

GAO

Report to the Committee on
Agriculture, Nutrition, and Forestry
U.S. Senate

April 2004

NUTRITION EDUCATION

USDA Provides
Services through
Multiple Programs,
but Stronger Linkages
among Efforts Are
Needed



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Highlights

Highlights of [GAO-04-528](#), a report to the Committee on Agriculture, Nutrition, and Forestry, U.S. Senate

Why GAO Did This Study

The Centers for Disease Control and Prevention recently reported that poor nutrition and lack of physical activity are catching up to tobacco use as the leading cause of death in the United States. In addition to having negative health outcomes, children with poor nutrition may have a harder time succeeding in school than other children. To help improve nutrition, the U.S. Department of Agriculture (USDA) provides nutrition education through five of its programs. The department spent \$472 million on these efforts in fiscal year 2002.

GAO was asked: (1) What key actions can officials take to increase the likelihood of success in nutrition education? (2) Do USDA and state and local officials take these actions during program design, service delivery, and program monitoring and evaluation?

What GAO Recommends

GAO recommends that the Secretary of Agriculture develop a unifying strategy for USDA's nutrition education efforts that (1) identifies ways to improve coordination efforts and strengthen the linkages among the nutrition education efforts and (2) explores options to improve program monitoring and evaluation by collecting reliable data on services and recipients, identifying and disseminating lessons learned, and considering a longer-term evaluation strategy.

www.gao.gov/cgi-bin/getrpt?GAO-04-528.

To view the full product, including the scope and methodology, click on the link above. For more information, contact David Bellis at (415) 904-2272 or bellisd@gao.gov.

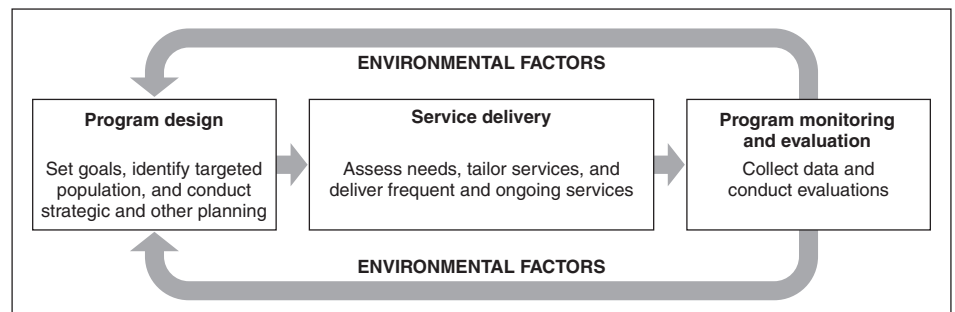
NUTRITION EDUCATION

USDA Provides Services through Multiple Programs, but Stronger Linkages among Efforts Are Needed

What GAO Found

GAO identified several key actions, based on research and performance-based management principles, that increase the likelihood that programs providing nutrition education will achieve their goals. As the figure below shows, examples of these actions include identifying program goals, tailoring services to meet the needs of participants, and collecting data on program results. The actions can be taken during program design, service delivery, and program monitoring and evaluation.

Key Actions That Increase the Likelihood of Successful Nutrition Education



Source: GAO analysis of nutrition education research, performance-based management principles, and expert interviews.

USDA programs providing nutrition education that we reviewed—the Food Stamps Program; the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC); the National School Lunch Program; the Child and Adult Care Food Program; and the Expanded Food and Nutrition Education Program—generally incorporated the key program design actions likely to contribute to success. For example, the USDA programs identified nutrition education goals and target populations. However, the programs' administrative structures hinder coordination among the USDA nutrition education efforts.

We found that the USDA programs incorporated the service delivery actions likely to contribute to successful nutrition education in different ways and to varying extents, but they faced similar challenges that affected their ability to fully incorporate these actions. The challenges included limited resources and systems for providing nutrition education and competing program requirements that took time or resources away from nutrition education. For example, WIC officials said they had limited time for nutrition education because of competing requirements, such as providing information on drug and alcohol counseling.

USDA's nutrition education efforts did not fully incorporate the monitoring and evaluation actions that contribute to success, such as collecting data on the types of nutrition education provided and the outcomes of the efforts. As a result, little is known about what nutrition education is provided and whether these programs have met their nutrition education goals.

Contents

| | | |
|---------------------|--|-----------|
| Letter | | 1 |
| | Results in Brief | 3 |
| | Background | 6 |
| | Several Actions Are Key to Performance-Based Management and Successful Nutrition Education | 13 |
| | Although USDA Generally Incorporates the Key Program Design Actions Likely to Contribute to Success, Establishing Linkages among Programs Is Difficult | 19 |
| | Programs Incorporated the Service Delivery Actions in Different Ways and to Varying Extents but Faced Similar Challenges to Incorporating Them | 25 |
| | Programs Generally Did Not Incorporate Key Nutrition Education Evaluation Actions, Leaving Officials with Limited Information about Program Results | 34 |
| | Conclusions | 41 |
| | Recommendations for Executive Action | 42 |
| | Agency Comments | 43 |
| Appendix I | Scope and Methodology | 46 |
| Appendix II | Nutrition Education Goals of Key USDA Programs | 50 |
| Appendix III | GAO Contacts and Staff Acknowledgments | 51 |
| | GAO Contacts | 51 |
| | Staff Acknowledgments | 51 |
| Tables | | |
| | Table 1: Characteristics of EFNEP | 8 |
| | Table 2: Characteristics of WIC | 9 |
| | Table 3: Characteristics of FSP | 10 |
| | Table 4: Characteristics of NSLP and CACFP | 12 |
| | Table 5: USDA's Nutrition Education Programs Target Similar Populations and Have Overlapping Eligibility Requirements | 20 |
| | Table 6: Studies of the Nutrition Education Efforts Included in Our Review | 40 |

| | |
|---|----|
| Table 7: 15 Studies on Nutrition Education in WIC, FSNE, Team Nutrition (NSLP and CACFP), and EFNEP | 49 |
|---|----|

Figures

| | |
|---|----|
| Figure 1: USDA Nutrition Education Expenditures Have Increased Overall between Fiscal Years 1992 and 2002 | 13 |
| Figure 2: Key Actions That Increase the Likelihood of Successful Nutrition Education | 15 |

Abbreviations

| | |
|--------|---|
| CACFP | Child and Adult Care Food Program |
| CSREES | Cooperative State Research, Education, and Extension Service |
| EFNEP | Expanded Food and Nutrition Education Program |
| FNS | Food and Nutrition Service |
| FSNE | Food Stamp Nutrition Education |
| FSP | Food Stamp Program |
| NSLP | National School Lunch Program |
| TANF | Temporary Assistance for Needy Families |
| USDA | U.S. Department of Agriculture |
| WIC | Special Supplemental Nutrition Program for Women, Infants, and Children |

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Accountability * Integrity * Reliability

United States General Accounting Office
Washington, DC 20548

April 27, 2004

The Honorable Thad Cochran
Chairman
The Honorable Tom Harkin
Ranking Democratic Member
Committee on Agriculture, Nutrition, and Forestry
United States Senate

The Centers for Disease Control and Prevention (CDC) recently reported that poor nutrition and lack of physical activity are catching up to tobacco use as the leading cause of death in the United States.¹ Poor nutrition has increased dramatically in recent decades and now accounts for about 300,000 preventable deaths each year. The proportion of the nation's children who are overweight nearly doubled over the last two decades, and the proportion of adolescents who are overweight almost tripled in the same period. Furthermore, between 1999 and 2000, two out of every three adults were obese or overweight. In addition to having negative health outcomes, children with poor nutrition may have a harder time concentrating and succeeding in school than other children.² As a result, the nation is focusing more attention on the importance of good nutrition.

