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Compliance with the New 2017 Child and Adult Care Food Program Standards for Infants and Children before Implementation

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Abstract

Background: Nationally, child care providers serve nutritious food to over 4.5 million children each day as part of the federal Child and Adult Care Food Program (CACFP). As implementation of the first major revisions to the CACFP standards occurs in 2017, understanding how to support compliance is critical.

Methods: In 2016, surveys were sent to a randomly selected sample of 2400 licensed California child care centers and homes. Compliance with the new CACFP standards and best practices for infants under 1 year and children 1–5 years of age was assessed. Also, compliance was compared by CACFP participation, and between centers and homes. Interviews were conducted with 16 CACFP stakeholders to further understand barriers to and facilitators of compliance.

Results: Analysis of 680 survey responses revealed that compliance with most individual CACFP standards and best practices examined was high (>60% of sites). However, compliance with all new standards was low (<23% of sites). Compliance was lowest for timing of introduction of solids to infants, not serving sweet grains, serving yogurt low in sugar, and serving appropriate milk types to children. When different, compliance was higher for sites participating in CACFP versus nonparticipants, and for centers versus homes. Although providers indicated few barriers, stakeholders identified the need for incremental and easily accessible trainings that provide practical tips on implementation.

Conclusion: Training on a number of topics is needed to achieve full implementation of the new CACFP standards to ensure that young children in child care have access to healthier meals and snacks.

Keywords: Child and Adult Care Food Program; child care; nutrition; policies; practices

Introduction

Healthy eating in early childhood is essential for optimal growth and to establish lifelong habits. The high prevalence of overweight among children[1–3] has led policymakers to target nutrition in child care settings.[4–6] In the United States ~175,000 licensed child care sites participate in the federal Child and Adult Care Food Program (CACFP), receiving reimbursement for feeding 4.5 million children daily in 2017.[7] In California about half of family child care homes (hereafter referred to as homes) and one-third of child care centers (hereafter referred to as centers) participate in CACFP.[8] In addition, in many states, including California, all licensed child care centers not participating in CACFP are required to follow the CACFP standards.[9]

Mandated by the 2010 Healthy, Hunger-Free Kids Act, the first major revisions to the CACFP standards went into effect in October 2017.[10] These changes aligned CACFP standards with the Dietary Guidelines for Americans as recommended by the Institute of Medicine (IOM).[11] The new required standards and optional best practices focus on increasing fruit, vegetables, and whole grains, and decreasing added sugar in snacks and meals served to children.

Understanding how to support compliance is critical. Only one study to date has assessed providers' compliance

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with new CACFP standards. In 2015, Schwartz et al. found that nutrition practices in 38 Connecticut centers participating in CACFP were not in alignment with the IOM recommendations.[12] This study involved a relatively small sample of centers and did not include child care homes and infant standards. All child care centers in Connecticut—regardless of whether participating in CACFP or not—are required to meet CACFP standards[13]; therefore another limitation of this study is that non-CACFP participating sites were not assessed.

To inform successful implementation of the new CACFP standards and best practices for infants and children, the present study assessed child care providers' compliance before implementation, perceived barriers, and desired resources. Included were centers and homes participating—and not participating—in CACFP and child care stakeholders in California. Compliance was compared between sites participating in CACFP and not, and between centers and homes. California was ideal for the study as the state with the most child care sites in the nation.[7]

Methods

Overview

A survey was administered to a sample of licensed child care providers. Child care experts with knowledge about CACFP were interviewed to further understand challenges and resources needed to implement the CACFP changes. The study was approved by the University of California, Davis Institutional Review Board.

Survey Sample Selection

A California Department of Social Services database was used to identify all licensed child care centers and homes in the state. A California Department of Education database was used to identify all licensed centers and homes participating in CACFP. Sites were placed in one of the following six categories before random selection: Head Start Centers (in CACFP), state preschools (that can participate in CACFP or follow the federal school meal program guidelines which generally meet or exceed those of CACFP), other centers in and not in CACFP, and homes in and not in CACFP. Using a random number generator, a sample of 2400 providers (for approximately equal representation from each category) was selected from over 50,000 statewide. The randomly selected sample included 1800 centers (including Head Start and state preschools) and 600 homes.

Survey Content

Questions were adapted from previous pilot-tested surveys[14,15] based on a validated instrument.[16] Providers reported all foods and beverages served by the child care site or brought from home by parents to infants (under 1 year) and, separately, to children (1–5 years), at breakfast, lunch, supper, and snacks on the day before completing the survey. Providers were asked what has or will help support implementation of select CACFP standards and best practices and what makes implementation difficult.

