Nutrition-Related Practices of Family Child Care Providers and Differences by Ethnicity

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Abstract

Background: Child care settings play an important role in shaping children's eating behaviors; yet few studies have included family child care homes (FCCHs). We examined provider-reported nutrition-related practices in FCCHs and observed adherence to nutrition guidelines from the Nutrition and Physical Activity Self-Assessment for Child Care (NAP SACC), exploring differences by provider ethnicity.

Methods: We assessed baseline data from a cluster-randomized trial, including surveys with FCCH providers and observational data collected at the FCCH. We examined provider-reported nutrition-related practices and if providers met NAP SACC guidelines using observational data. Differences by ethnicity were assessed using chi-square and multivariate log-linear analysis adjusting for education.

Results: Providers completed a telephone survey ($n=166$, 100% female and 72% Hispanic) and participated in 2 full-day observations ($n=119$). Many providers reported engaging in positive nutrition-related practices. Significant differences by ethnicity included the following: Hispanic providers less likely to report feeding practices that were responsive to children's self-regulation, but also less likely to report eating and drinking unhealthy foods/beverages in front of children and having screens on during meals and more likely to report seeking nutrition trainings. Using observational data, only 10 of 26 NAP SACC practices were met by >60% of providers. Few ethnic differences in meeting guidelines were found (7 of 26 practices).

Conclusions: While providers engage in some positive nutrition practices, improvement is needed to ensure that all providers actually meet evidence-based guidelines. Ethnic differences in certain practices underscore the need for culturally relevant trainings. Trial registration number: NCT02452645.

Keywords: child care; family child care homes; feeding practices; NAP SACC; nutrition; preschool children

Introduction

More than one fourth of preschool-aged children (2–5 years) in the United States are overweight or obese, with low-income and minority children, including Hispanics, disproportionately affected.¹ Childhood obesity is associated with long-term adverse health outcomes and greater likelihood of obesity later in life; thus, understanding early risk factors, such as unhealthy dietary behaviors, is critical.² Dietary behaviors of

preschoolers, especially low-income and ethnic minorities, do not meet national guidelines.^{3–6}

Child care settings play an important role in influencing children's dietary behaviors. Approximately 80% of preschool-aged children with working parents are in some form of child care,^{7–9} and may consume 50%–70% of their daily food in this setting.^{10–12} The foods child care providers serve,^{13–17} and the nutrition-related practices they implement can impact children's dietary behaviors.^{7,8,10,18–25} However, most of these studies have been

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conducted in child care centers and not family child care homes (FCCHs), which are the second most utilized form of nonrelative child care, caring for >1.6 million US children.^{26,27}

Children enrolled in FCCHs may be at increased risk of obesity compared with children in center-based care,^{28,29} highlighting the need to better understand how family child care providers (FCCPs) influence children's dietary behaviors. Therefore, the purposes of this article are to examine provider-reported nutrition-related practices and to assess whether observed nutrition-related practices of FCCPs meet nutrition guidelines from the Nutrition and Physical Activity Self-Assessment for Child Care (NAP SACC).^{30–32} Given the ethnic disparities seen in childhood obesity and qualitative data indicating potential differences in nutrition-related practices by child care provider ethnicity,^{33–36} we examined nutrition-related practices overall and by Hispanic ethnicity.

Methods

This study utilizes baseline data from an ongoing cluster-randomized trial, Healthy Start/Comienzos Sanos, that is evaluating the efficacy of a multicomponent intervention to improve the food and physical activity environments of FCCHs, as well as the diet, physical activity, and screen-time behaviors of the 2- to 5-year-old children in their care.³⁷ In the first year of the project, 7 focus groups were held with 45 FCCPs to inform the development of the intervention and evaluation.^{33,37} The Institutional Review Boards of Brown University, University of Rhode Island, and University of Connecticut approved all study procedures and materials. Details about study recruitment, intervention, and evaluation are discussed elsewhere,³⁷ but methods relevant to the current analyses are described below. Baseline data collection was conducted from November 2015 until July 2018.

To be eligible, providers had to have a FCCH within 60 miles of Providence that had been in operation for at least 6 months. The provider had to read and speak Spanish or English, and care for at least one unrelated 2–5 years old child for at least 10 hours per week who ate at least one meal and snack per day at the FCCH. Eligible providers completed a 30-minute baseline telephone survey, followed by a 30-minute in-person survey at the FCCH. Once parents of eligible 2- to 5-year-old children consented, a 2-day observation was scheduled. Participants received \$25 for completing the baseline survey and \$50 for the 2-day observation.

Measures

Demographics. Providers reported their gender, ethnicity, and race on the telephone survey and the following variables on the in-person survey: age, household income, marital status, education, years in the United States, country of origin, years as a child care professional, number of children currently in their care (and how many are their own children or grandchildren), and whether the FCCH accepts Child and Adult Care Food Program (CACFP) benefits (Table 1).

Provider-reported nutrition practices. Providers were asked the frequency of nutrition-related practices on the telephone survey using questions from the staff general questionnaire portion of the validated self-reported version of the Environment and Policy Assessment and Observation (EPAO-SR).³⁸ Only nutrition-related questions were included in this analysis: the reported frequencies (never, rarely, sometimes, often, very often, or always) of both positive (*i.e.*, role modeling, self-regulation, praise and encouragement for healthy eating) and negative practices (*i.e.*, using food as a reward, screen time during meals) were included. These items were included given that some of these practices have been found to be associated with children's healthy eating (positive practices), while some practices have been associated with less healthy eating (negative practices).^{18,20,24,25,39–42} Additional items assessed agreement (agree strongly to disagree strongly) with statements about seeking professional nutrition training and provider communication with parents and children regarding healthy eating (Table 2).

The telephone survey also included seven questions modified from the validated NAP SACC tool.³² These questions assessed how often (per day, week, or month) a provider reported offering fried meats, fried potatoes, other fried foods, high-fat meats, sweets, salty snack foods, and 100% juice. Final responses were converted into a per weekly basis. For juice, we also collected the typical amount offered each time and calculated ounces served per week.

Cognitive assessment testing was conducted with survey instruments in English and Spanish with six FCCPs to assess participants' comprehension, terminology, and cultural appropriateness. Survey instruments were revised based on this testing procedure.