The U.S. Department of Agriculture (USDA), the lead agency for the nation's nutrition education efforts, funds and administers a variety of nutrition education efforts.³ One program, the Expanded Food and Nutrition Education Program (EFNEP), is designed specifically to provide nutrition education. In addition, four of USDA's largest nutrition assistance programs,⁴ while designed primarily to ensure that eligible

¹The data reported in the CDC study came from Ali Mokdad et al., "Actual Causes of Death in The United States, 2000" *JAMA*; Mar 10, 2004; 291, 10; Health Module p. 1238.

²"Children's Nutrition and Learning," *ERIC Digest*, ED369579, June 1994.

³For the purposes of this report, nutrition education is defined as any set of learning experiences designed to facilitate the voluntary adoption of eating and other nutrition-related behaviors conducive to health and well-being.

⁴The USDA also provides nutrition education in a few other programs, such as the Food Distribution Program on Indian Reservations and the Commodity Supplemental Food Program. However, we did not include these programs in our review because they do not receive as large a share of overall federal program funds as the programs we review in this report.

individuals have access to low-cost or free food, also include nutrition education components. These programs are the Food Stamp Program (FSP); the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC); the National School Lunch Program (NSLP); and the Child and Adult Care Food Program (CACFP). Together, they reached one in five Americans, from infants to the elderly, in 2002. Each of these programs has its own administrative structure, resources, and guidelines for providing nutrition education.⁵ In addition, two different USDA agencies oversee the programs; the Cooperative State Research, Education, and Extension Service (CSREES) oversees EFNEP,⁶ and the Food and Nutrition Service (FNS) oversees the four nutrition assistance programs. Only two of the programs have legislative requirements to provide nutrition education—EFNEP and WIC. Together, resources for nutrition education in these programs totaled about \$472 million in fiscal year 2002. Depending on the program, nutrition education funds ranged from nearly \$10 million to almost \$250 million in fiscal year 2002, and programs spent between \$0.20 and \$103 per participant on nutrition education in that same year, according to USDA officials.

In view of the importance of good nutrition, you asked us to answer the following questions: (1) What key actions can officials take to increase the likelihood of success in nutrition education? (2) Do USDA, state, and local officials incorporate these actions into their nutrition education efforts during program design? (3) Do these officials incorporate these actions during service delivery? (4) Do these officials incorporate these actions during program evaluation?

To identify the key components believed to contribute to successful nutrition education, we conducted interviews with experts in the field of nutrition education research, reviewed key research on the topic, and reviewed GAO reports and other documents on performance-based

⁵Two of the programs—NSLP and CACFP—rely primarily on an initiative called Team Nutrition to support their USDA-sponsored nutrition education efforts. Team Nutrition funds the development and dissemination of nutrition education materials for these child nutrition programs.

⁶CSREES has responsibility for research, academic programs, and Cooperative Extension, which a USDA official says positions it well for the design, delivery, and accountability of nutrition education.

management.⁷ To answer the questions related to USDA's nutrition education efforts, we conducted interviews with officials from each of the five USDA programs and reviewed program reports and studies. We also conducted interviews with cognizant state and local officials from each of the five programs in three states; we conducted site visits in Maryland and California and conducted telephone interviews with Michigan officials. We selected these states because they represented a range of geographic locations and received a range of funding levels for nutrition education. Our observations on the delivery of nutrition education are primarily based on our site visits and cannot be generalized to the programs nationwide. Finally, we identified and reviewed studies and evaluations of the programs' nutrition education efforts that were conducted over the last 10 years to determine whether these programs were meeting their nutrition education goals. (See app. I for more information on our scope and methodology.) We conducted our study from May 2003 to April 2004 in accordance with generally accepted auditing standards.⁸

Results in Brief

We identified several key actions that increase the likelihood that nutrition education will succeed in achieving its goals, based upon research on nutrition education, prior GAO reports, and other documents on performance-based management. The key actions occur in three phases of a nutrition education effort: program design, service delivery, and program monitoring and evaluation. First, during program design, responsible officials need to set clear program goals, identify specific target populations, and develop strategic plans that outline how the program will achieve its goals. Second, during the provision of nutrition education

⁷Specifically, in our review of nutrition education research, we relied primarily on one comprehensive research review of 217 nutrition education studies at the recommendation of USDA officials. See Isobel Contento, "The Effectiveness of Nutrition Education and Implications for Nutrition Education Policy, Programs, and Research: A Review of Research," *Journal of Nutrition Education*, Vol. 27, No. 6 (December 1995). We also incorporated information from Dr. Contento's draft 2004 review of nutrition education research. Regarding GAO reports and other documents on performance-based management, we relied on our series of reports reviewing implementation of the Government Performance and Results Act to identify program design and evaluation strategies related to successful program management. For example, see U.S. General Accounting Office, *Results-Oriented Government: GPRA Has Established a Solid Foundation for Achieving Greater Results*, [GAO-04-38](#) (Washington D.C.: March 10, 2004).

⁸For the purposes of our report, we do not include activities such as food safety and budget management instruction in our definition of nutrition education. As a result, we did not review EFNEP's food safety and food resource management education services, nor did we review the nutrition assistance services of WIC, Food Stamps, NSLP, and CACFP.

services, or service delivery, nutrition educators should assess the needs of the targeted populations, including nutritional and learning needs, and appropriately tailor services to meet those needs. For example, in providing services to non-English-speaking pregnant women, nutrition educators would need to provide services that addressed the nutritional needs associated with pregnancy as well as provide those services in the participant's native language. Nutrition educators should also deliver services with an appropriate frequency and duration to ensure the content of the nutrition education services are sufficient to meet the program's goals. In addition, consistent nutrition messages should come through multiple channels of communication, which can reinforce positive nutritional behavior. Third, during program monitoring and evaluation, officials should monitor the services provided and who receives them, assess program outcomes, and evaluate whether the program has had the desired impact on participants. However, even when nutrition education efforts incorporate all of these actions, certain factors in the participant's environment, such as the availability of fresh fruits and vegetables or the prevalence of food advertising, can have a significant influence on a program's results. Accordingly, officials should be conscious of what environmental factors are affecting participants and work to address those factors.

In its nutrition education efforts, USDA generally incorporates the key program design actions that are likely to contribute to success, such as identifying target populations and setting nutrition education goals. However, USDA faces challenges coordinating and building linkages across the five different programs that provide nutrition education. The USDA programs share similar target populations and nutrition education goals. Specifically, the programs target some overlapping populations, such as low-income families, and each program's nutrition education goals focus on improving nutritional knowledge and changing dietary behavior. Given these overlaps, it is important that the programs build effective linkages and increase coordination efforts to make the most efficient and effective use of resources. At the federal level, USDA recognizes the value of coordination efforts among different programs that provide nutrition education. For example, USDA supports participation in nutrition-related committees and the sharing of nutrition education materials on a department Web site. In addition, FNS and EFNEP have identified the need to take additional steps to increase coordination efforts among its programs in certain areas. However, there is limited evidence of a department-wide strategy to build effective linkages between EFNEP and the FNS programs. In the absence of an overall strategy to better link these programs, USDA missed opportunities to increase coordination efforts,

such as more systematically planning services and developing programs, as well as sharing curricula, lessons learned, and data collection tools across the nutrition education efforts. At the state and local levels, linkages among programs are hindered by the different funding streams, personnel, and requirements for designing and delivering nutrition education for their target populations. For example, in one state we visited, USDA programs were administered by five different agencies, ranging from social service and health departments to a Cooperative Extension office.