Survey Data Collection

In fall 2016, all sites were mailed a postcard in Spanish and English with a link to an online survey (Qualtrics, Version 08-2016, 2016). A follow-up e-mail was also sent to sites with e-mail addresses ($n = 1248$). Two months later, paper surveys (in English for centers; in English and Spanish for homes) were mailed to providers who had not completed the survey online ($n = 2245$). Providers were contacted by phone when the response rate by child care category was below 10%. Providers were compensated with a $5 gift card.

Survey Data Analysis

Data from online surveys ($n = 155$, 6.5% response rate) were merged with paper surveys ($n = 581$, 25.9% response rate). Surveys were excluded from analysis due to duplication ($n = 20$). Overall survey response rate was 29.8%, and includes subjects that responded to the survey at least once in any form. Surveys were also excluded if >60% of the first section of the survey asking about characteristics of the child care site was incomplete ($n = 36$) for a total of 680. Of the 680 surveys included in the analysis, 564 (31.3%) were from centers (33.1% response rate), 116 (19.3%) were from homes (20.0% response rate). Thirteen family child care home providers (11.2%) completed the survey in Spanish. Paper surveys were double entered to ensure data quality. To analyze compliance with infant standards and best practices, the sample was restricted to the subset of 680 caring for infants ($n = 297$).

Questions were recoded as binary variables to indicate compliance or noncompliance with each CACFP standard or best practice and nonresponses were not included in the denominator. Compliance was also computed across all standards and further for at least four of five infant standards, and at least five and six of seven child standards to evaluate how far the providers were from full compliance. Compliance was not computed across all best practices since these are not required, but encouraged. Differences in compliance between sites participating in CACFP and not and between centers and homes were assessed using logistic regression adjusted for site being a center or home (for the CACFP vs. non-CACFP comparison), CACFP versus non-CACFP participant (for the center vs. home comparison), total number of infants and children per site, and years of operation. Standard errors were clustered on the ZIP-code level to take into consideration similarities in food environments within ZIP codes. This results in a conservative estimation. p-Values <0.05 were considered significant. Survey responses marked ''other (write-in)'' were recoded to either one of the appropriate answer responses or a new variable identified by themes of write-in responses. For those that did not include a write-in response, their response remained coded as ''other''. Data were analyzed using SAS version 9.4 (SAS Institute, Inc., Cary, NC, 2013).

Stakeholder Interviews

Interviews were conducted in spring 2017 with 16 child care experts knowledgeable about CACFP, including federal and state-level CACFP administrators, child care providers, unions organizing child care workers, resource and referral organizations, and others. Interview questions were developed by the research team with input from CACFP experts to illuminate anticipated challenges and resources needed to implement the CACFP changes and factors likely to influence compliance. Questions were modified for clarity from several initial interviews. All interviews were conducted by telephone by two researchers; one leading the interview and the other taking notes. Interviews lasted 30 minutes on average, were audiorecorded and transcribed verbatim. Conceptual analysis,[17] a process used to determine the presence of certain concepts within sets of tests known as codes or themes, was applied to examine responses for each open-ended question. Data were analyzed using Nvivo version 10.0 (QSR International Pty Ltd., 1999–2014). Interviewees were not compensated for their participation.

Results

Characteristics of Child Care Sites

Descriptive characteristics of the subset of sites caring for infants under 1 year of age ($n = 297$) and the full sample ($n = 680$ caring for children 1–5 years of age) are shown in Table 1. Most ($\sim 90\%$) surveys were completed by the site director or owner. A majority of all sites (82.9%) were centers and nearly three-quarters participated in CACFP. Sites cared for an average of 7 infants and 78 children 1–5 years of age. Over half of sites provided both full-day and half-day care. Most (>85%) had been in operation for over 5 years. Of sites not participating in CACFP, 57% had not heard about the new standards, whereas over half of CACFP-participating sites reported knowing somewhat (26%) or a lot (30%) about them.