FCCH observation. The EPAO was developed and validated to observe practices, environments, and policies within child care centers and FCCHs that influence children's nutrition, physical activity, and sedentary behavior.^{30,43–47} We used the adapted EPAO for FCCH, which has good inter-rater reliability between data collectors for most nutrition measures.⁴⁸

Based on formative research, we made additional modifications to reflect cultural differences in our population. For example, we added food items such as plantains, yautia, and yucca as starches in the "Potatoes" section and "other sugary drinks" to the "Beverages" section to capture homemade sugary beverages. We updated the EPAO to include all possible food items at every meal/snack because focus group participants talked about sometimes feeding children more of a "dinner" meal as an afternoon snack or a "breakfast" meal as a morning snack if they were concerned about children not eating those meals at home. We also modified the response categories for some variables (self-regulation, mealtime environment, role modeling, and encouragement) from a numerical scale to be "never," "a little," "sometimes," or "a lot." During our training and

Table 1. Family Child Care Provider Demographics by Ethnicity

Variable	Category	All % (n)	Hispanic ^a % (n)	Non-Hispanic ^a % (n)	p
			72%	28%	
Gender ^a (n = 166)	Female	100 (166)	100 (119)	100 (47)	NA
Age ^b (n = 127)	<34	6.5 (8)	4.9 (4)	9.8 (4)	0.1557
	35–44	22.8 (28)	19.5 (16)	29.3 (12)	
	45–54	40.7 (50)	46.3 (38)	29.3 (12)	
	55–64	26.8 (33)	24.4 (20)	31.7 (13)	
	65+	3.3 (4)	4.9 (4)	0 (0)	
Mean age ^b (n = 127)		48.4	49.7	47.2	0.1658
Provider's race ^a (n = 145)	American Indian/Alaska Native	5.5 (8)	8.2 (8)	0 (0)	<0.0001*
	Black/African American	15.9 (23)	17.3 (17)	12.8 (6)	
	Native Hawaiian/Pacific Islander	2.8 (4)	3.1 (3)	2.1 (1)	
	White/Caucasian	41.4 (60)	24.5 (24)	76.6 (36)	
	Unknown	32.4 (47)	45.9 (45)	4.3 (2)	
	More than one	2.1 (3)	1 (1)	4.3 (2)	
Which of the following best describes your level of education? ^b (n = 123)	No HS diploma or GED	11.4 (14)	15.9 (13)	2.4 (1)	0.0248*
	HS graduate or GED	31.7 (39)	35.4 (29)	24.4 (10)	
	Associate's degree	38.2 (47)	35.4 (29)	43.9 (18)	
	Bachelor's degree	15.4 (19)	9.8 (8)	26.8 (11)	
	Master's degree or higher	3.3 (4)	3.7 (3)	2.4 (1)	
What is your total yearly household income from all sources? ^b (n = 119)	<\$25,000	14.3 (17)	20 (16)	2.6 (1)	<0.0001*
	\$25,001–\$50,000	48.7 (58)	58.8 (47)	28.2 (11)	
	\$50,001–\$75,000	21 (25)	17.5 (14)	28.2 (11)	
	\$75,001–\$100,000	10.1 (12)	3.8 (3)	23.1 (9)	
	≥\$100,001	5.9 (7)	0 (0)	17.9 (7)	
Which country were you born in? ^b (n = 118)	United States	29.7 (35)	6.3 (5)	76.9 (30)	<0.0001*
	Caribbean	48.3 (57)	69.6 (55)	5.1 (2)	
	South America	13.6 (16)	19 (15)	2.6 (1)	
	Central America	3.4 (4)	5.1 (4)	0 (0)	
	Africa	3.4 (4)	0 (0)	10.3 (4)	
	Other	1.7 (2)	0 (0)	5.1 (2)	
What is your marital status? ^b (n = 123)	Single, never married	9.8 (12)	11 (9)	7.3 (3)	0.4066
	Married or living with a partner	73.2 (90)	69.5 (57)	80.5 (33)	
	Divorced	8.9 (11)	8.5 (7)	9.8 (4)	
	Separated	4.9 (6)	7.3 (6)	0 (0)	
	Widowed	3.3 (4)	3.7 (3)	2.4 (1)	

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Table 1. Family Child Care Provider Demographics by Ethnicity *continued*

Variable	Category	All % (n)	Hispanic ^a % (n)	Non-Hispanic ^a % (n)	p
How many of those enrolled children are your own children or grandchildren? ^b (n = 123)	0	64.2 (79)	65.9 (54)	61 (25)	0.6675
	1	18.7 (23)	18.3 (15)	19.5 (8)	
	2	13 (16)	12.2 (10)	14.6 (6)	
	3	3.3 (4)	3.7 (3)	2.4 (1)	
	4	0.8 (1)	0 (0)	2.4 (1)	
Does your child care home accept CACFP subsidies (also known as the food program)? ^b (n = 123)	Yes	82.1 (101)	81.7 (67)	82.9 (34)	0.8679
	No	17.9 (22)	18.3 (15)	17.1 (7)	
Mean years living in the United States ^b		26.1	22.5	29.6	0.021*
Mean No. of children in FCCH ^b (range 1–16)		7.8	7.1	8.6	0.0075*
Mean years working in early childhood profession ^b		13.6	10.9	16.2	0.0009*

^aPhone survey.^bIn-person survey.* $p < 0.05$.

CACFP, Child and Adult Care Food Program; FCCH, family child care home.

pilot phase, research staff found that using this scale was more intuitive and meaningful since we were trying to capture an overall picture of what the provider is doing.

One field observer conducted the EPAO in each FCCH for 2 full days, which included at least two eating occasions (breakfast, morning snack, lunch, afternoon snack, and/or dinner). Observations began before children ate breakfast and ended when children left for the day. Nutrition measures included types and frequency of foods and beverages served, the feeding environment, feeding practices, and nutrition education. We also asked FCCP for copies of their written nutrition policies. Field observers underwent intensive multiday training, including video scenarios and mock practice field observations.^{44,48} To receive EPAO certification, field observers had to achieve 85% agreement with “gold standard” staff from the University of North Carolina who developed the EPAO. Extensive quality control and retraining were conducted on an ongoing basis.^{44,48}

Meeting NAP SACC guidelines. To determine whether FCCPs met NAP SACC nutrition guidelines, we developed algorithms to compare each observed nutrition practice with its associated NAP SACC guideline (Table 3). Because a few nutrition practices referred to a time frame that went beyond the project’s 2-day observation period, both observation and provider-reported data from the NAP SACC survey questions were used in the algorithm for servings of juice, salty/sugary/fatty snack foods, high-fat meats, and fried foods (Table 3).

Statistical Analysis

We used three different baseline data sources from the ongoing trial; thus, the sample size differs for some variables as not all providers who completed the baseline telephone survey ($n = 166$) went on to complete the in-person survey ($n = 127$) or 2-day observation ($n = 119$). Some providers left the study before completing all assessments or could not get parental consent for observations. We examined the frequency of provider-reported nutrition practices (Table 2) and the proportion of providers whose observed practices met and did not meet NAP SACC guidelines (Table 4), and then examined associations by ethnicity (Hispanic vs. Non-Hispanic) (Tables 2 and 4).