We found that the USDA programs incorporated the service delivery actions likely to contribute to successful nutrition education in different ways and to varying extents, but they faced similar challenges that affected their ability to fully incorporate these actions. Service delivery approaches ranged from one-on-one counseling to broad media campaigns. The challenges included limited resources and systems for providing nutrition education and competing program requirements that took time or resources away from nutrition education. For example, the NSLP and CACFP programs lack a formal administrative structure to systematically deliver nutrition education and disseminate the nutrition education materials created by Team Nutrition. Similarly, although WIC staff members conducted preliminary needs assessments through basic intake questionnaires, they could not provide frequent and ongoing services because of limited resources and competing requirements. Specifically, WIC officials in the states we studied told us the time they could spend on nutrition education was limited to less than 20 minutes twice every 6 months per participant, in part because of requirements that they also provide information on drug and alcohol counseling, and other non-nutrition information and services.

The programs we reviewed did not fully incorporate the monitoring and evaluation actions that are key to performance-based management and likely to contribute to successful nutrition education. Most of the programs—with the exception of EFNEP—did not systematically monitor its nutrition education. Specifically, most of the programs did not collect data at the federal level on the types of nutrition education services provided and who received these services. For example, WIC does not systematically collect data at the federal level on the number and characteristics—such as age, gender, or income level—of participants receiving nutrition education. Nor does it collect data on the types of nutrition education provided or the length or frequency of nutrition education. In addition, most of the programs we reviewed did not collect data on potential outcomes of nutrition education. For example, only

EFNEP collected data changes in the nutrition knowledge and dietary behavior of participants. Moreover, none of the programs conducted regular nationwide evaluations of its nutrition education efforts, largely because such research can be difficult and costly. Despite the absence of regular nationwide evaluations, USDA and others have conducted some limited or smaller-scale evaluations and studies of particular nutrition education efforts. However, the studies conducted over the last 10 years that we identified were not of sufficient scope or quality to allow us to determine whether the programs have met their nutrition education goals. For example, we identified a number of studies finding that EFNEP improved participants' nutrition knowledge or dietary behavior, but each of these was limited to one city or state and did not allow us to determine whether EFNEP as a whole was meeting its goals. In the absence of key monitoring and evaluating actions, federal and state officials had limited information about the nature of nutrition education, potential outcomes of those efforts, and the impact of their investments in nutrition education.

To help overcome the challenges associated with USDA's nutrition education efforts and to help programs incorporate the key actions related to successful nutrition education, we recommend that the Secretary of Agriculture ensure that the department develop a unifying strategy for its nutrition education efforts. The unifying strategy should, at a minimum, identify ways to increase coordination efforts and strengthen linkages among the nutrition education efforts. It should also explore options to collect reliable data on services and recipients, identify and disseminate lessons learned, and consider a longer-term evaluation strategy. USDA generally agreed with our recommendations and suggested a number of technical corrections to the report, which we incorporated.

Background

Efforts to educate individuals about the benefits of healthy eating and nutrition occur at the federal, state, and local levels through a variety of different agencies and programs. However, the USDA leads the nation's nutrition education efforts, providing nutrition education through the EFNEP program and through four of its major nutrition assistance programs. The extent to which nutrition education is integrated into nutrition assistance programs varies. In some programs, such as WIC, it is a mandatory component of the program. In others, it plays a lesser role. Each program has different legislative requirements and administrative structures for its nutrition education efforts. In addition, each program has a particular funding level to support its nutrition education efforts.

USDA Is the Lead Federal Agency Responsible for Nutrition Education

Several federal agencies support nutrition education.⁹ However, in 1977, USDA was named the lead agency for nutrition research, extension, and teaching.¹⁰ Among USDA's wide array of responsibilities—including overseeing the nation's forests, conserving the nation's resources, and leading the nation's anti-hunger efforts—it provides nutrition education through the EFNEP program and four of its nutrition assistance programs.

In recent years, USDA has shifted its nutrition education focus from providing and disseminating nutrition information to more directly fostering changes in dietary behavior. USDA sets program regulations and guidelines that support its broad nutrition education goal, which is to provide an integrated nutrition education program that contributes to a nutritionally knowledgeable public, motivated to make behavioral change to promote optimal health and nutritional status. Within USDA, the Center for Nutrition Policy and Promotion oversees nutrition education policy and develops and maintains the Dietary Guidelines for Americans and the Food Guide Pyramid. USDA tries to ensure that its nutrition education integrates the messages established in USDA's Dietary Guidelines for Americans and the Food Guide Pyramid;¹¹ these efforts help USDA officials ensure some consistency across their nutrition education efforts.

Each of USDA's Programs That Provide Nutrition Education Has a Different Overall Mission, Legislative Requirement, Administering Entity, and Nutrition Education Funding Level

The five USDA programs that provide nutrition education differ in their overall mission and their legislative requirements, administering entities, and funding levels for nutrition education. First, only one of the five programs—EFNEP—is uniquely a nutrition education program; the four other programs are primarily nutrition assistance programs. These programs provide nutrition education through an array of state and local administering entities, from health and education departments to Cooperative Extension offices, a network of educators in universities and county offices. While these programs may differ operationally, they have the potential to reach a broad population with their nutrition education efforts.

⁹Other federal agencies, such as the Department of Health and Human Services, the Department of Education, and the Department of the Interior, support nutrition education.

¹⁰See Pub. L. No. 95-113.

¹¹USDA recently solicited comments on proposed revisions to the Food Guide Pyramid.

EFNEP

EFNEP is a federally funded program specifically designed to educate low-income families and youth about nutrition and nutrition-related subjects, such as food safety and food budgeting. (See table 1.) USDA initiated the program in fiscal year 1969 to help low-income families better understand nutrition and manage their food resources. EFNEP is administered at the state level by Cooperative Extension offices, which oversee the allocation of federal EFNEP funds. Federal EFNEP funds are allocated to states based on population data from the decennial census. Cooperative Extension offices then allocate EFNEP funds to county extension offices by targeting first those counties with the highest levels of poverty.

Table 1: Characteristics of EFNEP

| | |
|---|-------------------------------------|
| Program participation in FY2002: | 569,000 low-income adults and youth |
| Federal program expenditures for FY2002: | \$59 million (appropriated) |
| Legislative requirement to provide nutrition education (Yes or No): | Yes |
| State administering entity: | Cooperative Extension Service |
| Local administering entity: | County Extension offices |
| Description of nutrition educator: | Paraprofessionals and volunteers |

Source: USDA and 7 U.S.C. § 3175-3175e.

WIC

First authorized in 1974, WIC provides supplemental food and nutrition education to low-income pregnant, breast-feeding, and postpartum women and to infants and children under age 5. (See table 2.) In fiscal year 2000, the WIC program served almost half of all infants and about one-quarter of all children ages 1 through 4 in the United States. WIC is federally funded, and most of the program's resources are allocated for providing participants with paper vouchers in exchange for approved foods at grocery stores, including milk, juice, and cereal. However, federal program regulations require that each state expend at least one-sixth of its nutrition services and administration grants on nutrition education. This education must be offered to all WIC caregivers. However, WIC participants cannot be denied the other WIC benefits because they do not attend nutrition education activities.