Compliance with Infant Standards and Best Practices

Five standards and one best practice were assessed at sites caring for infants (Table 2). Nearly 6% were compliant with all infant standards, whereas 41.8% were compliant with at least four standards. Compliance was high ($\sim 70\%$ or more sites) for each individual standard with the exception of serving solid foods at around 6 months of age, with which one-quarter of sites were compliant. Serving yogurt low in sugar (determined by asking about plain yogurt without fruit flavoring or added sugar to approximate the USDA definition of <23 g of total sugar per 6 oz) was the only infant standard for which compliance was significantly higher for CACFP compared with non-CACFP sites (85.2% vs. 63.3%). Serving fruit and/or vegetables as snacks was the only infant standard for which compliance was significantly higher for centers than homes (72.0% vs. 52.8%). Nearly all sites implemented the best practice to not serve sugar-sweetened beverages to infants (98.6%).

Compliance with Child Standards and Best Practices

Sites caring for children 1–5 years of age were assessed for compliance with eight standards and five best practices (Table 3). Overall compliance with seven standards was calculated instead of all eight standards because one standard was restricted to only providers serving children 1- to 2-years of age. Compliance with seven standards was 22.2%, whereas 77.0% of sites were compliant with at least five and 52.9% were compliant with at least six standards. Significantly more CACFP than non-CACFP sites were compliant with at least five, six or all seven standards, and centers were significantly more compliant than homes for at least five or six of the seven standards. Serving only unflavored whole milk to children 1–2 years of age was the standard with the lowest compliance (54.5%); instead, sites reported usually serving lower fat milks.

CACFP sites had higher compliance than non-CACFP sites for providing at least one serving of whole grains each day (90.0% vs. 80.4%) and serving only unflavored low-fat or fat-free milk to children 2–5 years of age (73.5% vs. 43.0%). Centers, compared with homes, had higher compliance with serving breakfast cereals low in sugar (≤6 g sugar per dry ounce) (87.4% vs. 75.7%), making drinking water available and offered throughout the day (81.9% vs. 55.1%), and not providing grain-based desserts (68.2% vs. 53.6%).

Implementation of best practices ranged from 46.0% providing at least two servings of whole grain-rich foods per day as snacks to 75.0% for offering whole fruits more often than juice. CACFP sites reported higher implementation than non-CACFP sites for providing whole fruit more often than juice (78.7% vs. 66.3%), and for serving at least two whole grains each day (51.8% vs. 31.8%). Non-CACFP sites compared with CACFP sites reported higher implementation for having a fruit or vegetable (not including canned fruits in syrup, sweetened applesauce, or fried potatoes) as snacks (73.3% vs. 55.4%).

Barriers to Compliance

Response options to questions about difficulties implementing standards included not hard, parent preference, infant/child preference, not a provider priority, or other (write in). For all standards, the most common response was that implementation was not hard (Table 4). Parent preference was reported by 44.4% of sites as a barrier to serving solid foods to infants when 6 months old; however, CACFP allows solids before 6 months if parents deem their infant developmentally ready.[18] The child standards identified as most difficult were serving low-sugar yogurt and serving whole grains. Child preference (19.3%) and parent preference (12.9%) were the most commonly reported

Table 1. Characteristics of Child Care Sites

Characteristic	Sites with infants ($n = 297$ sites[a])			All sites ($n = 680$ sites[a])		
Site director/owner responded to survey (n, %)	277 (94.5%)[b] $n = 293$			597 (89.2%)[c] $n = 669$		
Type of child care (n, %)						
Head start[d]	27 (9.1%)			96 (14.1%)		
State preschool[e]	32 (10.8%)			132 (19.4%)		
Center in CACFP	88 (29.6%)			183 (26.9%)		
Center not in CACFP	76 (25.6%)			153 (22.5%)		
Home in CACFP	45 (15.2%)			68 (10.0%)		
Home not in CACFP	29 (9.8%)			48 (7.1%)		
Participate in CACFP (n, %)	192 (64.7%)			479 (70.4%)		
Number of infants (mean, SD)	$n = 273$			$n = 619$		
0–5 months	2.9 (14.7)			2.9 (14.7)		
6–11 months	4.4 (5.9)			4.4 (5.9)		
Total	7.3 (15.8)			7.3 (15.8)		
Number of children (mean, SD)	$n = 273$			$n = 619$		
12–23 months	9.4 (9.3)			5.2 (8.7)		
24–35 months	14.5 (15.4)			10.6 (18.4)		
3–5 years	47.8 (137.9)			62.1 (162.6)		
Total	71.7 (147.1)			77.9 (172.7)		
Number of staff (mean, SD)	17.4 (22.5) $n = 293$			14.8 (23.0) $n = 673$		
Type of care provided (n, %)	$n = 293$			$n = 665$		
Full-day care only	92 (31.4%)			190 (28.6%)		
Half-day care only	3 (1.0%)			122 (18.4%)		
Full-day and half-day	198 (67.6%)			353 (53.1%)		
Years in operation (n, %)	$n = 296$			$n = 672$		
<1 year	5 (1.7%)			7 (1.0%)		
1 up to 3 years	22 (7.4%)			36 (5.4%)		
3 up to 5 years	17 (5.7%)			32 (4.8%)		
≥5 years	252 (85.1%)			597 (88.8%)		
Knowledge of new CACFP standards (n, %)	**All ($n = 290$)**	**CACFP ($n = 188$)**	**Non-CACFP ($n = 102$)**	**All ($n = 657$)**	**CACFP ($n = 462$)**	**Non-CACFP ($n = 195$)**
None	80 (27.6%)	27 (14.4%)	53 (52.0%)	192 (29.2%)	81 (17.5%)	111 (56.9%)
Very little or a little	80 (27.6%)	47 (25.0%)	33 (32.4%)	180 (27.4%)	125 (27.1%)	55 (28.2%)
Somewhat	59 (20.3%)	47 (25.0%)	12 (11.8%)	135 (20.6%)	118 (25.5%)	17 (8.7%)
A lot	71 (24.5%)	67 (35.6%)	4 (3.9%)	150 (22.8%)	138 (29.9%)	12 (6.2%)