Chi-square and analysis of variance were used to test if demographics differed by ethnicity. We used chi-square or Fisher’s exact test to assess ethnic differences in provider-reported nutrition practices and the percentage of providers meeting or not meeting NAP SACC guidelines. We also performed multivariate log-linear analysis to create a saturated/custom (nonhierarchical) model for the associations between ethnicity and provider-reported practices and for meeting NAP SACC guidelines, adjusting for FCCP education.

In addition, to control for multiple comparisons, we constructed three separate multivariate log-linear models with ethnicity as the dependent variable. The predictors in the three models were as follows: (1) 13 positively reported nutrition practices, (2) 10 negatively reported nutrition practices, and (3) 26 variables of whether FCCPs met NAP SACC guidelines. In each model, multivariate log-linear

Table 2. Family Child Care Providers Self-Reported Nutrition-Related Practices by Ethnicity

	Category	All % (n)	Hispanic % (n)	Non-Hispanic % (n)	p	Adjusted ^a		
						Estimate (λ)	Z	p
Positive nutrition practices								
Encourage children to wait a few minutes before getting seconds so they can decide if they are still hungry.					0.0498*	−3.458	−4.496	0.001*
	Never	24.8 (41)	28 (33)	17 (8)				
	Rarely	16.4 (27)	19.5 (23)	8.5 (4)				
	Sometimes	23 (38)	20.3 (24)	29.8 (14)				
	Often	11.5 (19)	10.2 (12)	14.9 (7)				
	Very often	3.6 (6)	1.7 (2)	8.5 (4)				
	Always	18.8 (31)	19.5 (23)	17 (8)				
	Never serves seconds	1.8 (3)	0.8 (1)	4.3 (2)				
Let children decide for themselves how much they should eat.					0.0002*	0.729	3.834	<0.001*
	Never	22.9 (38)	28.6 (34)	8.5 (4)				
	Rarely	6 (10)	6.7 (8)	4.3 (2)				
	Sometimes	14.5 (24)	8.4 (10)	29.8 (14)				
	Often	12.7 (21)	12.6 (15)	12.8 (6)				
	Very often	8.4 (14)	5 (6)	17 (8)				
	Always	35.5 (59)	38.7 (46)	27.7 (13)				
Ask children if they are hungry before serving them seconds.					0.4805	−4.573	−4.076	<0.001*
	Never	28.9 (48)	29.4 (35)	27.7 (13)				
	Rarely	10.2 (17)	10.9 (13)	8.5 (4)				
	Sometimes	11.4 (19)	11.8 (14)	10.6 (5)				
	Often	11.4 (19)	14.3 (17)	4.3 (2)				
	Very often	1.8 (3)	1.7 (2)	2.1 (1)				
	Always	34.9 (58)	31.1 (37)	44.7 (21)				
	Never serves seconds	1.2 (2)	0.8 (1)	2.1 (1)				
Wait to give children seconds until they have finished another food on their plate.					0.0025*	−4.573	−4.076	<0.001*
	Never	16.3 (27)	16.8 (20)	14.9 (7)				
	Rarely	7.8 (13)	8.4 (10)	6.4 (3)				
	Sometimes	16.9 (28)	11.8 (14)	29.8 (14)				
	Often	15.7 (26)	18.5 (22)	8.5 (4)				
	Very often	1.8 (3)	0 (0)	6.4 (3)				
	Always	39.8 (66)	43.7 (52)	29.8 (14)				
	Never serves seconds	1.8 (3)	0.8 (1)	4.3 (2)				

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Table 2. Family Child Care Providers Self-Reported Nutrition-Related Practices by Ethnicity *continued*

	Category	All % (n)	Hispanic % (n)	Non-Hispanic % (n)	p	Adjusted ^a		
						Estimate (λ)	Z	p
Ask the children if they are full before you remove an unfinished plate of food.					0.1996	−0.478	0.912	0.362
	Never	16.9 (28)	20.2 (24)	8.5 (4)				
	Rarely	5.4 (9)	6.7 (8)	2.1 (1)				
	Sometimes	15.1 (25)	14.3 (17)	17 (8)				
	Often	9 (15)	9.2 (11)	8.5 (4)				
	Very often	3 (5)	1.7 (2)	6.4 (3)				
	Always	50.6 (84)	47.9 (57)	57.4 (27)				
Encourage children to eat fruits and vegetables by telling them that they taste good.					0.0039*	−0.269	−0.515	0.607
	Never	4.8 (8)	3.4 (4)	8.5 (4)				
	Rarely	0.6 (1)	0 (0)	2.1 (1)				
	Sometimes	7.2 (12)	4.2 (5)	14.9 (7)				
	Often	19.3 (32)	18.5 (22)	21.3 (10)				
	Very often	5.4 (9)	3.4 (4)	10.6 (5)				
	Always	62.7 (104)	70.6 (84)	42.6 (20)				
Encourage children to eat a wide variety of foods.					0.3531	−0.368	0.523	0.704
	Never	0.6 (1)	0.8 (1)	0 (0)				
	Rarely	1.2 (2)	1.7 (2)	0 (0)				
	Sometimes	9.6 (16)	10.1 (12)	8.5 (4)				
	Often	27.1 (45)	31.1 (37)	17 (8)				
	Very often	3.6 (6)	3.4 (4)	4.3 (2)				
	Always	57.8 (96)	52.9 (63)	70.2 (33)				
Praise children when they try a new food.					0.4568	−0.216	−0.415	0.678
	Never	0.6 (1)	0 (0)	2.1 (1)				
	Rarely	1.2 (2)	0.8 (1)	2.1 (1)				
	Sometimes	8.4 (14)	8.4 (10)	8.5 (4)				
	Often	19.3 (32)	21.8 (26)	12.8 (6)				
	Very often	9 (15)	9.2 (11)	8.5 (4)				
	Always	61.4 (102)	59.7 (71)	66 (31)				
Show children that you enjoy fruits and vegetables so the children are more likely to eat them.					0.3029	−0.324	−0.621	0.535
	Rarely	0.6 (1)	0 (0)	2.1 (1)				
	Sometimes	10.8 (18)	12.6 (15)	6.4 (3)				
	Often	21.1 (35)	22.7 (27)	17 (8)				
	Very often	10.8 (18)	10.9 (13)	10.6 (5)				
	Always	56.6 (94)	53.8 (64)	63.8 (30)				

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Table 2. Family Child Care Providers Self-Reported Nutrition-Related Practices by Ethnicity *continued*