Table 2: Characteristics of WIC

| | |
|---|--|
| Program participation in FY2002: | 7.5 million ^a |
| Federal program costs for FY2002: | Over \$4.3 billion |
| Federal expenditures for nutrition education for FY2002: | \$247 million |
| Legislative requirement to provide nutrition education (Yes or No): | Yes |
| State administering entity: | 88 state agencies, consisting of state health departments, Indian tribes, or intertribal councils |
| Local administering entity: | Over 10,000 local service sites or clinics, including health departments, community centers, and schools, for example ^b |
| Description of nutrition educator: | Dietitians, nurses, or other health professionals or paraprofessionals |

Source: USDA and 42 U.S.C. § 1786.

^aWIC participation data are based on annual averages.

^bSome state-level agencies operate the program at both the state and local levels rather than distributing WIC funds to local agencies.

Food Stamp Program

The Food Stamp Program enables low-income families to purchase nutritious foods at retail stores with electronic-based benefits. (See table 3.) While there is no legislative mandate for nutrition education, states have the option to use administrative funds to provide nutrition education as a component of the FSP known as Food Stamp Nutrition Education (FSNE).¹² In order to provide nutrition education, the state agency administering FSP is responsible for submitting a state nutrition education plan for FSNE. However, state agencies that determine food stamp eligibility generally do not have the professional staff and experience to provide nutrition education. Therefore, the traditional providers of nutrition education under FSNE have mostly been affiliated with the Cooperative Extension Service, the same entity that administers EFNEP. In addition, state Nutrition Networks, which include government, nonprofit and business organizations, have cooperative agreements with FNS to identify and respond to nutrition problems at the state level.

¹²FNS reimburses 50 percent of states' allowable expenditures on nutrition education.

Table 3: Characteristics of FSP

| | |
|---|--|
| Program participation in FY2002: | 19.1 million ^a |
| Federal program costs for FY2002: | \$20.7 billion (food stamp benefits and administration) |
| Federal expenditures for nutrition education for FY2002: | \$156.1 million |
| Legislative requirement to provide nutrition education (Yes or No): | No |
| State administering entity: | State social service agencies administer the Food Stamps Program. However, most states contract with USDA's Cooperative Extension for delivery of nutrition education through FSNE. In some cases, state nutrition networks, public health departments, welfare agencies, and university academic centers administer FSNE. |
| Local administering entity: | Social service offices determine eligibility for food stamp benefits. However, FSNE is usually provided in county extension offices, community-based centers, schools, day care and Head Start centers, WIC clinics, etc. |
| Description of nutrition educator: | Professionals or paraprofessionals |

Source: USDA and 7 U.S.C § 2011-2036.

^aFSP participation data is based on average monthly participation.

NSLP and CACFP

The NSLP and CACFP programs provide nutritionally balanced meals at low or no cost. (See table 4.) NSLP provides nutritionally balanced, federally subsidized meals for all children in public and nonprofit schools and residential child care institutions, with the size of the subsidy dependent on the income level of participating households.¹³ Similarly, CACFP provides nutritious meals and snacks to children in nonresidential child care and chronically impaired adults or adults age 60 or older in nonresidential day care facilities. FNS administers both programs at the federal level. At the state level, state education agencies typically administer and monitor the program. For NSLP, funding flows to the local school food authorities—offices responsible for managing the meals program. For CACFP, funding flows to sponsoring agencies, generally

¹³Children from households with incomes at or below 130 percent of the federal poverty level are eligible for free meals; those from households with incomes between 130 percent and 185 percent of the poverty level are eligible for reduced-price meals; and those from households above 185 percent of poverty pay full price. Also see U.S. General Accounting Office, *School Meal Programs: Estimated Costs for Three Administrative Processes at Selected Locations*, [GAO-02-944](#) (Washington D.C.: September 25, 2002).

nonprofit agencies. Neither program has a legislative requirement to provide nutrition education, and unlike EFNEP and the other FNS programs, neither NSLP nor CACFP has funding specifically to support nutrition education. However, USDA established the Team Nutrition initiative in 1995 to promote nutrition education activities through these child nutrition programs.¹⁴ Specifically, Team Nutrition provides grants to states and develops and disseminates technical assistance materials on how to build school and community support for healthy eating, physical activity, and a healthy nutrition environment. However, while Team Nutrition, which was funded at \$10 million in fiscal year 2002, funds the development of nutrition education messages and materials, it does not fund the staff and other resources needed to deliver nutrition education.

¹⁴USDA intended Team Nutrition to work in conjunction with the Nutrition Education and Training (NET) Program in an effort to improve the nutrition and eating environment of schools and day care centers. NET helped provide the manpower and resources needed for state and local officials to coordinate child nutrition programs with nutrition education activities in schools and child care centers. However, funding for the NET program has not been appropriated since fiscal year 1998. Team Nutrition now serves a primary, rather than supportive, role in providing nutrition education through NSLP and CACFP.

Table 4: Characteristics of NSLP and CACFP

| | NSLP | CACFP |
|---|--|---|
| Program participation in FY2002: | 28 million children ^a | 2.9 million ^b |
| Federal program costs for FY2002: | \$6.1 billion | \$1.9 billion |
| Federal expenditures for nutrition education for FY2002: | \$10 million through Team Nutrition | |
| Legislative requirement to provide nutrition education (Yes or No): | No | |
| State administering entity: | Department of education | Department of education, health, or social services |
| Local administering entity: | Public and private nonprofit schools and residential child care institutions | Child care centers, after-school and Head Start centers, and day care homes |
| Description of nutrition educator: | School food service personnel and teachers | Day care providers |

Source: USDA and 42 U.S.C. § 1751-1770.

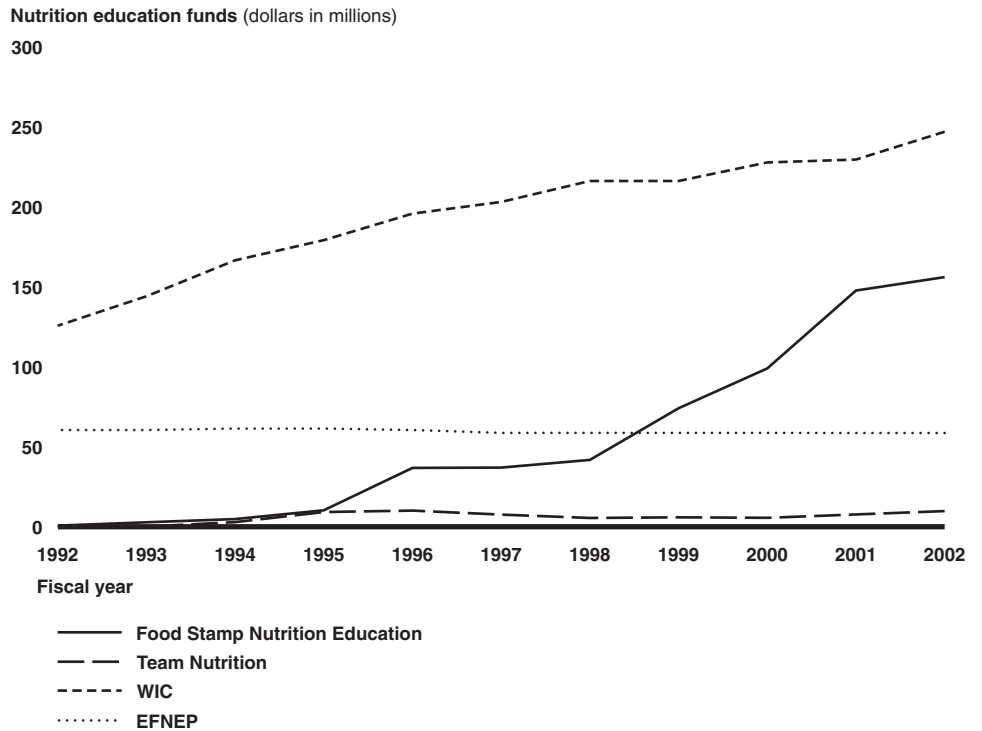
^aNSLP participation data are based on 9-month averages.