[a]Sample size is indicated when less than the full sample due to missing survey responses; percentages may not sum to 100% due to rounding; infant sites are a subset of the total sites which cared for children 0–11 months of age; all sites cared for infants (0–11 months) and children (1–5 years).

[b]Other responses included: cook, food program coordinator/manager, kitchen operations lead, nutrition manager.

[c]Other responses included: administrative assistant/aide, assistant director/principal, business manager, CACFP assistant, children services manager, cook, dietitian, food services manager.

[d]Head Start programs participate in CACFP and were categorized as a center participating in CACFP.

[e]State preschools participate in CACFP or the federal school meal programs and were categorized as a center participating in CACFP.

CACFP, Child and Adult Care Food Program.

Table 2. Compliance with New Child and Adult Care Food Program Meal Pattern Standards and Best Practices for Sites with Infants (Birth to 12 Months of Age)

	All ($n = 297$)	Comparison by CACFP status			Comparison of center vs. home		
		CACFP ($n = 192$)	Non-CACFP ($n = 105$)	p-Value	Center ($n = 223$)	Home ($n = 74$)	p-Value
Standards (n, % of sites)							
Solids introduced at around 6 months of age[a]	70 (25.4)	42 (23.7)	28 (28.3)	0.41	49 (24.0)	21 (29.2)	0.23
Fruit, vegetable, or both as snack[b]	195 (67.2)	128 (67.4)	67 (67.0)	0.65	157 (72.0)	38 (52.8)	**0.008**
No 100% juice	219 (77.7)	137 (74.9)	82 (82.8)	0.12	170 (80.2)	49 (70.0)	0.24
Yogurt low in added sugar[c]	217 (77.5)	155 (85.2)	62 (63.3)	**<0.001**	167 (78.0)	50 (75.8)	0.99
No processed cheese	209 (74.6)	141 (77.5)	68 (69.4)	0.07	155 (72.4)	54 (81.8)	0.10
Compliant with all five standards	17 (5.8)	12 (6.3)	5 (4.9)	0.71	13 (5.9)	4 (5.4)	0.63
Compliant with at least four of five standards	123 (41.8)	84 (44.0)	39 (37.9)	0.41	96 (43.6)	27 (36.5)	0.81
Best practices (n, % of sites)							
No sugar-sweetened drinks[d]	279 (98.6)	183 (98.9)	96 (98.0)	—[e]	213 (100.0)	66 (94.3)	—[e]

Around 2%–5% of data were missing depending on standard/best practice. Significance assessed by logistic regressions adjusted for site being center or home (in case of CACFP vs. non-CACFP comparison), CACFP versus non-CACFP participant (in case of center vs. home comparison), total number of infants and children at site, years of operation, and cluster design on ZIP-code level.

Boldface type indicates a significant p-Value.

[a]Survey question asked about usual practice with the following answer options: under 3 months, 4–6 months, 7–9 months, 10–12 months. Option of 4–6 month counted as being compliant.

[b]This is a combination of survey responses that include serving baby food fruits/vegetables in a jar or pouch, fresh/canned in water or own juice/frozen fruit, and/or fresh/frozen/canned/cooked/pureed vegetables.

