

Child and Adult Care Food Program

The Child and Adult Care Food Program (CACFP) provides Federal funds for meals and snacks served to children and adults in licensed, nonresidential day care facilities, including family and group child care homes, some child care centers, Head Start programs, after-school care programs, and adult day care centers.¹⁰⁸ Since July 1999, the program has also served preschool children who reside in homeless shelters. Federal assistance reimburses care providers at fixed rates for each meal and snack served.

The limited amount of research on the CACFP is almost entirely descriptive, focusing on the characteristics of participating institutions and the children and adults they serve. Several studies, including four nationally representative studies sponsored by the U.S. Department of Agriculture (USDA), have documented the nutrient content of meals and snacks offered to participants, but only one of these studies examined the nutrient content of meals and snacks offered in nonparticipating institutions.

Some studies have assessed the nutrient contribution of CACFP meals and snacks to participants' overall diets. However, there has been no research on the impact of the program on participants' nutrition and health status, relative to nonparticipants.

Program Overview

The CACFP is, in reality, two separate programs. One component serves children in child care centers, family child care homes, after-school care programs, and homeless shelters, and the other component serves adults attending adult day care centers. Program regulations allow these components to be administered by two separate State agencies.

The child care component of the program is substantially larger than the adult care component. In December 2001, the program served an average of 2.6 million children and 74,000 adults per day (USDA, Food and Nutrition Service (FNS), 2002a). In FY 2002, the \$1.9 billion reimbursed to participating institutions supported the provision of 1.7 billion meals and snacks to children and 44.6 million meals and snacks to adults (USDA/FNS, 2003).

To be eligible for Federal reimbursement, providers must serve meals and snacks that meet established meal pattern requirements. These requirements are modeled on the food-based menu planning guidelines used in the National School Lunch Program (NSLP) and the School Breakfast Program (SBP) (see chapters 5 and 6). The meal patterns specify foods (meal components) to be offered at each meal and snack as well as minimum portion sizes. For children, minimum portion sizes vary by age. Currently, CACFP meals and snacks are not required to meet specific nutrient-based standards such as those implemented in the mid-1990s for the NSLP and SBP. Child care centers and homes may receive reimbursement for two meals and one snack or two snacks and one meal per child per day. Homeless shelters may receive reimbursement for three meals per child per day.

Child Care Component

The CACFP began as a pilot program in 1968, known as the Special Food Service Program for Children (SFSPFC). The SFSPFC was established under Section 17 of the National School Lunch Act (42 U.S.C. 1766). Participation was initially limited to center-based child care in areas with poor economic conditions. Beginning in 1976, family child care homes were also eligible to participate, provided that they met State licensing requirements, where these were imposed, or obtained approval from a State or local agency. Homes had to be sponsored by a nonprofit organization that assumed responsibility for ensuring compliance with Federal and State regulations and that acted as a conduit for meal reimbursements. These rules govern participation of family child care homes to this day.

The CACFP became a permanent program in 1978. At the time, the program was focused exclusively on children and was called the Child Care Food Program (CCFP). The program was not renamed the Child *and* Adult Care Food Program (CACFP) until 1987, when the adult day care component of the program was added. (The adult care component of the program is discussed in a subsequent section of this chapter.)

Initially, the system used in the CCFP to reimburse both centers and homes was modeled after the system used in the NSLP. Three categories of reimbursement were established, based on family income, and a means test

¹⁰⁸Program regulations refer to snacks as "supplements."

was used to determine the family incomes of individual children. The largest reimbursement was provided for meals served to children with family incomes of 125 percent or less of the Federal poverty level (“free” meals); a lesser reimbursement was provided for meals served to children whose family incomes ranged from 125 to 195 percent of poverty (“reduced-price” meals); and the lowest reimbursement was provided for meals served to children whose family incomes exceeded 195 percent of the poverty guideline (“full price” meals).¹⁰⁹

Applying the means test in family child care settings was perceived to limit participation. Providers complained that the means test was overly burdensome and too invasive for their relationship with the few families for whom they provided child care. In addition, sponsors claimed that meal reimbursements were insufficient to cover their administrative costs and allow for adequate reimbursement to the homes.¹¹⁰ As a consequence, very few homes participated in the program—fewer than 12,000 by December 1978, approximately 2 years after homes were eligible to participate.

The 1978 Child Nutrition Amendments (P.L. 95-627) incorporated wide-ranging changes to the CCFP with the purpose of expanding participation, particularly among family child care homes. Most significantly, the 1978 Amendments eliminated the means test for homes. The three-level reimbursement structure was replaced with a single reimbursement rate for all participants, at a level slightly below the free-meal reimbursement rate for child care centers. In addition, the amendments separated the reimbursement of sponsors’ administrative costs from the meal reimbursement for family child care homes. Other changes included alternative procedures for approving homes and startup and expansion funds for family child care sponsors.