^bParticipation data represent average daily attendance with no adjustment for absenteeism. Data were collected monthly through fiscal year 1982, and quarterly in subsequent years.

Overall Funding for Nutrition Education Has Grown over the Last Decade

As shown in figure 1, funding for nutrition education has grown over the last decade, primarily driven by increases in WIC and FSNE; funding for Team Nutrition and EFNEP has remained relatively stable or grown only slightly.

Figure 1: USDA Nutrition Education Expenditures Have Increased Overall between Fiscal Years 1992 and 2002



Source: USDA.

Note: All funding amounts are based on expenditures with the exception of EFNEP funding data, which are based on appropriations.

Several Actions Are Key to Performance-Based Management and Successful Nutrition Education

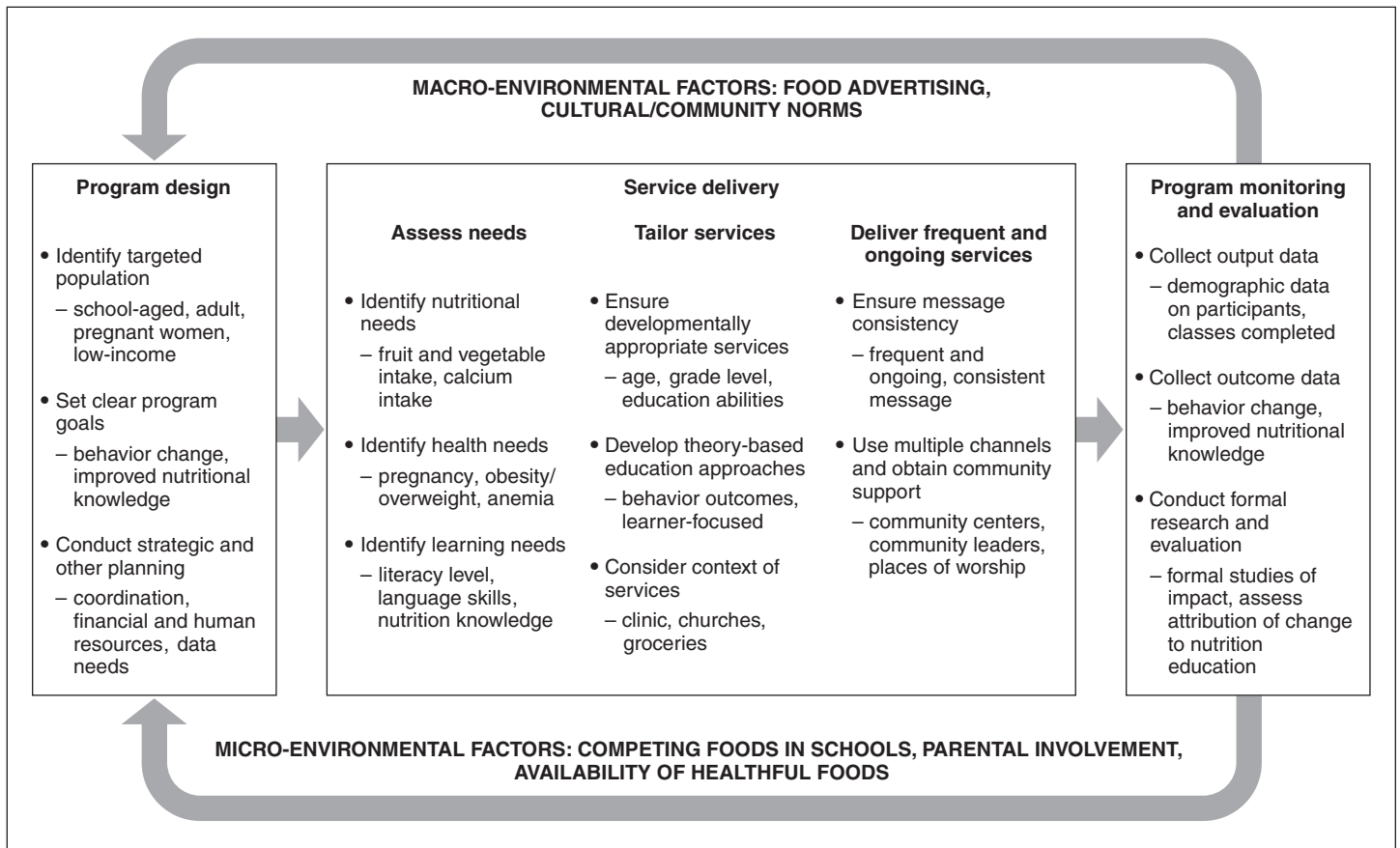
Several actions are key to performance-based management and likely to contribute to successful nutrition education, based upon nutrition education research, prior GAO reports, and other documents on performance-based management. On the basis of this work, program officials should take these actions during program design, service delivery, and program monitoring and evaluation. During service delivery, nutrition educators need to assess participants' needs and tailor services to meet those needs. Providing consistent messages through multiple delivery channels is also beneficial to encouraging a positive change in a participant's nutritional behavior. Last, during program monitoring and evaluation, officials need to collect and monitor program service and participant data, assess outcomes, and evaluate whether the nutrition education has had the desired impact. Research indicates that, along with these key actions, environmental factors can have a significant positive or negative influence on the results of nutrition education and should be

considered when designing, delivering, and monitoring and evaluating nutrition education efforts.

Key Actions in Nutrition Education Can Increase the Likelihood of Success

We identified several key actions presented in general nutrition education research, prior GAO reports, and other documents on performance-based management that program officials should take during any nutrition education program. These actions reflect an ideal. However, if seriously addressed, these actions will increase the likelihood that the nutrition education will achieve its goals. These actions occur at three separate stages in a nutrition education program: program design, service delivery, and program monitoring and evaluation. However, the framework does not prescribe a single method of program design, service delivery, or program monitoring and evaluation; broad principles underpin these actions, which allows for flexibility, multiple approaches to nutrition education delivery, and various contexts in which nutrition education can take place. Figure 2 depicts these actions and the three stages in which they occur.

Figure 2: Key Actions That Increase the Likelihood of Successful Nutrition Education



Source: GAO analysis of a comprehensive research review of 217 nutrition education studies (by Contento, I.), GAO reports and other documents on performance-based management, and interviews with several nutrition education experts.

Note: The lists of examples provided under the bulleted actions and environmental factors are not exhaustive.