[c]Survey question asked about yogurt flavored with fruit flavoring or added sugars followed by some examples. The USDA specifications for low-sugar yogurt: no more than 23 g total sugar per 6 oz.

[d]A California State Law (AB2084) has mandated the standard since 2012.[19]

[e]p-Values from adjusted analysis are not presented because there were no observations in one of the groups.

barriers to implementing the yogurt standard. Other common responses to the question on what makes it hard to serve yogurt low in sugar included difficulty in knowing what to buy (3.9%), not available where shop (3.1%) and higher cost (2.5%) (included in the "other" column in Table 4). The most commonly reported barrier to serving whole grains was child preference (18.2%). Other barriers to serving whole grains included higher cost (6.0%) and not knowing what to buy (4.9%) (included in the "other" column in Table 4).

The CACFP stakeholders who were interviewed reported inadequate time, difficulty training all sites, and additional paperwork to document compliance as the most likely barriers. Several said that the standards would be more difficult to implement in homes than centers due to more limited staffing and financial resources. Training concerns included lack of materials in different languages, lack of provider computer skills, and training not being accessible online for providers unable to attend in-person or webinar trainings.

Resources Needed

Table 5 lists resources that sites indicated would help them implement the standards. Of sites caring for infants 44.3% said that no additional assistance was needed. Information for families was the most common resource requested by 28.0% of sites, followed by policy and written guidelines (26.8%), and parent or family support (25.1%). Of sites caring for children, 45.1% reported that no additional resources were needed. Policies/written guidelines (22.7%) was the most common resource requested, followed by information for families (20.5%), and parent or family support (18.9%). For the standard on timing of introduction of solids to infants, information for families was the most common resource endorsed (by 44.9% of sites), followed by parent/family support (41.0%). Information for families (22.7%) and policies/written guidelines (21.9%) were the most commonly requested resources to support the standard on limiting yogurt with added sugar. For the child standard to serve whole grains, the most common "other" need identified was recipes or tips for preparing whole grains that children like (28.1%).

Stakeholders reported training and technical assistance as the most critical for successful implementation, citing the need to train providers on not only what the standards are, but how to implement them. Training topics identified as highest need were infant standards, what constitutes a

Table 3. Compliance with New Child and Adult Care Food Program Meal Pattern Standards and Best Practices for Sites with Children (1–5 Years of Age)

	All ($n = 680$)	Comparison by CACFP status			Comparison of center vs home		
		CACFP ($n = 479$)	Non-CACFP ($n = 201$)	p-Value	Center ($n = 564$)	Home ($n = 116$)	p-Value
Standards (n, % of sites)							
Juice limited to once per day[a]	591 (91.2)	418 (91.3)	173 (91.1)	0.87	495 (91.8)	96 (88.1)	0.12
At least one serving of grains per day are whole grain rich	567 (87.2)	415 (90.0)	152 (80.4)	**0.003**	468 (86.7)	99 (90.0)	0.20
Yogurt low in added sugar[b]	424 (65.5)	306 (67.0)	118 (62.1)	0.53	363 (67.7)	61 (55.0)	0.16
Breakfast cereals low in added sugar[c]	557 (85.4)	402 (87.0)	155 (81.6)	0.28	473 (87.4)	84 (75.7)	**0.03**
Unflavored whole milk to children 1 up to 2 years of age[d]	225 (54.5)	165 (56.9)	60 (48.8)	0.21	176 (56.4)	49 (48.5)	0.96
Unflavored low-fat or fat-free milk to children 2–5 years of age[a]	402 (65.1)	328 (73.5)	74 (43.0)	**<0.001**	335 (65.4)	67 (63.2)	0.36
Drinking water offered and available upon request throughout day[a]	502 (77.4)	367 (80.1)	135 (70.7)	0.08	442 (81.9)	60 (55.1)	**<0.001**
No grain-based desserts	427 (65.7)	303 (65.7)	124 (65.6)	0.39	368 (68.2)	59 (53.6)	**0.04**
Compliant with all seven standards[e] (for seven standards, $n = 586$)	130 (22.2)	112 (26.4)	18 (11.1)	**0.002**	118 (24.1)	12 (12.4)	0.09
Compliant with at least six of seven standards	310 (52.9)	240 (56.6)	70 (43.2)	**0.04**	279 (57.1)	31 (32.0)	**<0.001**
Compliant with at least five of seven standards	451 (77.0)	344 (81.1)	107 (66.1)	**0.01**	392 (80.2)	59 (60.8)	**0.02**
Best practices (n, % of sites)							
Healthier fruit, vegetable, or both as snack[f]	370 (60.7)	238 (55.4)	132 (73.3)	**<0.001**	297 (58.6)	73 (70.9)	0.10
Whole fruits more often than juice	469 (75.0)	347 (78.7)	122 (66.3)	**0.001**	391 (74.9)	78 (75.7)	0.39
At least two servings of whole grain-rich foods per day	299 (46.0)	239 (51.8)	60 (31.8)	**<0.001**	250 (46.3)	49 (44.6)	0.99
Only lean meats, nuts, and legumes	405 (62.2)	280 (60.6)	125 (66.1)	0.18	343 (63.5)	62 (55.9)	0.56
No processed cheese	410 (64.1)	284 (62.8)	126 (67.0)	0.26	339 (63.6)	71 (66.4)	0.43

