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Maternal Employment and Children's Nutrition

Volume I, Diet Quality and the Role of the CACFP

By Mary Kay Crepinsek and Nancy R. Burstein, Abt Associates Inc.

ERS project representative: Linda M. Ghelfi, 202-694-5437,
lghelfi@ers.usda.gov.

Abstract

Compared with children of nonworking mothers, children of full-time working mothers have lower overall HEI (Healthy Eating Index) scores, lower intake of iron and fiber, and higher intake of soda and fried potatoes, even after taking into account differences in maternal and other family characteristics. Nutritional differences between children of part-time working mothers and children of nonworking mothers were more sensitive to maternal and family characteristics, with no clear pattern of nutritional differences emerging. This study analyzed differences in nutrition outcomes among children whose mothers work full time, part time, and not at all, and the role USDA's Child and Adult Care Food Program (CACFP) plays in meeting the nutrition needs of participating children, especially those whose mothers work.

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Executive Summary

Labor force participation among women in the United States has increased dramatically over the past three decades. A majority of women with children are now employed outside the home. At the same time, there is evidence from national surveys that children's diets are less healthful than they should be, and that children are becoming increasingly overweight. Economic theory suggests that families in which mothers work outside the home must trade off the advantages of greater income against the disadvantages of less time for home food production and supervision of children's activities. This tradeoff may result in positive, negative, or no net impacts on children's nutritional well-being.

Although considerable research has been done on the relationship between maternal employment and breastfeeding, few studies to date have investigated the relationships between mother's work status and other child nutrition outcomes. Using extant data from nationally representative samples of children and their mothers in the mid-1990s, this study was conducted to explore the relationships between maternal employment and direct measures of children's nutrition, such as diet quality and weight status. It also considered the potential mediating effects of participation in USDA's food assistance programs, particularly the Child and Adult Care Food Program (CACFP), and other nutrition-related outcomes (e.g., meal skipping, household food expenditures, and food sufficiency). Direct measures of children's nutrition are discussed in this volume. Other nutrition-related outcomes are discussed in Volume II.

The study objectives concerned differences in nutrition outcomes among children age 0 to 17 years whose mothers work full-time, part-time, and not at all, and the role the CACFP serves in meeting the nutrition needs of participating children, especially those whose mothers are working. This report presents what has been learned with regard to these issues and discusses some implications for policy decisions. The project was carried out in cooperation with the U.S. Department of Agriculture (USDA), Economic Research Service.

Children's Diet Quality

Previous studies of the association between maternal employment and children's nutrient intake did not find negative effects, although they were limited to preschoolers age 2 to 5 years (Johnson *et al.*, 1992a and 1992b). For this study, no *a priori* hypotheses were formed with regard to mother's work status and children's diet quality. The loss of home production time and the gain in income were expected to work in opposite directions, with the net effect unknown.

Although it is naturally of interest to determine whether maternal employment causes children's nutrition outcomes to be better or worse, it is also important for policymakers to know whether children of working mothers have better or worse nutrition outcomes, regardless of the cause. For example, a greater percentage of black women than Hispanic women work. Some child nutrition outcomes may be affected by cultural factors associated with ethnicity. If families with working mothers tend to fare worse on some outcomes for whatever reason, policymakers will want to ensure that they have appropriate access to food assistance programs and nutrition education.

This study found evidence of a **negative** association between mother's employment status and children's diet quality. The analysis compared children whose mothers work (both full- and part-time) to children with homemaker mothers, overall and for subgroups based on child age, family

income, and the presence of other adults in the household. Measures of diet quality included the Healthy Eating Index (HEI) (total and component scores), intake of food energy, iron, zinc, and dietary fiber, and consumption of soft drinks, added sugars, and fried potatoes. Key findings are that:

- Children of full-time working mothers have lower overall HEI scores (poorer diet quality) than children whose mothers are homemakers. This appears to be the net outcome of strong negative results for 5- to 8-year-olds, and weaker positive results for preschoolers (ages 2 to 4) and children in single-adult households. Differences in HEI scores across employment groups do not significantly affect the relative proportions of children with “good” or “poor” HEI diet ratings.
- On some individual components of the HEI, children of full-time working mothers score lower by eating less grain, fruit, and variety of foods than homemakers' children eat. On other components, they score higher than children of homemakers by eating more vegetables and less total and saturated fat.
- Infants and children up to age 5 consume significantly more food energy relative to requirements if their mothers work full-time *versus* not at all. This raises the question of whether the higher HEI scores among this group of children are the result of excess food intake overall, putting them at greater risk for overweight.
- School-age children of full-time working mothers have lower iron and dietary fiber intakes, on average, than their counterparts with homemaker mothers. The only group for which this is particularly worrisome is teenage girls, whose intakes fall below recommended levels, and for whom maternal employment has substantial negative effects.
- Soda consumption in excess of 8 ounces per day is seen more frequently among children with working mothers than children whose mothers do not work. The differences are greatest for 5- to 8-year-olds and children in single-adult households. Children of full-time working mothers are also the least likely to avoid drinking soda altogether.
- A significant association between maternal full-time employment and children’s fried potato consumption was observed, but the differences amount to only one- to two-tenths of a serving.