According to this framework, during program design officials need to identify their specific targeted population, set clear program goals, and conduct strategic planning, which together provide the necessary foundation to help guide the rest of the actions. Identifying the target population can help program officials focus their goals and planning efforts appropriately. Program goals should be clear and measurable, so officials can determine whether the program is succeeding. Next, program officials need to conduct strategic and other planning efforts that detail how they intend to meet their nutrition education goals. For example, strategic plans should include the program goals, plus objectives,

performance measures, and strategies that they will use to achieve the goals and objectives. In addition, plans should also include information on how program officials will coordinate and plan crosscutting efforts with other related federal programs.

During service delivery, nutrition educators need to assess the needs of participants, tailor services to meet those needs, and deliver services of appropriate frequency and duration to meet program goals. In assessing participant needs, nutrition educators need to identify the nutritional, health, and learning needs of the participants and tailor the nutrition education activities to address those needs. For example, in providing services to non-English-speaking pregnant women, nutrition educators would need to provide services that addressed the nutritional and health needs associated with pregnancy as well as provide those services in the participant's native language. Programs should support needs assessments of the targeted population receiving nutrition education services. Research indicates that individual participant assessments can be a powerful tool in providing services and are particularly important when the participant has a high level of nutritional risk, such as in cases of low hemoglobin levels.¹⁵ However, programs may also assess the needs of a selected group of participants, such as low-income women living in a given community, and tailor services to meet the group's needs. These broader assessments can also increase the likelihood of a program's success, and are often present in efforts that employ social marketing, an audience-centered approach that features multiple and reinforced channels of communication along with public policy and environmental changes to influence behavior.¹⁶ In addition, educators who live in the community in which they teach, referred to as paraprofessionals in the EFNEP program, may have an enhanced understanding of participant needs.¹⁷

¹⁵Low hemoglobin levels can be an indication of iron-deficiency anemia.

¹⁶Social marketing is a private sector marketing model that can be adapted to social services, which often makes use of television, radio ads, videos, and brochures. These materials by themselves do not constitute social marketing; rather, social marketing entails a comprehensive program in which these materials are employed as part of the tactics to reach a target audience. Social marketing also emphasizes the importance of keeping the target audience and network partners involved in needs assessment, message development, and refinement of messages and delivery strategies.

¹⁷Research indicates that paraprofessionals must have proper and adequate training to deliver nutrition education to be beneficial.

Finally, nutrition educators also need to deliver services with an appropriate frequency and duration to ensure the content of the nutrition education services is sufficient to meet the program's goals. Experts agree that positive nutritional behavior change requires active and sustained participation for a duration that is significantly longer than what is needed for a gain in nutritional knowledge. Nutrition educators can help ensure that participants receive a sustained and consistent message by delivering services through multiple channels. By doing so, nutrition education messages are supported and emphasized, and also can increase the likelihood of services reaching participants who may not be able to come into a traditional classroom to receive the nutrition education.

During program monitoring and evaluation, program officials need to collect data and evaluate program impact to monitor their nutrition education efforts and evaluate the program's influence on participant behavior. Output data, such as how many participants received services and what services the program provided, enable officials to monitor general program operations. Outcome data, such as pre- and postprogram dietary behavior, provide valuable information on whether a participant's knowledge or behavior has changed following the nutrition education. Finally, program evaluations with an experimental or quasi-experimental design help determine whether it is the nutrition education that caused the knowledge or behavior changes, rather than other factors. Officials can use all this information to review their successes and failures, diagnose problems, and explain results. Officials can then use this information to retool the program design or service delivery to further increase the chances of success.¹⁸

Environmental Factors Can Challenge or Support Nutrition Education Efforts

A complex set of factors, including circumstances in the participant's environment outside the classroom, contributes to an individual's decisions about dietary behavior. Research indicates that these factors can influence the results of education efforts. For example, food advertising, lack of support from family members, and easy access to unhealthful foods can make it more difficult for participants to make the healthy choices presented in their nutrition education classes. For example, some, but not all, foods sold in schools separate from the regulated school meals

¹⁸In addition, the Government Performance and Results Act of 1993 encourages agencies to measure program performance by determining the extent to which program outcomes have been achieved.

program are high in fat, sodium, or added sugars. These foods are available in many schools and can compete with the more healthful foods available in schools.¹⁹ Outside of the school environment, participants face additional challenges if healthy foods, such as fruits and vegetables, are not readily available in local stores. Poverty and unstable monthly incomes can also affect a family's ability to routinely eat nutritious foods.

Program officials also described situations when environmental factors may support nutrition education efforts. For example, one official said the increasing health concern regarding obesity has generated more community support for healthy eating choices. In addition, nutrition education participants in rural communities with an abundance of locally grown produce and vegetables may find it easier to incorporate some of the lessons from their programs into their daily diets.

When nutrition education activities address environmental factors that can work against healthy eating choices or leverage environmental factors that support healthy choices, they may be more likely to improve participants' dietary behavior. Social marketing often addresses environmental factors. For example, through a social marketing approach, local public agencies could work in partnership with private business to establish produce sections in convenience stores located in low-income neighborhoods that do not have grocery stores. By then providing nutrition messages about fresh fruits and vegetables through multiple channels—such as local media and other community outlets—the effort may be able to increase local supply and demand for healthful foods.

¹⁹For more information on the types and sources of foods in schools that compete with the NSLP see Nancy Brenner et al., "Mental Health and Social Services: Results from the School Health Policies and Program Study 2000," *Journal of School Health*, Volume 71, Number 7, September 2001.

Although USDA Generally Incorporates the Key Program Design Actions Likely to Contribute to Success, Establishing Linkages among Programs Is Difficult

In its nutrition education efforts, USDA generally incorporates the key program design actions that are likely to contribute to success, such as identifying target populations and setting nutrition education goals. The programs share similar target populations and nutrition education goals, increasing the need for program officials to work together to make the most efficient and effective use of resources. However, USDA faces challenges increasing coordinating efforts and building and strengthening linkages across the five different programs that provide nutrition education. At the federal level, USDA recognizes the value of coordination among different nutrition education efforts. However, there is limited evidence of a department-wide strategy to build effective linkages among programs, particularly between EFNEP and the FNS programs.

USDA's Nutrition Education Programs Identified Target Populations and Goals

USDA's nutrition education efforts incorporate the key actions of defining their target populations and goals. While the programs' target populations for nutrition education are not identical, there is considerable overlap among them. (See table 5.) Most of USDA's nutrition education efforts target primarily low-income individuals and families, although nutrition education through NSLP or CACFP can target any person in a participating school or child care or adult day care center.

Almost all of USDA's programs use the same eligibility requirements for nutrition education that they use for their other services associated with the program, such as the receipt of WIC vouchers. One program, FSP, grants waivers to state agencies allowing FSNE to target a broader population than that of people receiving food stamps. However, states are required to demonstrate that these nutrition education efforts are generally targeted to program recipients and that the majority of FSNE participants are low-income.²⁰

²⁰Specifically, states are required to demonstrate that at least 50 percent of the population targeted has a gross household income that is at or below 185 percent of poverty.