	Category	All % (n)	Hispanic % (n)	Non-Hispanic % (n)	p	Adjusted ^a		
						Estimate (λ)	Z	p
Teach the children about the foods they are eating.					0.2311	-1.017	-1.899	0.058
	Never	0.6 (1)	0.8 (1)	0 (0)				
	Rarely	1.8 (3)	1.7 (2)	2.1 (1)				
	Sometimes	17.5 (29)	16.8 (20)	19.1 (9)				
	Often	34.9 (58)	38.7 (46)	25.5 (12)				
	Very often	12 (20)	8.4 (10)	21.3 (10)				
	Always	33.1 (55)	33.6 (40)	31.9 (15)				
Talk to children about the importance of healthy eating.					0.6321	-3.880	-4.455	<0.001*
	Agree a lot	90.4 (150)	89.1 (106)	93.6 (44)				
	Agree a little	7.2 (12)	7.6 (9)	6.4 (3)				
	Neither agree nor disagree	0.6 (1)	0.8 (1)	0 (0)				
	Disagree a little	1.8 (3)	2.5 (3)	0 (0)				
Talk to parents about the importance of healthy eating.					0.5449	-4.573	-4.076	<0.001*
	Agree a lot	76.5 (127)	79 (94)	70.2 (33)				
	Agree a little	12.7 (21)	10.1 (12)	19.1 (9)				
	Neither agree nor disagree	4.8 (8)	5 (6)	4.3 (2)				
	Disagree a little	3 (5)	3.4 (4)	2.1 (1)				
	Disagree a lot	3 (5)	2.5 (3)	4.3 (2)				
Look for trainings to learn about healthy eating for children.					0.001*	-4.343	-1.017	<0.001*
	Agree a lot	82.5 (137)	89.9 (107)	63.8 (30)				
	Agree a little	13.3 (22)	7.6 (9)	27.7 (13)				
	Neither agree nor disagree	3 (5)	1.7 (2)	6.4 (3)				
	Disagree a lot	0.6 (1)	0 (0)	2.1 (1)				
Negative nutrition practices								
Promise children a reward if they eat a specific food.					0.0085*	-4.573	-4.076	<0.001*
	Never	60.8 (101)	55.5 (66)	74.5 (35)				
	Rarely	12.7 (21)	16.8 (20)	2.1 (1)				
	Sometimes	18.7 (31)	16.8 (20)	23.4 (11)				
	Often	4.8 (8)	6.7 (8)	0 (0)				
	Always	3 (5)	4.2 (5)	0 (0)				

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Table 2. Family Child Care Providers Self-Reported Nutrition-Related Practices by Ethnicity *continued*

	Category	All % (n)	Hispanic % (n)	Non-Hispanic % (n)	p	Adjusted ^a		
						Estimate (λ)	Z	p
Reward children with food or sweets when they are well behaved.					0.5821	-0.133	-0.382	0.265
	Never	72.9 (121)	73.1 (87)	72.3 (34)				
	Rarely	12.7 (21)	11.8 (14)	14.9 (7)				
	Sometimes	10.8 (18)	10.1 (12)	12.8 (6)				
	Often	2.4 (4)	3.4 (4)	0 (0)				
	Always	1.2 (2)	1.7 (2)	0 (0)				
Encourage children to eat by using food as a reward.					0.4598	-3.880	-4.454	<0.001*
	Never	61.4 (102)	58 (69)	70.2 (33)				
	Rarely	18.1 (30)	20.2 (24)	12.8 (6)				
	Sometimes	14.5 (24)	14.3 (17)	14.9 (7)				
	Often	3 (5)	4.2 (5)	0 (0)				
	Very often	1.2 (2)	1.7 (2)	0 (0)				
	Always	1.8 (3)	1.7 (2)	2.1 (1)				
Give children something to eat to make them feel better when they are upset.					0.3762	-3.474	-4.518	<0.001*
	Never	68.5 (113)	65.3 (77)	76.6 (36)				
	Rarely	17.6 (29)	21.2 (25)	8.5 (4)				
	Sometimes	11.5 (19)	11 (13)	12.8 (6)				
	Often	1.8 (3)	1.7 (2)	2.1 (1)				
	Always	0.6 (1)	0.8 (1)	0 (0)				
Watch and guide children's eating so that they don't eat less than providers think they should.					0.1157	-0.479	-0.913	0.361
	Never	10.9 (18)	11.9 (14)	8.5 (4)				
	Rarely	7.3 (12)	5.1 (6)	12.8 (6)				
	Sometimes	10.3 (17)	7.6 (9)	17 (8)				
	Often	12.1 (20)	13.6 (16)	8.5 (4)				
	Very often	7.3 (12)	5.9 (7)	10.6 (5)				
	Always	52.1 (86)	55.9 (66)	42.6 (20)				
Encourage children to finish their food even if they say they are not hungry.					0.0054*	-1.354	-2.478	0.013*
	Never	33.1 (55)	26.9 (32)	48.9 (23)				
	Rarely	9.6 (16)	8.4 (10)	12.8 (6)				
	Sometimes	23.5 (39)	21.8 (26)	27.7 (13)				
	Often	13.3 (22)	16.8 (20)	4.3 (2)				
	Very often	1.8 (3)	2.5 (3)	0 (0)				
	Always	18.7 (31)	23.5 (28)	6.4 (3)				

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Table 2. Family Child Care Providers Self-Reported Nutrition-Related Practices by Ethnicity *continued*

	Category	All % (n)	Hispanic % (n)	Non-Hispanic % (n)	p	Adjusted ^a		
						Estimate (λ)	Z	p
Eat chips, sweets, or fast food while you are caring for children.					0.018*	−2.781	−4.266	<0.001*
	Never	84.3 (140)	89.1 (106)	72.3 (34)				
	Rarely	10.8 (18)	8.4 (10)	17 (8)				
	Sometimes	4.8 (8)	2.5 (3)	10.6 (5)				
Drink soda or other sugary drinks while you are caring for children.					0.3965	−4.573	−4.076	<0.001*
	Never	83.7 (139)	84.9 (101)	80.9 (38)				
	Rarely	9 (15)	9.2 (11)	8.5 (4)				
	Sometimes	6.6 (11)	5.9 (7)	8.5 (4)				
Leave the TV on during children's meals and snacks.					0.2914	−2.270	−3.794	0.001*
	Never	87.3 (145)	89.1 (106)	83 (39)				
	Rarely	6.6 (11)	6.7 (8)	6.4 (3)				
	Sometimes	6 (10)	4.2 (5)	10.6 (5)				
Play videos for the children during children's meals and snacks.					0.5767	−3.880	−4.455	<0.001*
	Never	86.1 (143)	88.2 (105)	80.9 (38)				
	Rarely	7.2 (12)	6.7 (8)	8.5 (4)				
	Sometimes	5.4 (9)	4.2 (5)	8.5 (4)				
	Always	1.2 (2)	0.8 (1)	2.1 (1)				

^aGeneral log-linear analysis controlled for education. Italicized values refer to estimates for the model's constant. The models have only main effects included (and no interactions).