The 1978 Amendments provided financial incentives for homes serving middle-income children to participate in the CCFP and for sponsoring agencies to recruit such homes into the program. Following the implementation of these amendments in May 1980, the family child care component of the program began a period of tremendous growth. Between June 1980 and March 1981, the number of participating homes increased by 40 percent—from 17,000 to 43,000.

¹⁰⁹Effective January 1982, the income eligibility for free meals was increased from 125 to 130 percent of poverty and the threshold for reduced-price meals was reduced from 195 to 185 percent of poverty.

¹¹⁰Meal reimbursements generated by participating homes were paid directly to the sponsoring agency. The sponsor was permitted to deduct administrative costs before passing reimbursement on to providers.

This growth brought with it a change in the profile of children being served by the CCFP. In early 1980, program administrative data showed that most of the children served in participating homes were from low-income families—only 32 percent of these children were from families with incomes above 195 percent of the poverty level. By January 1982, however, most of the children served in participating homes were from middle-income families—62 percent of children in participating homes were from families with incomes above 195 percent of the poverty level (Glantz et al., 1983). By 1995, with over 190,000 homes participating in the program, more than 75 percent of the children in participating homes were from families with incomes above 185 percent of the poverty level (the revised threshold for eligibility for reduced-price meals established in 1982) (Glantz et al., 1997).

Program Changes To Improve Benefit Targeting

Since the mid- to late 1990s, several changes have been implemented to better target the benefits provided through the child care component of the CACFP and to expand program coverage to meet the needs of low-income children receiving care in other settings. The most dramatic change was implemented in 1996 as part of the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) (P.L. 104-193). PRWORA changed the reimbursement structure for family child care homes to target benefits more specifically to homes serving low-income children. The new rate structure for family child care homes took effect July 1, 1997.

Under the new reimbursement structure, family child care homes located in low-income areas have reimbursement rates that are similar to the rates that existed for all family child care homes before PRWORA. A low-income area is defined as either an area where at least half of the children live in families with incomes below 185 percent of the poverty level or an area served by an elementary school in which at least half of the enrolled children are eligible for free or reduced-price school meals. Homes where the provider’s own income is below 185 percent of the poverty guideline have the same reimbursement structure as homes located in low-income areas. Homes meeting one of these criteria are referred to as tier I homes.

All other homes are reimbursed at substantially lower rates. This latter group of homes, referred to as tier II homes, includes those that are neither located in a low-income area nor operated by a low-income provider.

Tier II homes can receive the higher tier I reimbursement rates for meals and snacks served to children from families with incomes below 185 percent of poverty, if family income is documented. FY 2003 reimbursement rates are shown in table 38.

As noted previously, family child care homes can participate in the CACFP only if they are sponsored by a recognized sponsoring agency. Sponsors are responsible for determining that homes meet the CACFP eligibility criteria, for providing training and other support to family child care providers, and for monitoring homes to ensure that they comply with applicable Federal and State regulations. Sponsors receive and verify the homes' claims for CACFP reimbursement, forward the claims to USDA for payment, receive the reimbursements from USDA, and distribute the meal reimbursements to the homes. Sponsors receive Federal reimbursement for the costs of providing these administrative services that are the lesser of (1) actual costs, (2) the budget amount approved by their State CACFP office, (3) 30 percent of total program funds (funds and administrative reimbursements), or (4) the sum of the number of homes sponsored times the administrative cost reimbursement rates shown in table 39.

The legislative changes enacted under PRWORA do not affect sponsors' administrative payment levels, but do add new responsibilities. Sponsors have been given primary responsibility for classifying providers as tier I or tier II. In addition, for tier II homes seeking reimbursement at the tier I level for individual children, sponsors are responsible for administering the income test. Parents send income verification forms directly to sponsors, who then determine whether the household income is below 185 percent of the poverty guideline. Providers are notified of the number of children approved for the higher reimbursement rates but not the names of the children approved.

A congressionally mandated study of the effect of tiering found that the legislative change achieved desired objectives: The number of low-income children served in CACFP homes grew by 80 percent between 1995 and 1999, and the number of meal reimbursements for low-income children doubled (Hamilton et al., 2001). Moreover, tiering had no adverse effect on either the number or nutritional characteristics of meals and snacks offered by tier II providers (Crepinsek et al., 2002).

Other Recent Program Changes

In 1998, the Child Nutrition Reauthorization Act (P.L. 105-336) expanded institutional eligibility for the child

Table 38—Meal reimbursement rates for homes and centers, July 1, 2002-June 30, 2003¹

Meal	Family child care homes		Child or adult care centers		
	Tier I rate	Tier II rate	Paid	Reduced	Free
<i>Dollars</i>					
Breakfast	0.98	0.37	0.22	0.87	1.17
Lunch/supper	1.80	1.09	.20	1.74	2.14
Supplement (snack)	.53	.14	.05	.29	.58

¹Meal reimbursement rates are higher in Alaska and Hawaii.