Table 5: USDA’s Nutrition Education Programs Target Similar Populations and Have Overlapping Eligibility Requirements

| Program | Target population for nutrition education | Eligibility for program services |
|--------------------|--|---|
| EFNEP | Low-income youth and low-income families with children | There are no specific eligibility requirements, but EFNEP providers are encouraged to target EFNEP to families on other types of low-income assistance, such as food stamps, or to neighborhoods or schools with high rates of poverty. |
| WIC | Low-income pregnant, postpartum, and breast-feeding women; infants; and young children receiving WIC | 185% of poverty or less, and assessed as having “nutritional risk” ^a |
| Food Stamp Program | Low-income children and families receiving food stamps ^b | 130% of poverty or less ^b |
| NSLP | School children | At or below 130% of poverty for free meals, between 130% and 185% for reduced price; no restrictions for full-priced meals ^c |
| CACFP | Children in nonresidential day care and adults in day care facilities that participate in CACFP and adults over 60 in adult day care centers or chronically disabled persons in adult day care centers | Children 12 and under, migrant workers’ children 15 and under, children 18 and under residing in residential child care facilities, and functionally impaired adults or adults over age 60 in care centers ^d |

Source: USDA.

^aIn 2003, the poverty level for a family of three was \$15,260 for the 48 contiguous states. EFNEP does not require participants to provide eligibility documentation. However, the program specifically targets audiences located in low-income neighborhoods, schools, community center, etc.

^bIn 2002, all 50 states had approved waivers allowing them to provide nutrition education funded by the Food Stamp Program to non-food stamp participants.

^cIn school year 2002-2003, USDA reimbursed participating schools \$2.14 for every free lunch meal provided, \$1.74 for every reduced price lunch meal sold, and \$0.20 for every other lunch meal served.

^dFor more information about the definition of a functionally impaired adult, see USDA’s CACFP regulations under 7 C.F.R. § 226.2.

All five of the USDA programs that provide nutrition education also share the overall nutrition education goal to improve nutritional knowledge and dietary behavior, as shown in appendix II. Officials from each of these programs told us that state officials have flexibility to set more specific nutrition education goals. For example, in addition to setting the federal FSP goal, state FSNE officials in a number of states set the specific goal of increasing the consumption of fresh fruits and vegetables.

While USDA sets goals for its nutrition education efforts, the department does not include measures that specifically assess its nutrition education efforts. For example, both USDA and FNS have strategic plans that include the goal of improving the nation’s nutrition and health. However, neither strategic plan includes measures for assessing the effects of the nutrition education efforts. To assess progress toward its goals, USDA uses a broad national index—the Healthy Eating Index—a measure of diet quality

among Americans with incomes under 130 percent of poverty and children in households under 185 percent of poverty. Although this measure is helpful in tracking changes in the diet quality of the target population, it is not tied to participation in nutrition education efforts. Therefore, it is difficult to determine whether changes in participant behavior are influenced by program nutrition education efforts or other factors. In addition, neither USDA's strategic nor its performance plans include other interim measures that can be more closely linked to program success or outcomes.

Some Coordinating Efforts Exist across Programs Providing Nutrition Education, but Strong Linkages Are Absent

When programs have similar goals and serve similar and potentially overlapping target populations, it is important that some mechanisms exist that support an array of coordinated activities in order to make the most efficient and effective use of resources. On one hand, overlap creates the potential for unnecessary duplication of, or gaps in, service delivery as well as administrative inefficiencies. On the other hand, overlap between agencies or programs that administer similar functions is sometimes necessary to meet federal priorities, and in the case of nutrition education, participants can benefit from hearing the message from several sources. To be effective, the messages across programs must be consistent with one another, which requires established linkages across programs.

USDA recognizes the value of coordinating efforts among these programs; in practice, the programs coordinate in various ways. FNS and EFNEP staff participate in multiple committees and initiatives within USDA and with other federal and nongovernmental organizations to work together on specific nutritional issues. For example, officials from USDA and the Department of Health and Human Services participate in a working group to ensure that dietary guidance from both departments accurately reflects the Dietary Guidelines for Americans and the Food Guide Pyramid.²¹

In addition, the programs work with the Food and Nutrition Information Center (FNIC) at the National Agricultural Library to provide a forum for the exchange of nutrition education information among programs and with state and local officials and nutrition educators. However, FNS materials

²¹USDA also participates in committees that work on nutrition education with other federal agencies and departments, including the CDC, the National Cancer Institute (NCI), and the Departments of Education and Health and Human Services. For example, USDA, CDC, and NCI are part of the National 5-A-Day Partnership to formulate national strategies and plans to increase the consumption of fruits and vegetables.

are separate from EFNEP's. FNIC has a memorandum of understanding with FSNE, WIC, and Team Nutrition to support their nutrition education materials through FNIC's Web site.²² The Web site houses a wide array of nutrition education materials, including multiple databases containing nutrition education curricula. For example, the Web site supports the Food Stamp Nutrition Connection database, which provides a forum for nutrition educators to share curricula, participant materials, and other resources with personnel providing nutrition education activities to food stamp participants, applicants, and other low-income individuals likely to be eligible for FSP. Similarly, the Healthy School Meals Resource System provides information to persons working in USDA's child nutrition programs. In addition, FNIC also supports links to discussion groups that allow providers of nutrition education to communicate and exchange ideas. While there is useful information available through FNIC, we do not know the extent to which nutrition educators use these resources. Furthermore, FNIC's Web site does not include either the database of nutrition education materials created primarily by EFNEP or a link to this database. Instead, CSREES supports the Nutrition Education for Diverse Audiences database, which contains nutrition education curricula and other related material on its Web site.²³ These materials can be a valuable resource for those individuals who take advantage of them; however, USDA does not systematically ensure coordination or the sharing of materials among the programs, particularly between FNS and EFNEP.

FNS has identified the need to take additional steps to strengthen the overall linkages among its programs. For example, as part of the department's strategic goal to promote healthier eating habits and lifestyles, it has listed a strategy to support an integrated, cross-program nutrition education effort to address health-related problems, such as obesity. However, the plan does not describe the specific means, mechanism, or responsible authority to implement this strategy. In addition, FNS has recognized the need for a more integrated, cross-program approach in its 1999 report to Congress, the President's fiscal year 2005 budget request, and other documents. For example, in its report to Congress,²⁴ FNS states that its goal is to ensure that nutrition education

²²For more information, see <http://www.nal.usda.gov/fnic/databases.html>.

²³See <http://www.reeusda.gov/f4hn/efnep/necd.htm>.

²⁴U.S. Department of Agriculture, Food and Nutrition Service, *Promoting Healthy Eating: An Investment in the Future* (Alexandria, VA: December 1999), ii.

is fully integrated into all FNS programs; specifically, FNS says the changes needed to enhance nutrition behaviors can only be achieved through a nutrition education effort that allows flexibility for integrated, cross-program interventions. In the report, FNS suggests that funding be authorized for such cross-program coordination. In the budget request, FNS is requesting a total appropriation of \$2.5 million for cross-program nutrition education efforts, including establishing a cross-program nutrition framework with the goal of ensuring a comprehensive, integrated, and family-oriented approach in all FNS nutrition assistance programs.²⁵ The funds would support increased coordinating efforts, such as the formulation of curricula, the sharing of best practices across FNS program participants, and the fostering of collaboration among state agencies.