Around 4%–16% of data were missing depending on standard/best practice. Significance assessed by logistic regressions adjusted for site being center or home (in case of CACFP vs. non-CACFP comparison), CACFP versus non-CACFP participant (in case of center vs. home comparison), total number of infants and children at site, years of operation, and cluster design on ZIP-code level.

Boldface type indicates a significant p-Value.

[a]A California State Law (AB 2084) has mandated the standard since 2012.[19]

[b]Survey question asked about yogurt flavored with fruit flavoring or added sugars followed by some examples. The USDA specifications for low sugar yogurt: no more than 23 g total sugar per 6 oz.

[c]Survey question asked about sweet cereals with examples of common cereals listed. USDA specifications for breakfast cereal: no more than 6 g sugar per 1 dry oz.

[d]Excludes participants ($n = 207$) who reported they do not provide care for children 1–2 years of age.

[e]The seven standards include: juice limited to once per day, at least one serving of grains per day are whole grain rich, yogurt low in added sugar, breakfast cereals low in added sugar, unflavored low-fat or fat-free milk served to children 2–5 years of age, drinking water offered and available throughout the day, and no grain-based desserts. The whole milk standard for children 1–2 years of age was excluded because not all respondents provided care for children 1–2 years of age.

[f]Canned fruit in syrup (heavy or light) or sweetened applesauce and fried potatoes were not counted; this is a combination of three best practices: make at least one of the two required components of a snack, a vegetable, or a fruit; serve a variety of fruits; and serve a variety of vegetables.

whole grain, ounce equivalents of grains, grain-based desserts, and healthy snacks. Respondents cited webinars, followed by online, as the best ways to provide information to providers. Stakeholders emphasized that training should be offered often and include follow-up technical assistance.

Discussion

In our survey of licensed child care centers and homes caring for infants and young children in California, a majority of providers reported following most of the individual

Table 4. Factors that Make the New Infant and Child Standards Hard for Providers to Implement

	Not hard	Parent preference or practice	Infant/child preference	Not a priority for provider	Other[a]
	(*n*, %)				
Infant standards					
Solids introduced at appropriate age (*n* = 279)	162 (58.1)	124 (44.4)	4 (1.4)	12 (4.3)	10 (3.6)
Fruit, vegetable, or both as snack (*n* = 287)	258 (89.9)	16 (5.6)	10 (3.5)	2 (0.1)	25 (8.7)[b]
No 100% juice (*n* = 285)	246 (86.3)	20 (7.0)	6 (2.1)	4 (1.4)	16 (5.6)
No processed cheese (*n* = 285)	253 (88.8)	16 (5.6)	12 (4.2)	6 (2.1)	6 (2.1)[c]
Average for infant standards	229.8 (80.8)	44.0 (15.7)	8.0 (2.8)	6.0 (2.0)	14.3 (5.0)
Child standards					
Juice limited (*n* = 635)	524 (82.5)	59 (9.3)	60 (9.5)	18 (2.8)	21 (3.3)[d]
Serve whole grains (*n* = 636)	485 (76.3)	—[e]	116 (18.2)	10 (1.6)	82 (12.9)[f]
Limit yogurt with added sugar[g] (*n* = 632)	433 (68.1)	82 (12.9)	122 (19.3)	9 (1.4)	58 (9.2)[h]
Limit breakfast cereals with added sugar (*n* = 630)	537 (84.3)	39 (6.1)	67 (10.5)	5 (0.8)	21 (3.3)[i]
Unflavored whole milk to children 1–2 years of age (*n* = 393)[j]	363 (92.4)	13 (3.3)	7 (1.8)	2 (0.5)	22 (7.5)[k]
Unflavored low-fat or fat-free milk to children 2–5 years of age (*n* = 625)	562 (88.4)	24 (3.8)	31 (4.9)	4 (0.6)	16 (2.6)[l]
Limit grain-based desserts (*n* = 636)	520 (81.8)	98 (15.4)	46 (7.2)	7 (1.1)	15 (2.4)
Average for child standards	489.1 (76.9)	52.5 (8.25)	64.1 (10.1)	7.9 (1.2)	65.5 (10.5)

