitutions were considered. As stated in the introduction, only a few studies have examined the match between posted menus in ECE centers and the foods and beverages actually served to the children. In 2005, the menus from 84 ECE centers in North Carolina were compared to the actual foods and beverages served to the children.¹⁰ Similar match rates for breakfast (52% and lunch (54%) were reported, but only 49% of snack meals served completely matched the menus.¹⁰ Substitutions were not reported.¹⁰ In New York City, menu compliance in 95 ECE centers was assessed in 2010.¹¹ The match rate for overall foods was 87%, including acceptable substitutions. The match rates for milk (93%), vegetables (74.2%), and protein foods (87.2%) were somewhat similar to rates in the current study.¹¹ The fruit match was lower at 59.6%, as was the match rate for grains (72.7%).¹¹ However, both these studies utilized the old CACFP meal guidelines.

With the new CACFP meal guidelines implemented in Fall 2017, it is important to assess how many changes to current CACFP menus are needed to meet the new guidelines. Only one study conducted in northeastern state of Connecticut was found where observers in 38 ECE centers assessed the CACFP menu items and what changes would be needed to meet the new guidelines.¹² For the mandatory guidelines, similar to the current study, some centers only served 1 fruit or vegetable serving at lunch (1/2 cup) compared to the new guideline of both a fruit and vegetable serving (1/4 cup each). Fresh, frozen and canned fruit items were served. Six of the 38 centers served 2% milk and 2 served flavored milk¹²; whereas no centers in the current study did so. Similar to the Schwartz et al. study, the guideline for 1 whole grain-rich serving per day was not met in the current study as well. This finding is interesting considering similarities in the results between the studies conducted in the very different geographical locations serving ethnically diverse low-income groups.

For the Best Practices related to lunch, the current study found that fruit juice was not served often, nor were legumes. Additionally, regular beef and full fat cheese products were commonly served. These are similar to the findings from the study by Schwartz et al.¹² The use of non-creditable food items that contain added sugars was not reported in the previous study.¹² These items were available a very limited number of times in the current study.

Both the previous study¹² and the current study identified which of the new CACFP guidelines will need the most effort to change. Serving a variety of vegetables, including dark green, red orange, other and starchy vegetables as well as legumes, will require careful menu planning. Schwartz found that serving both a fruit and vegetable on the CACFP menu resulted in a significantly greater amount of fruit and vegetables served on children's plates and consumed, compared to children in ECE centers where only 1 fruit or vegetable were served.¹²

Providing at least 1 whole grain food per day may be another challenge. First, identifying what is a 100% whole grain food could be difficult. Schwartz¹² reported that CACFP staff believed their centers were serving 100% whole grain foods just because the bread was not white. Moreover, although being labeled as a whole wheat product, some of the grain products might also contain a small amount of refined grains. Procurement and acceptance of whole grain foods may be another issue, as it was for a similar change in the National School Lunch Program meal requirements.¹⁵ The added cost for whole grain foods may be an additional barrier.⁶

The elimination of desserts (such as cookies, sweet pie crusts, doughnuts, cereal bars, breakfast bars, granola bars, sweet rolls, toaster pastries, cake, brownies) and reduced use of foods with added sugars such as yogurt and cereal, as well as lower fat meats and other protein products will also require menu changes. In order to successfully implement these menu changes, as noted in the National Academy of Medicine report⁶, engaging stakeholder and providing adequate training and nutrition education for staff will be needed.

Several limitations should be noted. The study was conducted in 9 ECE centers in the Houston area. Thus the findings might not generalize to Texas and the US. There was non-random selection of the centers and days of observation; however, the centers did not know which days were to be observed. Another limitation could be the possibility of misclassification of the observed foods and not taking type 1 or type 2 errors into consideration.

Implications for Research and Practice

The findings from this study are encouraging in that ECE centers enrolled in CACFP were providing meals that met the current CACFP guidelines. Some menu improvements will be needed for the centers to meet the new guidelines and Best Practices. Regular monitoring of menus will be needed in order to identify problems, provide assistance as needed, and ensure consistency with the latest dietary guidelines. Agreement with the new CACFP meal pattern guidelines will: 1. improve alignment with current dietary guidance; 2. achieve satisfactory consistency with standards and regulations of three other USDA nutrition programs (Special Supplemental Nutrition Program for Women, Infants, and Children - WIC, National School Lunch Program, and School Breakfast Program) and with recommendations for competitive foods; and 3. address the high prevalence of childhood obesity and other health concerns that result from limited access to nutritious foods. More research is needed to fill the gaps in knowledge of the nutritional needs of the CACFP recipients and the effects of the new requirements on participants' total and program-related dietary intakes as well as on the food and nutrient content of the meals and snacks served. Regular monitoring of the program as well as research using periodic evaluations will help contribute towards more healthful food and nutrient intakes by CACFP participants, especially in view of the high prevalence of obesity in the US.