Multivariate Analysis of Child Nutrition Outcomes

Children of working mothers differ in many ways from children of homemaker mothers: with regard to race/ethnicity, mother’s age and education, household resources, and other factors. The observed differences in child nutrition outcomes reported above might be due in part or in whole to these factors.

Although this study is unable to attribute causation, we conclude that it is plausible to relate most of the differences in children’s diet quality to maternal employment status *per se*, at least in the case of full-time employment. A regression analysis that controlled for differences in household circumstances, including maternal demographics and employment and occupation of other adult household members, did not substantially alter the pattern of differences among the employment groups. Furthermore, supplementary analyses on a limited sample for which data were available on maternal nutrition knowledge and attitudes found that consideration of these characteristics also did not change the results. Thus, the great majority of the striking differences seen in child nutrition

outcomes by maternal employment status appears to be due to employment *per se*, rather than being explained by differences in the households. These differences include, for children of full-time working mothers, lower overall HEI scores, especially among children age 5 to 8; lower intake of iron, especially among children age 5 to 12 and teenage girls; lower intake of fiber, especially among children age 5 to 12; higher intake of soda, especially among children age 5 to 8; and higher intake of fried potatoes, especially among children age 2 to 8.

Evidence of negative differences for children of part-time working mothers was scattered and fragmentary. There were no negative differences in the bivariate analyses for all ages combined, and the only significant regression-adjusted difference for all ages combined was increased consumption of fried potatoes. The results for particular age groups associated with part-time maternal employment were more likely to gain or lose statistical significance between the bivariate and multivariate analyses, indicating that the differences in composition were more important for part-time working *versus* homemaker mothers than for full-time working *versus* homemaker mothers. (Examples of such differences are that full-time working mothers are relatively more likely to be black, whereas homemaker mothers are relatively more likely to be Hispanic; that of the three groups, part-time working mothers tend to have the most and homemaker mothers the least formal education; and that estimated earnings from other household members are greatest on average among households with part-time working mothers and least among households with homemaker mothers.)

Other Nutrition-Related Outcomes¹

Income relative to poverty tends to be higher in households with working mothers. Consequently these households are less likely to participate in the means-tested food assistance programs, the Special Supplemental Nutrition Program for Women, Infants and Children, the Food Stamp Program (WIC), and the School Breakfast Program (SBP). (Although SBP is in principle available to children of all incomes, in practice it predominantly serves low-income children.) National School Lunch Program participation, in contrast, is higher among children of working mothers.

The effects of greater income among households of working mothers is also seen in their greater expenditures on food per adult male equivalent; and their higher levels of food sufficiency. The effects of time pressures are seen in working mothers' reduced participation in meal planning, shopping, and food preparation; in the increased prevalence of morning meal skipping by teenage girls; and the heavier reliance on away-from-home food sources.

This study also found that children of full-time working mothers spend more time watching TV and videos than children of homemakers. The frequency of engaging in vigorous exercise, however, does not differ across employment groups. Among 12- to 14-year olds, children with full-time working mothers are at significantly greater risk of overweight (Body Mass Index above the 85th percentile) than children whose mothers are homemakers.

Unfortunately, available data on exercise level were self-reported and obtained only from older children (12 to 17 years). In addition, reliable data on weight status were not available for children under

¹ Results of analyses exploring the relationships between mothers' work and children's eating patterns, household food acquisition and sufficiency, participation in food assistance programs, and children's physical activity and weight status can be found in Volume II of this report.

12 years old. The possibility that maternal employment is related to the physical activity level and risk of overweight for younger children cannot be ruled out.

Role of the Child and Adult Care Food Program

The great majority of working mothers at all income levels relies on non-parental child care, especially for infants and young children (Tout *et al.*, 2001). The CACFP is a federal program, administered by the USDA, that subsidizes nutritious meals and snacks served to children in participating child care facilities. It is thus the food assistance program most directly targeted to children of working mothers. The ability of CACFP to mediate any negative effects of maternal employment on children's diets is related to the quality of the meals and snacks actually consumed, and their relative contribution to participants' nutritional needs for the full day. This study marks the first analysis of both the in-care and out-of-care components of CACFP participants' 24-hour dietary intake using a national sample. However, the sample response rate for the 24-hour recall was low, 41 percent. Although a comparison of respondents and nonrespondents did not suggest that the results are invalid, the possibility of bias remains.² The USDA Food and Nutrition Service therefore recommends that analysis of these data should not be considered as representative of CACFP participants or of the impact of the program.