Respondents were allowed to select multiple answer options so percentages do not add up to 100% across a row.

[a]Includes "other" write-in responses.

[b]Includes additional response options on the survey: "not sure what kind of fruits and vegetables to buy," "fruits and vegetables are too difficult to prepare as a snack," "fruits and vegetables are expensive," "fruits and vegetables are hard for me to find," "infants are not served snack".

[c]Includes additional response option on the survey: "other cheese products are more expensive in comparison."

[d]Includes additional response option on the survey: "higher cost of whole fruit."

[e]Parent preference or practice was not an answer option on the survey.

[f]Includes additional response options on the survey: "higher cost of whole grains," "whole grains are not available where I shop," "hard to tell which grains are whole grains."

[g]Standard also applies to infants.

[h]Includes additional response options on the survey: "high cost of lower-sugar yogurt," "yogurt with less sugar not available where I shop for food," "hard to know which yogurt has less sugar."

[i]Includes additional response options on the survey: "high cost of low-sugar cereal," "cereal with less sugar not available where I shop for food," "hard to know which cereal has less sugar."

[j]Two hundred seven survey respondents did not provide care for children 1–2 years of age.

[k]Includes additional response options on the survey: "high cost of unflavored whole milk", "unflavored whole milk not available where I shop", "I don't provide care for 1 year olds".

[l]Includes additional response options on the survey: "high cost of unflavored low-fat or fat-free milk", "unflavored low-fat or fat-free milk not available where I shop for food".

CACFP standards in advance of October 2017 when the new standards became requirements. Few barriers to implementing the standards were reported, which suggests that transitioning to the new CACFP standards will not be unduly difficult.

A higher percentage of sites participating in CACFP than not participating in CACFP were compliant with the new standards. This was expected (even though in California centers not on CACFP are supposed to follow CACFP standards) because centers on CACFP receive more training and monitoring than those not on the program. Less expectedly, for several standards a higher percentage of centers than homes were compliant with the new standards. This may reflect California's state

Table 5. Factors that Influence Change in Implementing New Infant and Child Standards

	Already doing/none of these	Information for families	Support from parents/families	Training for providers	Policy/written guidelines	Other[a]
	(*n*, %)					
Infant standards						
Solids introduced at appropriate age (*n* = 283)	67 (23.7)	127 (44.9)	116 (41.0)	53 (18.7)	108 (38.2)	10 (3.5)
Fruit, vegetable, or both as snack (*n* = 283)	130 (45.9)	68 (24.0)	65 (23.0)	40 (14.1)	67 (23.7)	72 (25.4)[b]
No 100% juice (*n* = 277)	145 (52.4)	56 (20.2)	62 (22.4)	29 (10.5)	72 (26.0)	1 (0.4)
No processed cheese (*n* = 280)	154 (55.0)	64 (22.9)	39 (13.9)	33 (11.8)	54 (19.3)	48 (17.1)[b]
Average for infant standards	124.0 (44.3)	78.8 (28.0)	70.5 (25.1)	38.8 (13.8)	75.3 (26.8)	32.8 (11.6)
Child standards						
Juice limited (*n* = 624)	307 (49.2)	139 (22.3)	135 (21.6)	87 (13.9)	165 (26.4)	12 (2.0)
Serve whole grains (*n* = 630)	233 (37.0)	138 (21.9)	98 (15.5)	107 (17.0)	130 (20.6)	225 (35.7)[b,c]
Limit yogurt that is not low in sugar (*n* = 621)	286 (46.1)	141 (22.7)	131 (21.1)	103 (16.6)	136 (21.9)	28 (4.5)
Limit sweet breakfast cereals (*n* = 610)	310 (50.8)	126 (20.7)	117 (19.2)	93 (15.3)	139 (22.8)	9 (1.5)
Unflavored whole milk to 1 up to 2 year olds (*n* = 386)[d]	208 (53.9)	72 (18.7)	59 (15.3)	64 (16.6)	101 (26.2)	14 (3.6)
Unflavored low-fat or fat-free milk to 2–5 year olds (*n* = 609)	299 (49.1)	118 (19.4)	119 (19.5)	93 (15.3)	168 (27.6)	16 (2.6)
Limit grain-based desserts (*n* = 631)	313 (49.6)	156 (24.7)	162 (25.7)	88 (14.0)	145 (23.0)	9 (1.4)
Average for child standards	279.4 (45.1)	127.1 (20.5)	117.3 (18.9)	90.7 (14.7)	140.6 (22.7)	154.1 (24.9)