All variables were taken from the phone survey ($n = 150$).³⁷

* $p < 0.05$.

analysis allowed for the detection of multiple-factor interactions and the simultaneous examination of pairwise associations (thus controlling for multiple comparisons).^{49,50} This analysis did not affect the significance level of the statistically significant items; hence, we did not include the results in this article. We ran descriptive analysis using SAS version 9.4 (SAS Institute, Cary, NC) and SPSS version 24 for multivariate log-linear analysis.⁵¹

Results

Providers were all female, 72% Hispanic, and 16% Black. They were on average 48.4 years old and 82% participated in CACFP (Table 1). Overall, 11% of providers had no high school education, and 19% had bachelor's degrees or higher with Hispanic providers having lower educational levels than non-Hispanic ($p < 0.03$). The lowest income providers (<\$25K) represented 14% of the

sample with Hispanic providers having lower income levels than non-Hispanic ($p < 0.001$) (Table 1).

Provider-Reported Nutrition-Related Practices

Positive nutrition practices that were reported as common (often, very often, or always) by more than two thirds of providers included the following: encouraging children to eat a variety of foods (89%), praising children when they tried a new food (90%), encouraging children to eat fruits and vegetables (87%), and role-modeling enjoyment of fruits and vegetables (89%), and teaching children about foods they are eating (80%). In addition, 96% agreed that they looked for trainings to learn about healthy eating for children, and most agreed that they talked to parents (89%) and children (98%) about the importance of healthy eating. Other positive practices were not reported as frequently. Only 57% of FCCPs reported often (often/very often/always), letting children decide for themselves how much

Table 3. Best Practices from Nutrition and Physical Activity Self-Assessment for Child Care and Algorithm for Meeting Best Practices Based on Environment and Policy Assessment and Observational Data and/or Provider-Reported Survey Data

Domain	Best practice	Requirement to meet best practice
Water	Make drinking water available for children at all times.	Observer indicates that children have self-service access to water in the FCCH (including from filled cups that are always accessible).
Water	Prompt children to drink water during each indoor and outdoor playtime.	Observer indicates that provider reminds children to drink water at least once during every outdoor play time and every active indoor play time.
Juice	Limit 100% fruit juice to no more than two, 4–6 oz servings per week.	Observer indicates that the total amount of 100% fruit juice served to a single child across the 2 days of observation does not exceed 12 oz; AND the amount of 100% fruit juice that the provider reports serving the children does not exceed 12 oz per week.
Juice	Only serve 100% fruit juice that has no sugar added.	Observer indicates that provider does not serve juice that is <100% fruit juice at any meal or snack time.
Milk	Children aged ≥ 2 should only be served skim or 1% milk.	Observer does NOT indicate that provider serves 2% or whole milk at any meal or snack time.
Milk	Never serve flavored milk (milk with chocolate or strawberry syrup, or with added sugar).	Observer does NOT indicate that provider serves flavored milk at any meal or snack time.
Sugary drinks	Never serve sugary drinks.	Observer does NOT indicate that provider serves sugary drinks (e.g., fruit flavored drink, lemonade, sports drink, soda, sweetened tea, or homemade drink with added sugar) at any meal or snack time.
Vegetables	Offer children vegetables two or more times a day.	Observer indicates that provider offers vegetables at more than one meal or snack time on each observation day.
Vegetables	Don't prepare vegetables with added fat. Small amount of vegetable oil is the healthiest option.	Observer does NOT indicate that vegetables are fried or prepared with lard, butter, margarine, or cheese sauce at any meal or snack time.
Fruit	Offer children fruits two or more times a day.	Observer indicates that provider offers fruit at more than one meal or snack time on each observation day.
Fruit	Never serve fruit in syrup or with added sugar.	Observer does NOT indicate that fruit served at any meal or snack time was canned in syrup or sweetened with added sugar.
Whole grains	Offer children high-fiber, whole-grain foods two or more times a day.	Observer indicates that FCCP offered a whole-grain food (including whole-grain breads, pastas, cereals, crackers, and granola bars) two or more times daily on both observation days (at any combination of morning meal, morning snack, lunch, and afternoon snack).
Snack foods	Limit offering children sugary, salty, or fatty foods to less than one time per week or never.	Observer indicates that the provider does NOT serve crackers, pretzels, chips, dessert items, sugary cereal, granola bars, pastries, or Pop-Tarts at any meal or snack time; AND the provider reports serving such items less than once per week.
High-fat meats	Limit serving high-fat meats to less than one time per week or never.	Observer indicates that the provider does NOT serve bacon, ham, hot dogs, bologna, salami, regular sausage, or other high-fat meat at any meal or snack time; AND the provider reports serving such items less than once per week.
Fried and prefried foods	Limit offering children fried or prefried foods to less than one time per week or never.	Observer indicates that the provider does NOT serve fried meat, fried potatoes, or other fried foods at any meal or snack time; AND the provider reports serving such items less than once per week.
Mealtime environment	Always sit at the table and eat with the children.	Observer indicates that FCCP sat with the children “a lot” at every observed meal on both days (morning meal, morning snack, lunch, and afternoon snack).
Mealtime environment	Teach children how to serve themselves or, in the case of older children, allow them to serve themselves.	Observer indicates that “children served themselves most or all foods, and decided what size portions to take” at every observed meal and snack time.
Self-regulation	Always ask children if they are full before removing an unfinished meal or snack plate.	Observer indicates that provider never removes an unfinished plate without asking a child if he or she is full at any observed meal and snack time.
Self-regulation	Always ask children if they are hungry before serving more food.	Observer indicates that provider does the following behavior “a lot” at every observed meal and snack time where seconds are served—serves seconds only after a child requests them and after asking if child is still hungry.

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Table 3. Best Practices from Nutrition and Physical Activity Self-Assessment for Child Care and Algorithm for Meeting Best Practices Based on Environment and Policy Assessment and Observational Data and/or Provider-Reported Survey Data *continued*

Domain	Best practice	Requirement to meet best practice
Self-regulation	Never pressure children to eat more food than they want.	Observer indicates that provider never required a child who ate less than half of a meal or snack to sit at the table until they cleaned their plate at any observed meal or snack time.
Self-regulation	Do not use food or sweets as a reward or reward children for finishing their plate.	Observer indicates that provider never uses food or sweets as a reward or rewards children for finishing their plate at any meal or snack time.
Role modeling	Enthusiastically role model eating and drinking healthy foods.	Observer indicates that provider enthusiastically role models eating and drinking healthy foods at least a little at $\geq 75\%$ of observed meal and snack times.
Encouragement	Always prompt and praise children for trying new or less preferred foods.	Observer indicates that provider prompts and praises children for trying new, less preferred, or healthy foods at least a little at $\geq 50\%$ of observed meal and snack times.
Nutrition education	Lead a planned nutrition education lesson one or more times per week.	Provider reports leading a planned nutrition education lesson at least once per week.
Nutrition education	Talk with children informally about nutrition and healthy eating as often as possible.	Observer indicates that provider talks with children informally about nutrition at least a little at every observed meal and snack time.
Parent communication	Provide families with information on child nutrition to help them continue healthy practices at home.	Provider reports sharing information with families about child nutrition topics, including (1) types of foods and drinks children should eat, (2) recommended serving sizes, (3) the importance of serving a variety of foods, and (4) a healthy mealtime environment.