Table 39—Monthly administrative cost reimbursement rates for sponsors of family child care homes, July 1, 2002-June 30, 2003¹

Number of homes	Rate per home
<i>Dollars</i>	
Initial 50 (homes 1-50)	84
Next 150 (homes 51-200)	64
Next 800 (homes 201-1,000)	50
All additional (homes 1,001 and over)	44

¹Administrative cost reimbursement rates are higher in Alaska and Hawaii.

component of the CACFP to include after-school care programs and homeless shelters. To be eligible for participation, after-school programs must be located in geographic areas where 50 percent or more of the children enrolled in school are eligible for free or reduced-price meals in the NSLP. They must also provide regular, structured activities for children, including educational and enrichment activities (USDA/FNS, 2002b). Snacks are served free of charge, and providers are reimbursed at the free snack rate for all snacks provided. Reimbursement is limited to one snack per child per day on school days, weekends, or holidays during the school year.

P.L. 105-336 also added homeless shelters to the list of institutions eligible to participate in the CACFP. The participation of homeless shelters grew out of a demonstration project (the Child Nutrition Homeless Demonstration) that was authorized by P.L. 101-147 (the Child Nutrition and WIC Reauthorization Act of 1989). The purpose of the demonstration was to determine the best means of providing year-round food assistance to homeless preschool children residing in emergency shelters (Macro International, 1991). Sites selected for the demonstration provided free meals and snacks to children, following CACFP meal pattern guidelines, and received standard CACFP reimbursements.

The demonstration ran for 4 years (FY 1990 through FY 1994) and increased from one sponsor and four shelters serving approximately 22,000 meals (Macro International, 1991) to 59 sponsors and 81 shelters serving more than 700,000 meals and snacks (Fox and Cutler, 1996). Because the demonstration showed the feasibility of providing USDA-reimbursed meals and snacks in a variety of homeless shelters, the Homeless Child Nutrition Program was established as a permanent program in 1994 (P.L. 103-448). The program was incorporated into the CACFP in July 1999.

In 2000, the Agricultural Risk Protection Act (P.L. 106-224) expanded institutional eligibility for the CACFP to include some for-profit child centers. Eligibility was extended to centers where 25 percent or more of enrolled children (or 25 percent of licensed capacity, whichever is less) are eligible for free and reduced-price meals.¹¹¹ Initially, the timeframe for this temporary provision was December 21, 2000, to September 30, 2001. In 2001, under P.L. 107-76, the timeframe was extended through September 2002. In 2003, the FY 2003 appropriations bill extended the timeframe through September 2003 (Garnett, 2003).

Finally, in 2000 and 2001, after-school care programs in seven States (Delaware, Michigan, Missouri, New York, Oregon, Pennsylvania, and Illinois) were authorized to provide supper to participating children (USDA/FNS, 2002c).

Adult Day Care Component

In 1987, as a means of increasing support for elderly feeding programs, P.L. 100-175 amended the Older Americans Act to mandate that the CACFP be expanded to allow eligible adult day care centers to participate. Centers that provide day care services to persons age 60 or older or to functionally impaired persons 18 and older are eligible to participate in the program. Eligible centers have the option of participating in the CACFP or in the Nutrition Services Incentive Program (discussed in chapter 10), but cannot receive reimbursement under both programs for the same meal. Participation in the adult component of the CACFP has increased steadily over time, after a period of rapid growth in the early years of operation. Since 1988, the number of meals served to adults has increased from 2 million to approximately 45 million (USDA/FNS, 2003).

The adult component of the CACFP operates in essentially the same manner as the child care *center* component of the program. Adult day care centers are reimbursed for meals and snacks served to participating adults, using the same income-eligibility criteria and reimbursement rates as participating child care centers. Moreover, meals and snacks served in adult day care centers must meet CACFP meal pattern requirements to qualify for Federal reimbursement.

Review of Research on the Child Care Component of the CACFP

To date, no research has examined the impact of the child care component of the CACFP on participants' nutrient intake or other nutrition- and health-related outcomes. Ten descriptive studies of the child care component of the CACFP were identified. Characteristics of these studies are summarized in table 40.

Seven studies, four of which were national in scope, examined the nutrient content of meals and snacks offered in child care centers and/or homes participating in the CACFP. Six studies assessed children's nutrient intake from CACFP meals. Four of these studies looked at nutrient intake both in and out of care, so were able to describe the contribution of CACFP meals and snacks to children's overall diets.

Only one study, the first national study of the program, examined meals and snacks offered to nonparticipating children—that is, to children receiving care in child care centers that did not participate in the CACFP (Glantz and O'Neill-Fox, 1982). This study, which was completed when the program was still focused exclusively on children, is described next.

Evaluation of the Child Care Food Program

The 1978 Child Nutrition Amendments (P.L. 95-627) directed USDA to study meal quality in day care centers and homes that participated in the CACFP. The study examined the nutrient content and nutrient density of meals and snacks offered in participating and nonparticipating child care centers as well as the quality and variety of foods offered (Glantz and O'Neill-Fox, 1982). The study also described meals and snacks offered in participating homes, but did not include a sample of nonparticipant homes.¹¹²

¹¹¹For-profit centers that either have tax-exempt status or receive Title XX funding for 25 percent or more of enrolled children have long been eligible for CACFP participation. The provision in P.L. 106-224 did not affect eligibility of so-called "Title XX centers."