Contribution of CACFP to Children's Diets

This analysis was intended to be descriptive, providing estimates of children's average consumption of food energy and key nutrients over 24 hours and from CACFP meals and snacks. Results are reported for all CACFP children age 1 to 10 and by type of child care facility (e.g., family child care homes, Head Start, child care centers). CACFP appears to make an important and positive contribution to participating children's intake of key nutrients. Continued efforts to educate providers and provide tools to assist them in serving lower fat, lower sodium meals and snacks seem warranted.

Findings suggest that:

- CACFP participants' daily levels of food energy, protein, vitamins A and C, calcium, iron, and zinc meet or exceed Recommended Dietary Allowances. The one exception is 6- to 10-year-old children in child care centers, whose average daily food energy intake falls below the recommended level (87 percent of 1989 Recommended Energy Allowance (REA)).
- Meals and snacks consumed in CACFP care make a substantial and positive contribution to the daily food energy and nutrient requirements of toddlers and preschool children (36 to 47 percent for food energy and 45 to more than 100 percent for the other nutrients). This does not vary appreciably with the type of CACFP care.
- School-age children consume a smaller share of their daily nutrition needs from CACFP than younger children. This is consistent with the relatively few hours they spend in child care (typically 3 hours per day). For some nutrients (e.g., food energy and iron), the CACFP contribution for 6- to 10-year-olds is less if they are cared for in child care

² Percentages of food energy consumed by the 24-hour recall children and other children observed while eating in CACFP facilities were very similar (see Appendix D). It is, however, possible that nonrespondents have systematically different out-of-CACFP-care dietary-intake patterns than respondents.

centers *versus* family child care homes. This can be explained by the higher likelihood that 6- to 10-year-olds are offered breakfast and lunch in homes than in centers, where they are more likely to receive snacks (Fox *et al.*, 1997).

- CACFP participants age 3 to 10, like other children their age (USDA/ARS, 1999), fall short of meeting the *Dietary Guidelines* recommendations for fat and saturated fat, and consume more sodium and less carbohydrate than the National Research Council's *Diet and Health* recommendations. Regardless of the type of care, the diets of both preschool and school-age participants meet daily recommendations for cholesterol and dietary fiber.
- CACFP meals and snacks do not contribute disproportionately to participants' daily intake of fat, saturated fat, or sodium, relative to total food energy. They do, however, provide more than the recommended level of saturated fat (about 13 percent of food energy).

Comparison of Diet Quality: CACFP Children of Working Mothers and Not-in-Care Children of Nonworking Mothers

To look more closely at the role of CACFP for 1-to-5 year-old children with working mothers, nutrition outcomes were compared to those of not-in-care children of nonworking mothers. This analysis suggests that the CACFP is making a positive contribution to the diets of preschool children with working mothers. Participants are estimated to have better diets than children cared for by their own mothers who do not work outside the home. In addition, the detrimental relationships between mother's full-time work and preschool children's overconsumption of soda and added sugars seem to be ameliorated for those in CACFP care. CACFP participation alone, however, does not appear to lessen the negative relationship between maternal employment and excess food energy and sodium intake. Findings suggest:

- Both part-day (4 or less hours) and full-day (more than 4 hours) CACFP participants with working mothers have higher quality diets, based on the HEI, than not-in-care children of homemakers. This result persists after controlling for demographic characteristics of the children and their households. Differences in overall diet quality are due mainly to greater fruit and milk consumption, and lower total fat intake among CACFP participants.
- A larger share of CACFP participants with working mothers consumes "good" diets and fewer have "poor" diets relative to not-in-care children of homemakers.
- CACFP children in full-day care are more likely to consume in excess of 110 percent of the 1989 REA than not-in-care children of homemakers (mean of 105 percent). Regardless of hours in care, however, CACFP participants are also less likely to have food energy intakes **below** recommended levels than other children.
- Not surprisingly, given CACFP meal pattern requirements, CACFP participants with working mothers consume less soda and other soft drinks than not-in-care children of homemakers. They also consume less added sugar from this source, and if in care more than 4 hours per day, less added sugar from all sources.
- Although there were no differences in fried potato consumption, CACFP participation was associated with greater consumption of vegetables other than fried potatoes.

Differences between groups are generally larger for children in CACFP more hours per day and among children in low-income households, suggesting the target population in particular is benefiting from the program.

Note that this study does not prove that CACFP is what makes the difference in children's diets. Although an analysis controlling for compositional differences between the samples of children and their families confirmed the findings of better diet quality among CACFP participants, the possibilities of selection effects or low survey response bias cannot be ruled out. Nevertheless, the findings are interesting and worth pursuing further, ideally with a prospective, experimental design.