Data source: EPAO,⁴⁸ telephone survey.³⁷

EPAO, Environment and Policy Assessment and Observation; FCCP, family child care provider.

they should eat; 48% reported often asking children if they were hungry before serving them seconds, and 57% reported often waiting to give children seconds until they had finished another food on their plate (Table 2).

The frequency of some positive provider-reported practices differed by ethnicity. Adjusting for education, non-Hispanic FCCPs were more likely than Hispanic to report encouraging children to wait a few minutes before getting seconds ($p < 0.001$), letting children decide for themselves how much they should eat ($p < 0.001$), and asking children if they are hungry before serving seconds ($p < 0.001$). They were also more likely to report talking to children and parents about the importance of healthy eating ($p < 0.001$ for both). In contrast, Hispanic providers were more likely than non-Hispanic to report waiting to give children seconds until they have finished foods on their plate ($p < 0.001$), and looking for trainings to learn about healthy eating for children ($p = 0.001$) (Table 2).

Negative nutrition-related practices that were reported rarely or never by more than two thirds of providers included the following: promising children a reward if they eat a specific food (74% rarely/never); rewarding children with food when they are well behaved (86%); encouraging children to eat by using food as a reward (80%); giving children food when they are upset (86%); leaving the TV on or playing videos during meals/snacks (94%); eating

chips, sweets, or fast food (95%); or drinking sugary drinks (93%) in front of children. In contrast, only 42% of providers reported rarely/never encouraging children to finish their food even if they are not hungry.

The frequency of some negative provider-reported practices also differed by ethnicity. Adjusting for education, non-Hispanic providers were less likely than Hispanic providers to promise children a reward if they ate a specific food ($p < 0.001$), to encourage children to eat by using food as a reward ($p < 0.001$), and to encourage children to finish their food even if they said they are not hungry ($p < 0.02$). In contrast, Hispanic providers were less likely than non-Hispanic to report giving children food when they were upset ($p < 0.001$); eating chips, sweets, or fast food while caring for children ($p < 0.001$); leaving the TV on during children's meals ($p < 0.001$); playing videos during children's meals ($p < 0.001$); or drinking sugary drinks while caring for children ($p < 0.001$) (Table 2).

Meeting NAP SACC Guidelines

More than two thirds of providers met the NAP SACC guidelines for the following observed behaviors: serving 100% fruit juice with no added sugar (97%), serving skim or 1% milk (78%), never serving flavored milk (77%), never serving sugary drinks (96%), preparing vegetables without added fat (87%), offering children fruit two or

Table 4. Percentage (and Number) of Family Child Care Providers Meeting and Not Meeting Nutrition and Physical Activity Self-Assessment for Child Care Nutrition Best Practices by Ethnicity

Variable	Category	All % (n)	Hispanic ^a % (n)	Non-Hispanic ^a % (n)	p	Adjusted ^b		
						Estimate (λ)	Z	p
Make drinking water available for children at all times ^c								
	Meeting	16.7 (18)	17.6 (13)	14.7 (5)	0.7109	0.048	0.092	0.926
	Not meeting	83.3 (90)	82.4 (61)	85.3 (29)				
Prompt children to drink water during each indoor/outdoor playtime ^c								
	Meeting	7.4 (8)	10.8 (8)	0 (0)	0.0463*	0.154	0.295	0.768
	Not meeting	92.6 (100)	89.2 (66)	100 (34)				
Limit 100% fruit juice to no more than two, 4–6 oz servings per week ^d								
	Meeting	59.3 (64)	55.4 (41)	67.6 (23)	0.2292	−0.667	−1.253	0.210
	Not meeting	40.7 (44)	44.6 (33)	32.4 (11)				
Only serve 100% fruit juice that has no sugar added ^c								
	Meeting	97.2 (105)	97.3 (72)	97.1 (33)	0.9442	1.012	1.733	0.083
	Not meeting	2.8 (3)	2.7 (2)	2.9 (1)				
Children aged ≥2 should only be served skim or 1% milk ^c								
	Meeting	78.7 (85)	75.7 (56)	85.3 (29)	0.2568	−1.316	−2.386	0.017*
	Not meeting	21.3 (23)	24.3 (18)	14.7 (5)				
Never serve flavored milk ^c								
	Meeting	77.8 (84)	74.3 (55)	85.3 (29)	0.2028	−1.274	−2.315	0.021*
	Not meeting	22.2 (24)	25.7 (19)	14.7 (5)				
Never serve sugary drinks ^c								
	Meeting	96.3 (104)	95.9 (71)	97.1 (33)	0.7761	−3.065	−4.289	<0.001*
	Not meeting	3.7 (4)	4.1 (3)	2.9 (1)				
Offer children vegetables two or more times per day ^c								
	Meeting	1.9 (2)	2.7 (2)	0 (0)	0.3332	0.212	0.407	0.684
	Not meeting	98.1 (106)	97.3 (72)	100 (34)				
Don't prepare vegetables with added fat ^c								
	Meeting	87 (94)	91.9 (68)	76.5 (26)	0.0267*	−1.813	−3.144	0.002*
	Not meeting	13 (14)	8.1 (6)	23.5 (8)				
Offer children fruits two or more times per day ^c								
	Meeting	73.1 (79)	70.3 (52)	79.4 (27)	0.3195	−1.084	−1.995	0.046*
	Not meeting	26.9 (29)	29.7 (22)	20.6 (7)				
Never serve fruit in syrup or with added sugar ^c								
	Meeting	75 (81)	79.7 (59)	64.7 (22)	0.0940	−1.156	−2.117	0.034*
	Not meeting	25 (27)	20.3 (15)	35.3 (12)				
Offer children high-fiber, whole-grain foods two or more times per day ^c								
	Meeting	4.6 (5)	5.4 (4)	2.9 (1)	0.5714	0.183	0.352	0.725
	Not meeting	95.4 (103)	94.6 (70)	97.1 (33)				

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Table 4. Percentage (and Number) of Family Child Care Providers Meeting and Not Meeting Nutrition and Physical Activity Self-Assessment for Child Care Nutrition Best Practices by Ethnicity *continued*