¹¹²The study was unable to identify a sample of eligible nonparticipating homes.

Table 40—Studies that examined the nutrient content of meals and snacks offered in the Child and Adult Care Food Program and/or the nutrient contribution of meals and snacks consumed by program participants

Study	Measure(s)	Sample	Data collection method
<i>Studies of the child care component of the CACFP: Nutrient content of meals and snacks offered</i>			
Crepinsek et al. (2002)	Nutrient content of menus relative to RDAs Compliance with the <i>Dietary Guidelines for Americans</i>	Nationally representative sample of 542 tier II homes	Self-administered menu forms for a 5-day period
Fox et al. (1997)	Nutrient content of menus relative to RDAs Compliance with the <i>Dietary Guidelines for Americans</i>	Nationally representative sample of 1,962 centers and homes	Self-administered menu forms for a 5-day period
Briley et al. (1993)	Nutrient content of menus relative to RDAs Compliance with the <i>Dietary Guidelines for Americans</i>	Nationally representative sample of 171 centers	Self-administered menu forms for a 10-day period
Drake (1992)	Nutrient content of menus relative to RDAs	46 randomly selected centers in Kansas City area	Self-administered menu forms for a 10-day period
Briley et al. (1989)	Nutrient content of menus relative to RDAs Frequency of foods served	Convenience sample of 40 centers in Texas	Self-administered menu forms for 3 10-day periods
Domer (1983)	Nutrient content of menus relative to RDAs	Convenience sample of 1 center in North Carolina	Self-administered menu forms for a 20-day period
Glantz and O'Neill-Fox (1982)	Nutrient content of menus relative to RDAs Nutrient density of menus Food quality and variety	Nationally representative samples: ▪ 100 participating centers ▪ 64 nonparticipating centers ▪ 60 participating homes	Self-administered menu forms for a 3-day period
<i>Studies of the child care component of the CACFP: Children's nutrient intake from CACFP meals and snacks</i>			
Crepinsek and Burstein (2003)	In-care nutrient intake relative to RDAs, and <i>Dietary Guidelines for Americans</i> Out-of-care nutrient intake relative to RDAs and <i>Dietary Guideline for Americans</i>	Nationally representative sample of 336 homes and centers	In-care observations for 2 nonconsecutive days 24-hour recall with parent for 2 nonconsecutive days
Fox et al. (1997)	In-care nutrient intake relative to RDAs and <i>Dietary Guidelines for Americans</i>	Nationally representative sample of 372 centers and homes	In-care observations for 2 nonconsecutive days
See notes at end of table.			Continued—

Table 40—Studies that examined the nutrient content of meals and snacks offered in the Child and Adult Care Food Program and/or the nutrient contribution of meals and snacks consumed by program participants—Continued

Study	Measure(s)	Sample	Data collection method
Briley et al. (1993)	In-care nutrient intake relative to RDAs, <i>Dietary Guidelines</i> , and Food Guide Pyramid Out-of-care nutrient intake relative to RDAs, <i>Dietary Guidelines</i> , and Food Guide Pyramid	Convenience sample of 12 centers in central Texas, 6 centers with “strong” menus, and 6 centers with weaker menus	In-care observations for 3 consecutive days Parent-maintained food records for 3 consecutive days
Drake (1992)	In-care nutrient intake relative to RDAs	Convenience sample of 4 centers in Kansas City	In-care observations for 10 consecutive days
Drake (1991)	In-care nutrient intake relative to RDAs Out-of-care nutrient intake relative to RDAs	Convenience sample of 1 center in Kansas City	In-care observations for 5 consecutive days 24-hour recall with parent for 5 consecutive days
Glantz et al. (1983)	In-care nutrient intake relative to RDAs Out-of-care nutrient intake relative to RDAs	Convenience sample of 20 centers in Boston area	In-care observations for 5 consecutive days 24-hour recall with parent for 5 consecutive days
Studies of the adult care component of CACFP			
Ponza et al. (1993)	Frequency of foods served In-care nutrient intake relative to RDAs Out-of-care nutrient intake relative to RDAs	Nationally representative sample of 85 adult day care centers and 942 participating adults	Self-administered menu forms for a 5-day period In-care meal observations and 24-hour recall

Design

The study used a quasi-experimental design to evaluate the effects of CCFP participation on the quality of meals offered to children in child care. Data were collected from a nationally representative sample of 100 participating child care centers, 60 eligible nonparticipating centers, and 62 participating family child care homes. A one-day site visit was completed in each child care center and home. The preparation and service of one lunch and one snack were observed. Data on the portions of food served to children were obtained using a “plate game,” a technique that obtained actual gram weights of the portions served to or taken by a sample of six children. These data were used to impute portion sizes for an analysis of three daily menus from a randomly selected week.