Respondents were allowed to select multiple answer options so percentages do not add up to 100% across a row.

[a]Includes write-in responses.

[b]Includes additional response option on the survey: "recipes or preparing tips."

[c]Includes additional response option on the survey: "lessons for children."

[d]Two hundred seven survey respondents did not care for children 1–2 years of age.

requirement that licensed centers not participating in CACFP must also follow CACFP standards; this is not true for licensed homes not participating in CACFP. Thus, with the broader reach of nutrition standards among centers than homes, there is broader awareness, too.

Relatively few sites, however, were compliant with all standards assessed (<6% for all five infant standards and <23% for all seven child standards examined). Furthermore, <75% of sites were compliant for several standards: introducing solids at around 6 months of age; serving unflavored whole milk to children 1–2 years of age; serving unflavored low-fat or skim milk to children 2–5 years of age; serving yogurt with no more than 23 g of sugar per 6 oz; and not serving grain-based desserts. The requirement to serve whole milk to 1–2 year olds may be particularly confusing for providers in California. Since 2012, the California Healthy Beverages in Childcare Act (AB2084)[19] requires that children 2 years and older are served unflavored 1% or skim milk. Stakeholder concerns mirrored reported rates of compliance, except for the requirement for whole grains. Because of confusion over what constitutes a grain that is whole grain rich,[20,21] providers may have overreported compliance. Topics with relatively low compliance will likely require the most training and support.

Implementation was lower for optional best practices than for required standards. The notable exception was not serving sugar-sweetened beverages to infants. California's AB2084 disallows such beverages from being served in any licensed child care.[19] The practice of serving sugar-sweetened beverages may differ in states without such regulations. For example, a recent study in Pennsylvania found that more than half of child care centers surveyed offered sugar-sweetened beverages to children.[22]

Although sites did not report insufficient training as a barrier to implementing the new CACFP standards, stakeholders emphasized the need to help providers understand not only the content, but also how to operationalize the standards, expressing a concern that some providers might

not realize what they did not know. Suggestions included providing cooking tips and recipes to prepare endorsed foods in ways that appeal to children. Although sites acknowledged few challenges in implementing the standards, child and parent preference were most frequently mentioned. Therefore, sites welcome information for families to increase support for the changes.

Few sites serving children (1.9%) reported higher costs as a barrier to implementing the standards. However, we did not ask sites if serving food, in general, was cost prohibitive. Previous studies have shown providers have limited funding to support improving the nutritional quality of menus[23] or experience increased food costs when menu quality increases.[24,25]

Limitations

Survey results may not fully capture practices at each site, as providers reported on a single day of foods and beverages served and may have biased reporting in favor of desirable rather than actual practice. Furthermore, providers were asked to report on all foods and beverages served, including those brought to child care by parents. While <6% of sites reported usually serving foods from home, such foods are not subject to CACFP standards. Furthermore, while we attempted to gather information on foods and beverages that matched the standards, we were unable to achieve perfect alignment given the standards were finalized after the survey was conducted. For example, Graham crackers were included on the survey as a sweet grain; however subsequently the USDA decided to allow them. Conditional standards were not assessed (*e.g.*, nondairy milk substitutes may be served to children with medical or special dietary needs). Finally, although sites were randomly selected to participate in the survey, it is unknown to what extent differences exist between respondents and nonrespondents.

Conclusions

While a majority of California's licensed child care centers and homes appear ready for the new CACFP standards, most frequent concerns exist relating to the appropriate milk for different ages and to the requirements for grains. Based upon information from stakeholders, we identified several resources to help achieve full implementation, including offer trainings on an ongoing basis, use a range of formats with a focus on how to implement the standards, and include information for families on the new standards.

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