Variable	Category	All % (n)	Hispanic ^a % (n)	Non-Hispanic ^a % (n)	p	Adjusted ^b		
						Estimate (λ)	Z	p
Limit offering children sugary, salty, or fatty foods to less than one time per week or never ^d								
	Meeting	1.9 (2)	2.7 (2)	0 (0)	0.3332	0.212	0.407	0.684
	Not meeting	98.1 (106)	97.3 (72)	100 (34)				
Limit serving high-fat meats to less than one time per week or never ^d								
	Meeting	48.1 (52)	55.4 (41)	32.4 (11)	0.026*	−0.426	−0.807	0.419
	Not meeting	51.9 (56)	44.6 (33)	67.6 (23)				
Limit serving children fried/prefried foods to less than one time per week or never ^d								
	Meeting	31.5 (34)	29.7 (22)	35.3 (12)	0.5631	−0.148	−0.282	0.778
	Not meeting	68.5 (74)	70.3 (52)	64.7 (22)				
Always sit at the table and eat with children ^c								
	Meeting	7.4 (8)	6.8 (5)	8.8 (3)	0.7033	0.154	0.295	0.768
	Not meeting	92.6 (100)	93.2 (69)	91.2 (31)				
Teach children how to serve themselves or allow them to serve themselves ^c								
	Meeting	0.9 (1)	0 (0)	2.9 (1)	0.1383	0.221	0.426	0.620
	Not meeting	99.1 (107)	100 (74)	97.1 (33)				
Always ask children if they are full before removing an unfinished meal/snack ^c								
	Meeting	35.2 (38)	28.4 (21)	50 (17)	0.0289*	−0.203	−0.387	0.699
	Not meeting	64.8 (70)	71.6 (53)	50 (17)				
Always ask children if they are hungry before serving more food ^c								
	Meeting	33.3 (36)	35.1 (26)	29.4 (10)	0.5579	−0.175	−0.334	0.139
	Not meeting	66.7 (72)	64.9 (48)	70.6 (24)				
Never pressure children to eat more food than they want ^c								
	Meeting	88.9 (96)	83.8 (62)	100 (34)	0.0128*	−1.967	−3.352	0.001*
	Not meeting	11.1 (12)	16.2 (12)	0 (0)				
Do not use food or sweets as a reward or reward children for finishing their plate ^c								
	Meeting	38 (41)	27 (20)	61.8 (21)	0.0006*	−0.247	−0.470	0.638
	Not meeting	62 (67)	73 (54)	38.2 (13)				
Lead a planned nutrition education lesson one or more times per week ^a								
	Meeting	38 (41)	41.9 (31)	29.4 (10)	0.2145	−4.910	−2.477	0.013*
	Not meeting	62 (67)	58.1 (43)	70.6 (24)				
Talk with children informally about nutrition and healthy eating as often as possible ^c								
	Meeting	0.9 (1)	0 (0)	2.9 (1)	0.1383	0.221	0.426	0.670
	Not meeting	99.1 (107)	100 (74)	97.1 (33)				
Enthusiastically role model eating and drinking healthy foods ^c								
	Meeting	8.3 (9)	5.4 (4)	14.7 (5)	0.1043	0.144	0.276	0.783
	Not meeting	91.7 (99)	94.6 (70)	85.3 (29)				

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Table 4. Percentage (and Number) of Family Child Care Providers Meeting and Not Meeting Nutrition and Physical Activity Self-Assessment for Child Care Nutrition Best Practices by Ethnicity *continued*

Variable	Category	All % (n)	Hispanic ^a % (n)	Non-Hispanic ^a % (n)	p	Adjusted ^b		
						Estimate (λ)	Z	p
Always prompt and praise children for trying new or less preferred foods ^c								
	Meeting	64.8 (70)	67.6 (50)	58.8 (20)	0.3768	−0.814	−1.519	0.129
	Not meeting	35.2 (38)	32.4 (24)	41.2 (14)				
Provide families with information on child nutrition to help them continue healthy practices at home ^a								
	Meeting	44.4 (48)	45.9 (34)	41.2 (14)	0.6432	−0.357	−.678	0.498
	Not meeting	55.6 (60)	54.1 (40)	58.8 (20)				

See Table 3 for definitions of Meeting guidelines.

^aTelephone survey.

^bGeneral log-linear analysis controlled for education. Italicized values refer to estimates for the model's constant. The models have only main effects included (and no interactions).

^cEPAO.

^dBoth survey and observation.

* $p < 0.05$.

more times per day (73%), never serving fruit in syrup or with added sugar (75%), and never pressuring children to eat more food than they want (89%) (Table 4).

Less than one third of providers met the NAP SACC guidelines for serving fried foods less than once per week (32%), making drinking water available at all times (17%), prompting children to drink water during each indoor/outdoor playtime (7%), enthusiastically role modeling eating healthy foods (8%), always sitting at the table and eating with children (7%), offering high-fiber whole-grain foods at least twice a day (5%), offering vegetables two or more times a day (2%), serving children sugary, salty, fatty snack foods less than once per week (2%), talking with children informally about healthy eating as often as possible (1%), and teaching children how to serve themselves or allowing them to serve themselves (1%).

The frequency of meeting some NAP SACC guidelines differed by ethnicity. Adjusting for education, Hispanic providers were more likely than non-Hispanic to meet guidelines for preparing vegetables without added fat ($p = 0.002$), and never serving fruit in syrup or with added sugar ($p = 0.03$). Non-Hispanic providers were more likely to meet guidelines for never pressuring children to eat more food than they want ($p = 0.001$), serving only skim or 1% milk ($p < 0.02$), never serving flavored milk ($p = 0.02$), never serving sugary drinks ($p < 0.001$), and offering children fruit two or more times a day ($p < 0.05$) compared with Hispanic providers.

Discussion

The goal of this article was to examine FCCP-reported nutrition-related practices and to assess whether observed

nutrition-related practices met NAP SACC guidelines. We found that many providers reported often implementing positive nutrition-related practices and rarely/never implementing negative nutrition-related practices. However, the observational data indicate that a large proportion of providers did not meet NAP SACC nutrition guidelines. Implementation of several nutrition-related practices differed by provider ethnicity, highlighting the possible importance of culture in the FCCH setting.