The main limitation of this design is the potential for selection bias; child care centers and homes that were more concerned with nutrition (and therefore more likely to offer nutritious meals and snacks) may have been more likely to choose to participate in the CCFP than other child care providers. The analysis did not attempt to control for selection bias or for measured differences that may have existed between participating and nonparticipating providers. Results of the study are based on simple comparisons of the nutritional characteristics of meals and snacks offered by participating and nonparticipating providers. Data were tabulated separately for participating homes and participating centers.

Findings

Three measures were used to assess the nutritional characteristics of meals and snacks offered by participating and nonparticipating providers: nutrient content; nutrient density; and food quality and variety. On each of these measures, participating centers and homes scored significantly higher than nonparticipating centers.

Nutrient Content. Compared with nonparticipating centers, both participating centers and homes offered meals and snacks that provided a significantly greater proportion of the Recommended Dietary Allowances (RDAs) for food energy and for all nutrients examined except vitamins A and C.¹¹³ At least part of this difference was due to CCFP centers and homes serving breakfast much more frequently than nonparticipating

centers. Nonparticipating centers tended to offer a morning snack rather than a complete breakfast.

Nutrient Density. Nutrient density scores were used to assess the overall quality of the meals and snacks offered.¹¹⁴ With the exception of the score for vitamin C, nutrient density scores for meals and snacks offered in participating centers and homes were significantly higher than scores for meals and snacks offered in nonparticipating centers. That is, participating centers and homes served meals and snacks that provided significantly greater amounts of nutrients, relative to food energy.

Food Quality and Variety. Three daily menus were scored using an index that reflected the quality of foods served (for example, fresh fruits or vegetables vs. canned fruits or vegetables), as well as the variety of foods served within major food groups. Mean scores on this index were significantly greater for participating centers and homes than for nonparticipating centers. Differences were noted for both the quality and variety components of the index.

Limitations

Findings reported by Glantz and O’Neill-Fox (1982) should be treated with some caution because the data are now considerably out of date. Many market and legislative changes may have affected characteristics of foodservice programs in both participating and nonparticipating centers and homes. Moreover, as just noted, the study did not attempt to deal with potential selection bias or adjust for any differences in measured characteristics that may have existed between the participant and nonparticipant groups. This allows for the possibility that the differences observed between participating centers and homes and nonparticipating centers were a reflection of a greater interest in or focus on nutrition among CCFP providers than among other providers.

Other Studies of the Child Care Component of the CACFP

All of the other studies identified for this review examined the nutrient content of meals and snacks offered to or consumed by participating children but did not assess program impact—that is, the studies did not include comparisons to nonparticipating institutions or children.

¹¹³Meals and snacks offered in participating centers and homes were also higher in vitamins A and C. These differences, however, were not statistically significant.

¹¹⁴Nutrient density scores were calculated for each nutrient examined using the following equation: percent RDA for nutrient/percent RDA for food energy. A score of less than 1 indicated a suboptimal ratio of nutrients to calories.

CACFP regulations and guidance materials provide only broad standards for meals and snacks offered under the program. In the absence of specific nutrient-based standards, most of these descriptive studies used the recommendations of the American Dietetic Association (ADA) (1994, 1999) as a benchmark for assessing the nutrient content of CACFP meals and snacks. The ADA recommends that children in care for 8 or more hours per day receive food that provides at least one-half to two-thirds of their daily needs for energy and nutrients (based on age-appropriate RDAs). In addition, the ADA recommends that meals and snacks be consistent with the *Dietary Guidelines for Americans*.

Findings from the identified studies must be interpreted in light of shifting program policies regarding the maximum number of meals and snacks eligible for reimbursement. Before 1981, participating centers and homes could be reimbursed for up to two meals and two snacks per day for each child in care. The previously described evaluation of the CCFP (Glantz and O'Neill-Fox, 1982) collected data when this policy was in effect.

The 1981 Omnibus Budget Reconciliation Act (P.L. 97-35) limited reimbursements to a maximum of two meals and one snack per child per day. Following this change, there was a marked reduction in the number of child care centers that offered a morning snack (Glantz et al., 1988). Three of the identified studies are based on data collected while this policy was in place (Briley et al., 1989; Domer, 1983; and Glantz et al., 1983).

The policy governing maximum reimbursements was changed again, in 1988, when Congress allowed child care providers to be reimbursed for an additional meal or snack for children in care 8 or more hours per day (P.L. 100-435). Thus, findings from five of the most recent studies (Crepinsek and Burstein, 2004 (which used data collected as part of the study reported on by Fox et al., 1997); Fox et al., 1997; Briley et al., 1993; and Drake, 1991 and 1992) reflect a program that allowed providers to be reimbursed for up to two meals and two snacks per child per day.

Under the 1996 PRWORA reforms, the so-called "fourth-meal provision" was eliminated again. Today, CACFP providers can be reimbursed for a maximum of one meal and two snacks or two meals and one snack per child per day, regardless of how long the child is in care. The most recent study of CACFP meals and snacks (Crepinsek et al., 2002) collected data in 1999, after the PRWORA change had been implemented.