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TABLE 1

THE MATCHES, ACCEPTABLE SUBSTITUTION, OMISSIONS, AND ADDITIONS BETWEEN POSTED MENUS AND FOOD COMPONENTS SERVED AT CACFP BREAKFAST, LUNCH AND SNACK MEALS

Food Component	# days on menu	Menu Match [‡] n (%)	Substitution [‡] n (%)	Total Match [‡] n (%)	Omission [‡] n (%)	Addition [‡] n (%)
Breakfast (59.6% menu match; 100% total match)						
Milk	37	37 (100)		37 (100)		
Fruit	37	27 (73.0)	10 (27.0)	37 (100)		
100% Fruit juice	0					
Grains	37	25 (68)	12 (32)	37 (100)		
Protein foods	12	5 (41.7)	7 (58.3)	12 (100)		
Lunch (53.7% menu match; 95.5% total match)						
Milk	67	67 (100)		67 (100)		
Yoghurt/cheese	0					2 (2.9)
Fruit	62	44 (71.0)	15 (24.2)	59 (95.2)	3 (4.8)	2 (2.9)
100% Fruit juice	0					
Vegetables	67	47 (70.1)	20 (29.9)	67 (100)		
Grains	67	56 (83.6)	11 (16.4)	67 (100)		
Protein foods	67	54 (80.6)	13 (19.4)	67 (100)		
Desserts	0					1 (1.5)
Snack (75.7% menu match; 93.9% total match)						
Milk	3	3 (100)		3 (100)		2 (3.1)
Yoghurt/cheese	10	8 (80.0)	2 (20.0)	10 (100)		1 (1.6)
Fruit	19	15 (78.8)	2 (10.6)	17 (89.4)	2 (10.6)	1 (1.6)
100% Fruit juice	19	16 (84.2)	3 (15.8)	19 (100)		1 (1.6)
Vegetables	13	8 (61.6)	3 (23.1)	11 (84.7)	2 (15.3)	1 (1.6)
Grains	56	47 (83.9)	9 (16.1)	56 (100)		0
Protein foods	19	14 (73.7)	5 (26.4)	19 (100)		1 (1.6)
Desserts	0					2 (3.1)

The above data is based on menus and food components served at 37 breakfast, 67 lunch and 66 snack meals observed in 9 childcare facilities participating in the CACFP in Houston, TX in 2016.

£ Calculated based on number of days served

€ Menu match + Substitutions

€ Calculated based on total number of days observed for the meal

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TABLE 2

A COMPARISON OF 2016 MENUS FROM 9 TEXAS CHILD CARE FACILITIES AND THE MAJOR CHANGES TO THE NEW CACFP MEAL PATTERNS IMPLEMENTED IN OCTOBER, 2017

	Fully met	Partially met	Not met
Greater Variety of Vegetables and Fruit			
The combined fruit and vegetable component is now a separate vegetable component and a separate fruit component		x	
Juice is limited to once per day	x		
More Whole Grains			
At least 1 serving of grains per day must be whole grain-rich		x	
Grain-based desserts no longer count towards the grain component	x		
More Protein Options			
Meat and meat alternates may be served in place of the entire grains component at breakfast 3 times per week	x		
Less Added Sugar			
Yogurt must contain no more than 23 g of sugar/6 ounces			x
Breakfast cereals must contain 6 g of sugar/dry ounce			x
Milk			
Unflavored low-fat/fat-free milk served to 2–5 year old children	x		

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TABLE 3

A COMPARISON OF 2016 MENUS FROM 9 TEXAS CHILD CARE FACILITIES AND THE OPTIONAL BEST PRACTICES FOR THE NEW CACFP MEAL PATTERNS, IMPLEMENTED IN OCTOBER, 2017

	Fully met	Partially met	Not met
Vegetables and Fruit			
Make at least 1 of the 2 required components of a snack a vegetable or a fruit.		x	
Serve a variety of fruits and choose whole fruits (fresh, canned, dried, or frozen) more often than juice.		x	
Provide at least 1 serving per week of dark green, red and orange, starchy, and other vegetables and legumes.		x	
Grains			
Provide at least 2 servings of whole grain-rich grains per day.			x
Meat and Meat Alternates			
Serve only lean meats, nuts, and legumes.			x
Limit serving processed meats to 1 serving/week.			x
Serve only natural cheeses and choose low-fat or reduced fat-cheeses.			x
Milk			
Serve only unflavored milk to all participants (< 6 years of age).	x		
Other			
Limit serving purchased pre-fried foods to 1 serving/week.	x		
Avoid serving non-creditable foods that are sources of added sugars, such as sweet toppings (e.g., honey, jam, syrup), mix-in ingredients for yogurt (e.g., honey, candy, or cookie pieces), and sugar sweetened beverages (e.g., fruit drinks or sodas).	x		

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