Providers reported engaging in many positive nutrition-related practices, including encouragement and praise for healthy eating, role modeling, nutrition conversations with children and parents, and seeking nutrition trainings. Other qualitative and survey-based studies with FCCPs have similarly found a high proportion of providers reporting such practices.^{18,20–24,36,52–54} Furthermore, in this study, most providers reported rarely engaging in negative practices such as using rewards, allowing screen time during meals and snacks, and eating unhealthy foods in front of children. These findings are similar to studies in child care centers where providers rarely used these practices.^{18,55,56}

However in this study, providers were less likely to report letting children decide for themselves how much they should eat, asking children if they were hungry before serving them seconds, and waiting to give children seconds until they had finished other food. It appears that providers in FCCHs are aware of many positive and negative nutrition practices; yet they may not fully be aware of practices related to self-regulation, such as not pressuring children to finish all of food on their plate, that could help children develop internal rather than external satiety cues. Such practices have been shown to be important in preventing obesity.⁵⁷

Using observational data to look at the percentage of practices that met NAP SACC guidelines, we found that many providers did not meet guidelines related to self-regulation. These findings are comparable with what others have found,^{24,46,58–60} demonstrating a need for improvement in the use of responsive feeding practices in FCCs. Furthermore, previous findings suggest that FCCPs believe that allowing children to serve themselves, another best practice that may promote self-regulation, is costly, messy, and seems to violate the CACFP policy.⁶¹

Many providers met the NAP SACC guidelines for serving low-fat milk and enough fruit, and not serving flavored milk, sugary drinks, or fruit in syrup, or preparing vegetables with fat. However, many providers did not meet the guidelines for serving children enough vegetables and whole grains, making drinking water always available and prompting children to drink it, and limiting salty/sugary/fatty snacks. Our findings are similar to what others have found in FCCs, whereby many providers fall short in providing foods that are lower in fat and sugar and rich in whole grains and vegetables.^{28,29,43,62–65} It is important to note that most of the baseline data collection for this study was done before October 2017 changes to the national CACFP guidelines. The new guidelines have a greater emphasis on providing lean meats, vegetables, and whole grains, while avoiding added sugars,⁶⁶ and thus could help address the inadequacies we found in foods served in FCCs, as >80% of our sample reported accepting CACFP.

Other observed practices that did not meet NAP SACC guidelines for many providers included mealtime practices such as sitting at the table with children, role modeling, and not using food or sweets as a reward, which is in contrast to provider-reported data for these practices. Moreover, although many providers reported nutrition education with parents and children, most providers were not observed talking with children informally about healthy eating. Inadequate nutrition education has also been observed in other studies.⁶³ Thus, more training on how to lead nutrition lessons with children and how to reinforce nutrition education informally throughout the day with children and families is needed.

While this study cannot compare self-reported practices with observation, we did find that the provider-reported practices on the survey were generally more favorable than adherence to best practice guidelines assessed through observation. Although providers may have the best intentions of adhering to best practice guidelines, it is possible that due to social desirability, they may report adhering to them more than they actually do, which can result in overestimation of positive behaviors and underestimation of negative behaviors. Several studies on child care have shown that providers tend to under-report negative nutrition behaviors while over-reporting those that are more positive.^{56,67}

Ethnic Differences

In this study, we did find differences between Hispanic and non-Hispanic providers in certain practices even after

adjusting for education. For example, Hispanic providers were less likely than non-Hispanic to report letting children decide for themselves how much they should eat and more likely to report promising children a reward for eating and encouraging children to finish their food even if they say they are not hungry. Similarly, in observations, Hispanic providers were less likely than non-Hispanic to meet guidelines for never pressuring children to eat more food than they wanted. These results are similar to those of previous studies, which demonstrated that Hispanic providers were more likely to practice controlling behaviors during children's mealtimes.^{34,68,69}

Our results are also consistent with qualitative research,³³ wherein Hispanic FCCPs reported concerns about children not eating enough and felt the need to push or help children to eat.³⁴ Hispanic providers also believed that healthier children are heavier,³³ a common belief in Hispanic cultures^{70,71} that may influence how Hispanic FCCPs feed children. Previous research also indicated that Hispanic FCCPs were very concerned about children wasting food,³³ which could be related to their lower income levels, and may explain why Hispanic providers were more likely to report waiting to give children seconds until they finished foods on their plate. It is also possible that Hispanic providers were worried that the children they care for are food insecure and wanted children to "fill up" before they went home where food may be less available.³³

In contrast, Hispanic providers were more likely than non-Hispanic providers to report looking for trainings to learn about healthy eating for children. Previous studies have also shown the interest of FCCPs, especially Hispanic providers, in training.^{33,34,36} Hispanic providers were also less likely to report eating unhealthy foods in front of children and having screen time during meals. More Hispanic providers met NAP SACC guidelines for serving fruits and vegetables without added sugar and fat, which may be because they often serve culturally appropriate meals and snacks made from scratch. Future research should further explore the role that culture plays in shaping nutrition-related practices of child care providers. Furthermore, although NAP SACC guidelines are the most evidence based to date, future studies should explore if adhering to these guidelines differs in outcomes for racial and ethnic minority groups.

Limitations/Strengths

This study does have some limitations. The study sample may not be representative of all FCCPs in our region, although demographics of the current sample mostly matched a previous statewide survey³⁴ with the exception that the current sample has a higher proportion of Hispanic providers. Barriers that preclude participation in a randomized trial may also potentially bias recruitment to providers who are comfortable with study-related burdens. In addition, even though we adjusted for multiple comparisons, the large number of tests computed increases the possibility of type I error, which is finding differences that

are due to chance alone. Multiple comparisons, coupled with somewhat small sample size, weaken the confidence that all of these findings are indicative of true ethnic differences. Further research in ethnically diverse FCCCHs will be required to support or reject these findings.

Provider-reported data can be biased by social desirability and recall. While observational data are generally considered to be more accurate than provider-reported data, observed data collected over 2 days may not be representative of usual practices and may not account for the full variability in behaviors. Furthermore, for the nutrition practices that had weekly rather than daily guidelines (*i.e.*, servings of juice, snack foods, high-fat meats, and fried foods) we could not determine whether providers met guidelines using only 2 days of observation, and thus used a combination of self-report and observation. Therefore, for these best practices, there may be some false positives and false negatives.

Due to the presence of observers, providers may have altered their behaviors on the observation days to reflect their perceptions of desired practices. However, we believe this is unlikely given that our observed data generally demonstrated fewer positive and more negative nutrition practices than provider-reported practices. Inclusion of both 2-day observational data and provider-reported data provides a more robust assessment of practices than either measure alone might provide. Furthermore, although NAP SACC guidelines are the most evidence based to date, not all have been linked to child outcomes. They are based on expert opinion and derived from the cultural experiences of these experts.

Conclusions

While providers report engaging in some positive nutrition practices, much improvement is needed to ensure that all providers actually meet evidence-based guidelines. Future interventions and trainings with FCCCHs should continue to improve practices, focusing on those that are less likely to be adopted, while taking into consideration provider's perspectives. Ethnic differences underscore the need for culturally relevant trainings to improve the nutrition-related practices of FCCCHs.

The results of this study may help explain some of the nutrition-related factors that could contribute to the higher obesity rates that have been documented among young children in FCCCHs compared with other forms of child care.²⁸ Further research is needed to identify barriers to healthful nutrition-related practices in FCCCHs. In addition, future studies should link provider practices to child outcomes, and ensure that they include FCCCHs and providers of varied ethnicities. Several current cluster-randomized trials (including Healthy Start) are studying the efficacy of interventions to help FCCCHs improve their nutrition environments.^{37,65,72–760} If such interventions are found to be efficacious, translational research should be conducted to disseminate these interventions widely to FCCCHs nationwide.

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