Nutrient Content of CACFP Meals and Snacks Offered to Participating Children

Seven studies described the nutrient content of meals and snacks offered to participating children (table 40).¹¹⁵ During periods when USDA allowed providers to be reimbursed for up to two meals and two snacks per day for each child in care, most studies found that, on average, the combinations of meals and snacks commonly offered to children provided them with the opportunity to obtain at least 50 percent of their daily energy and nutrient needs (Fox et al., 1997; Drake, 1992; Glantz and O'Neill-Fox, 1982).¹¹⁶ Briley et al. (1993) reported similar results but found that meals and snacks offered to children in full-time care fell short of the ADA's recommendation for food energy, iron, and niacin, a finding that may have been an artifact of the way the data were analyzed.¹¹⁷

Two studies conducted during a time when CACFP reimbursements were limited to two meals and one snack per child per day (Briley et al., 1989; Domer, 1983) found that the full complement of meals and snacks offered in participating centers provided less than 50 percent of the RDAs for food energy and several nutrients.

The most recent study of CACFP meals, based on data collected in 1999 and limited to tier II family child care homes, found that, on average, the mean nutrient content of the most common combinations of meals and snacks offered (breakfast, lunch, and one snack and breakfast, lunch, and two snacks) satisfied the ADA guidelines for full-time care (Crepinsek et al., 2002). Indeed,

¹¹⁵Most of the available studies provide separate results for different meals (breakfast and lunch) as well as for snacks. This discussion is limited to findings related to the full complement of meals and snacks offered, relative to the ADA recommendations.

¹¹⁶Glantz and O'Neill-Fox (1982) reported that, on average, the total diets (all meals and snacks combined) offered in participating child care centers contributed only 48 percent of the RDA for iron (which is just below the ADA recommendation of 50 percent for children in care 8 or more hours per day). However, methodology used in this study was different from that of all other studies examined here. In computing the mean percentage of the RDAs, levels exceeding 100 percent for any individual provider were truncated to 100 percent. While this approach had the intended effect of minimizing the effects of excessively high levels on the mean values, it also understated the true mean values. One can probably safely assume that, in the absence of this truncation, the true mean percentage of the RDA for iron would have exceeded the 50 percent benchmark established by the ADA.

¹¹⁷The study analyzed the nutrient content of the average menu offered in each center but did not directly measure quantities of food offered or served. Rather, the analysis assumed that centers served the amounts specified in program regulations, which probably resulted in an underestimation of the energy and nutrient content of the meals offered. Fox et al. (1997) found that portion sizes actually served to or taken by children are generally equivalent to or greater than the minimum portion sizes specified in the CACFP regulations.

researchers demonstrated that the mean nutrient content of meals and snacks offered in 1999 did not differ significantly from the mean nutrient content of meals and snacks offered by similar providers in 1995 (based on data from Fox et al., 1997).¹¹⁸ This was true despite the elimination of the “fourth meal” provision and reduction in reimbursement rates for tier II providers by PRWO-RA. Findings may differ for other types of providers (who were affected by the change in the maximum number of meals and snacks eligible for reimbursement but not the change in reimbursement rate).

As noted, the ADA recommends that meals and snacks offered in the CACFP be consistent with the *Dietary Guidelines*. Under current program regulations, CACFP providers are not required to meet these standards. Indeed, the applicability of the *Dietary Guidelines* to the diets of children between the ages of 2 and 5 has been somewhat controversial over the years.

The 1995 edition of the *Dietary Guidelines* stated that recommendations for total fat and saturated fat did not apply specifically to children between the ages of 2 and 5. Rather, the recommendation was that “after [2 years], children should gradually adopt a diet that, by about 5 years of age, contains no more than 30 percent of calories from fat” (USDA and U.S. Department of Health and Human Services (HHS), 1995).

The most recent edition of the *Dietary Guidelines*, released in 2000, takes a firmer stand on this issue and states specifically that advice about intake of total fat, saturated fat, and cholesterol “applies to children who are 2 years of age and older” (USDA/HHS, 2000).

The two largest and most recent studies of CACFP meals and snacks compared the nutrient content of the combinations of meals and snacks most commonly offered by CACFP providers with *Dietary Guidelines* and associated recommendations for total fat, saturated fat, cholesterol, and sodium. Fox and colleagues (1997) limited their analysis to meals and snacks offered to children age 5 and older; at the time, the 1995 edition of the *Dietary Guidelines* was in effect. Results showed that the two most common combinations of meals and snacks offered to children in this age group met or approximated the *Dietary Guidelines* recommendation for fat but exceeded the recommendation for saturated fat. In addition, meals and snacks were high in sodium,

relative to energy contributions. While the two most common combinations of meals and snacks provided 61-71 percent of children’s daily energy needs, on average, they provided 68-75 percent of the recommended daily maximum of sodium.

The most recent study of CACFP meals and snacks, completed in 2002, examined meals and snacks offered to children age 2 and older (Crepinsek et al., 2002). Results were similar to those reported by Fox et al. in 1997. For the two most common combinations of meals and snacks offered (the same combinations assessed by Fox et al., 1997), mean saturated fat content exceeded the *Dietary Guidelines* recommendation and mean sodium content was high, relative to energy content. As noted, however, this study included only tier II homes, so findings may be different for other types of providers.

Nutrient Content of CACFP Meals and Snacks Consumed by Participating Children

The nutrient profile of meals and snacks actually consumed by participating children may differ from the nutrient profile of meals and snacks offered by providers. For example, children may decline one or more of the foods offered, children may select portions that differ from that of the average portion, or children may waste (not consume) some of the food they take. Thus, to gain a full understanding of the contributions of CACFP meals and snacks to children’s energy and nutrient needs, one must examine the nutrient content of CACFP meals and snacks actually consumed by children.

As summarized in table 40, six studies examined the nutrient content of the meals and snacks *consumed* by children while in care. Four of these studies have limited generalizability because they used small convenience samples (Briley et al., 1993; Drake, 1992 and 1991; and Glantz et al., 1983).

The most recent comprehensive study of the CACFP, the Early Childhood and Child Care Study (Fox et al., 1997), included meal observations in a nationally representative sample of 372 participating child care centers and homes. Observations were completed for 1,347 children between the ages of 1 and 10. Children generally selected portions of food that were equivalent to or greater than the minimum portion sizes specified in the CACFP meal pattern requirements and generally consumed between 70 and 80 percent of the portions taken.

Among children in care 8 or more hours per day, CACFP meals and snacks provided about 50 percent

¹¹⁸One significant difference was detected for the combination of breakfast, lunch, and two snacks. The mean energy content of this combination of meals and snacks was greater in 1999 than 1995.

of daily needs for energy and iron.¹¹⁹ Intake of calcium from CACFP meals and snacks approximated, on average, three-quarters of the RDA. Average intakes of protein, vitamin A, and vitamin C exceeded 100 percent of the RDA.

Comparisons of intakes to *Dietary Guidelines* recommendations were limited to 5-year-olds because of the 1995 *Dietary Guidelines* restriction and limited samples of older children in full-time care. Findings showed that CACFP meals and snacks consumed by these children provided more than the recommended amounts of both total fat and saturated fat. In addition, intake of sodium from CACFP meals and snacks was high, relative to energy intake.

The Early Childhood and Child Care Study also attempted to describe the relative contribution of CACFP meals and snacks to children's 24-hour intakes. The analysis was ultimately abandoned, however, because of low response rates. The study methodology called for two 24-hour recalls on non-consecutive days made up of in-care observations for foods consumed in care, as well as telephone interviews with parents for foods consumed at home. Because of difficulties in reaching parents to complete the interview about at-home consumption within 48 hours of the in-care observations, complete data were obtained for a relatively small percentage of the sample (roughly 40 percent).

Crepinsek and Burstein (2004) recently analyzed the 24-hour recall data from the Early Childhood and Child Care Study. A nonresponse analysis revealed that, although children with complete and incomplete dietary recall information were similar on a number of key variables, children with complete information were more likely than those with incomplete information to be from households with incomes equal to or greater than 185 percent of poverty. At the same time, children with complete and incomplete information were quite similar with regard to the meals and snacks they were observed to eat in care. Moreover, mean intakes of food energy and key nutrients at each eating occasion differed little between the two groups. The authors concluded that, with the use of sampling weights to correct for discrepancies between the two groups to the extent possible, the description of CACFP contributions to total nutrient intakes based solely on respondents with complete information is not

greatly distorted. Key findings from this analysis, which was not limited to children in full-time care, are summarized here.

For toddlers and preschoolers, CACFP meals and snacks contributed 36-47 percent of daily energy needs and 45 to more than 100 percent of the RDA for key nutrients. CACFP meals and snacks made smaller contributions to the intakes of school-age children (ages 6-10) because they spend fewer hours in care (typically 3 hours per day). For food energy and iron, the CACFP contribution for 6-10-year-olds was less for children who received care in centers than for children who received care in family child care homes. The authors attribute this difference to the fact that children receiving care in homes are likely to be offered breakfast and lunch, whereas, children receiving care in centers are likely to be offered snacks (as reported by Fox et al., 1997).

CACFP meals and snacks did not contribute disproportionately to children's daily intake of fat, saturated fat, or sodium, although total daily intakes of children ages 3-10 exceeded recommendations for intake of all these nutrients. CACFP meals and snacks provided more than the recommended level of saturated fat, as a percentage of total food energy.

Children's 24-hour intakes of food energy, protein, vitamins A and C, calcium, iron, and zinc met or exceeded the RDAs. The one exception was energy intake among children ages 6-10 in child care centers. For this group of children, mean daily intake of food energy was equivalent to 87 percent of the RDA.

Review of Research on the Adult Care Component of the CACFP

To date, only one study has examined the adult day care component of the CACFP (Ponza et al., 1993). Although this descriptive study of the meals and snacks served by participating adult day care centers compared the characteristics of participating and nonparticipating centers, it did not collect menu or dietary intake information from nonparticipating centers. The study collected menu information for a 1-week period from a nationally representative sample of 85 adult day care centers participating in the CACFP as well as information on foods consumed over a single 24-hour period by a random sample of 942 adults attending these centers.

The study did not analyze the nutrient content of the meals and snacks served in participating centers. The

¹¹⁹This analysis was limited to children under the age of 6 because older children were seldom in care 8 or more hours per day.

analysis of menus was limited to tabulations of the types and frequencies of foods offered. The study described dietary intakes of CACFP participants and assessed the contribution of program meals to total daily intake. The authors examined the percentage of the RDA for food energy and key nutrients consumed during the day as part of CACFP reimbursable meals and snacks, as well as the percentage of total daily intake supplied by CACFP meals and snacks.¹²⁰ The study also compared the composition of CACFP meals and snacks consumed by participants with the *Dietary Guidelines for Americans*.

On average, total nutrient intake from all CACFP meals and snacks supplied 42 percent of the RDA for food energy and between 52 percent (iron) and 83 percent (vitamin C) of the RDAs for key nutrients. Taken together, CACFP reimbursable meals and snacks consumed by participating adults contributed about one-half of their total daily intake.

The study also found that CACFP meals and snacks consumed by participants were not consistent with the *Dietary Guidelines for Americans*. On average, the percentage of food energy derived from fat (33 percent) and saturated fat (11 percent) exceeded the recommended levels of no more than 30 percent and less than 10 percent, respectively.

Summary

Very little solid information exists concerning the impact of the CACFP on the nutrition and health outcomes of participating children and adults. Only one study has attempted to compare CACFP conditions with the conditions that would exist in the absence of the program. That study (Glantz and O'Neill-Fox, 1982) provides some evidence that the program improves the quality of meals and snacks served to children in participating child care centers and homes, but the evidence has substantial limitations. First, it is quite dated. Since the time that this study was completed, program regulations, program participation, and national patterns of child care use have changed significantly. Second, the study looked at only the characteristics of meals offered and did not examine children's actual intakes from CACFP meals and snacks. Finally, the study design is potentially vulnerable to selection bias.

¹²⁰Program regulations limit CACFP reimbursements to a maximum of two meals and one snack per day. Some adults in participating centers consume an additional snack while in care that is not reimbursable.

Other available research is less outdated but is even more limited than the 1982 study in the sense that it includes no representation of the conditions that would exist in the absence of CACFP. Moreover, the most recent comprehensive descriptive study of the child care component of the program (Fox et al., 1997) is based on data that were collected when providers were eligible to receive reimbursement for an additional meal or snack for children in care 8 or more hours per day. Subsequent research has indicated that this change had no impact on the number or nutritional quality of meals and snacks served in tier II homes (Crepinsek et al., 2002), but information is lacking for other types of providers.

Similarly, the one study that has been completed on the adult component of the program was entirely descriptive in nature and offers no comparison of participants' nutrient intakes to those that would exist in the absence of the CACFP.

Thus, the existing literature leaves unanswered the fundamental question of how the CACFP affects the nutrient intake and other nutrition- and health-related outcomes of participating children and adults. The need for an answer to this question will become increasingly important as child care use patterns continue to evolve and the population continues to age.

Addressing the question of program impact will almost certainly require new, special-purpose research. The national surveys that measure nutrient intake in detail, such as the National Health and Nutrition Examination Survey (NHANES) and the Continuing Survey of Food Intake of Individuals (CSFII), do not provide reliable indicators of institutional participation in the CACFP and do not even ask about meals that might be consumed in family child care homes. Thus, identifying a valid sample of CACFP and non-CACFP participants from these existing databases is unlikely.

In addition to collecting primary data, future studies of the CACFP should do the following:

- Use dietary assessment methods that measure usual energy and nutrient intake of participating children and/or adults, children and adults attending nonparticipating day care programs, and, perhaps, children and adults who are not in care.
- Look at meals and snacks offered by participating and nonparticipating programs and the foods actually consumed by attending children and adults.

- Examine the impact of the CACFP on the total dietary intake of participants over the full day, including food consumed in care and food consumed outside of care.

Given the problems encountered in the Early Childhood and Child Care Study—low response rates because of difficulties in obtaining information from parents about food consumed at home to couple with information obtained during in-care observations—

special attention will need to be paid to the methodology used to collect complete dietary recall information for children.¹²¹

¹²¹This problem has been encountered in other studies that used a comparable methodology. For example, the first School Nutrition Dietary Assessment Study (SNDA-I) (Burghardt et al., 1993, chapter five) achieved response rates of 30-35 percent for students in grades 1 and 2 where parent interviews were used to collect information on out-of-school food consumption for a single 24-hour period.

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