Despite these initiatives and proposals, overall, we found limited evidence of a department-wide unifying strategy to build and support effective linkages among the FNS programs and EFNEP that would ensure consistency of message, efficient use of resources, and planning for service delivery and program development at the federal level. Increasing coordination efforts and building strong linkages between EFNEP and FNS may be challenging because they are administered by two different USDA agencies. For example, we identified missed opportunities to share data collection tools and software that could have helped with both program efficiency and effectiveness. However, some federal officials we spoke with have recognized the need to improve linkages between the two USDA agencies. An FNS official said that FNS has begun to focus efforts on ways to ensure that nutrition messages are coordinated across its programs. However, it has not yet worked with EFNEP on this issue. An EFNEP official said that FNS and CSREES are beginning to see the need for enhanced coordination and have begun to discuss activities that could go in a memorandum of understanding.

Distinct administrative structures can also create coordination challenges and fragmented service delivery at the state level and local level.

²⁵The proposed \$2.5 million increase would address the lack of funding for cross-program initiatives and the widely varying levels of nutrition education within the FNS nutrition assistance programs. Of the \$2.5 million, \$1.5 million would be used to expand the Eat Smart, Play Hard nutrition education and promotion campaign and fund the development of nutrition promotion materials that could be used in more than one program. The remaining \$1 million would be used for new projects that operate across FNS program boundaries.

Specifically, state and local officials are hindered by the different administrative structures of each of the programs, including the funding streams, personnel, and requirements for designing and delivering nutrition education for their target populations. For example, in one state we visited, USDA programs were administered by five different agencies, ranging from social service and health departments to a Cooperative Extension office. Moreover, states often lack a process or a central focal point to help coordinate planning efforts among the programs. In our report on NSLP, we noted that not all states had established a state focal point for leadership or had begun collaboration among state agencies to provide nutrition education in schools.²⁶ In the past, the Nutrition Education and Training Program helped to fund this central focal point by providing the manpower and resources needed for state and local officials to coordinate child nutrition programs with nutrition education activities in schools and child care centers. Despite the lack of a central focal point, we did find instances of local coordination across some programs, but this coordination was sporadic and generally involved two programs rather than all of them.

USDA has taken some steps to encourage and facilitate linkages between some of its programs that provide nutrition education. At the state level, FNS established cooperative agreements with 22 states to establish Nutrition Networks, which can act as the collaborative agent at the state level to help identify and highlight nutrition problems, such as obesity.²⁷ Nutrition Networks are state-level organizations that can expand, coordinate, and integrate innovative nutrition education messages across programs.²⁸ California's Nutrition Network, for example, includes over 300 government, nonprofit, and business organizations, including the state

²⁶See U.S. General Accounting Office, *School Lunch Program: Efforts Needed to Improve Nutrition and Encourage Healthy Eating*, GAO-03-506 (Washington D.C.: May 9, 2003). In this report, we recommended that the Secretaries of Agriculture, Health and Human Services, and Education encourage states to identify a focal point in each state to promote collaborative efforts that would further develop nutrition education activities for the schools.

²⁷In 1995 and 1996, FNS approved cooperative agreements to establish Nutrition Networks in 22 states. As of 2002, 19 of the original 22 networks were active and self-sustaining. Additional states are creating networks or studying the feasibility of creating networks.

²⁸Nutrition Networks comprise state and local government agencies, nonprofit organizations, and representatives of private industry. The networks use social marketing techniques, such as providing nutrition education through public service announcements, using mass media to reach food stamp participants, and using researched and tailored nutrition education messages.

Departments of Health Services, Social Services, Education, and Food and Agriculture, and the state's Cooperative Extension system. State officials said that one of the many goals of its network is to identify service gaps across nutrition education efforts. USDA also recently began an initiative to promote collaboration, known as the State Nutrition Action Plans initiative. This initiative encourages state agencies to work together toward a more integrated approach to planning and delivering nutrition education. When the initiative was launched at its national conference, FNS asked state officials to work together to identify goals for collaboration and specific objectives and steps to achieve the goals. However, the Nutrition Networks are not nationwide, and the State Nutrition Actions Plans initiative is still in the early stages of development.

Programs Incorporated the Service Delivery Actions in Different Ways and to Varying Extents but Faced Similar Challenges to Incorporating Them

We found that the USDA programs incorporated the service delivery actions likely to contribute to successful nutrition education in different ways and to varying extents, but they faced similar challenges that affected their ability to fully incorporate these actions. Service delivery ranged from one-on-one counseling to broader media campaigns. However, challenges such as competing requirements and resource constraints limited each program's ability to fully incorporate all of the service delivery actions.

EFNEP Incorporated Key Service Delivery Actions, but Services May Not Have Reached Many Eligible Participants because of Resource Constraints

As the only USDA program we reviewed whose primary mission is to deliver nutrition education, EFNEP was able to consistently assess participant needs, tailor services to meet those needs, and provide frequent nutrition education. However, officials at state Cooperative Extension offices, EFNEP's administering entity, expressed concern over their ability to provide equitable services to those in need because of existing funding formulas and resource constraints.

A federal EFNEP official told us the program assessed participant needs for nutrition education by routinely having participants fill out either a food behavior checklist or other questionnaires, which asked about what the participant had eaten the previous day. These assessments provided instructors with important indicators of nutrition and dietary behavior. States had the option of gathering additional information from participants. For example, California added two more questions to the

assessment form that determined participants' fruit and vegetable intake. In addition, EFNEP uses paraprofessionals to deliver nutrition education, and their presence in these communities may augment their ability to assess local needs. An EFNEP official in Michigan, for example, stated that having EFNEP paraprofessionals who lived in a Native American community enhanced their ability to determine the needs of that community.

The EFNEP program has a core curriculum that includes classes on dietary practice, nutrition quality, food safety, food security, and resource management. However, EFNEP officials we spoke with stated that the program allows educators to tailor parts of the curriculum to address participants' needs. For example, Michigan EFNEP officials told us their paraprofessionals developed an individual plan for participants tailored to each participant's responses to questions from the formal needs assessment.²⁹ The individual plans included the core curriculum of the particular program but also included areas for emphasis or supplementation within the curriculum. Similarly, California EFNEP introduced a nutrition program into public schools called EatFit. With the goal of increasing nutrition and health among school children, the program included participant self-assessments, which drove the specific curriculum and messages provided through the program's series of classes. The children received tailored interventions, based on the assessments, with goals such as increasing fruit intake at lunch and increasing physical activity throughout the school day.

EFNEP officials told us they delivered frequent and ongoing nutrition education. Specifically, EFNEP educators provided a series of interventions, which varied in number from 6 to 16, generally in the form of small group classes over the course of approximately several months to a year, depending on the number of interventions.³⁰ EFNEP educators provided nutrition education through various sites, such as WIC clinics, 4-H clubs, community centers, and other key sites in the community. Research indicates that providing nutrition education through various sites is beneficial to participants. However, officials noted that while the delivery of classes over the course of several months helped ensure

²⁹This method of service delivery—highly focused on the individual participant—can be higher in cost than nutrition education that focuses on broader groups of participants.

³⁰The core program objectives are set at the national level. However, the number of classes offered is at the discretion of the local implementing agency.

participants benefited from the services, this benefit could diminish after the nutrition education ended.

A federal program official told us that resource constraints and funding formulas presented challenges for equitable service delivery. Given its current resources, the program is currently able to fund services in approximately 700 to 800 of the nation's 3,150 counties. This is, in part, because EFNEP funding has declined in constant dollars over several decades despite a general increase in the number of people eligible for EFNEP services. Furthermore, an EFNEP official said the funding formula for allocating program resources among states is outdated. It is based on census data from the 1960s. As a result, states such as California, where the low-income population has increased over the last two decades, had less to spend per eligible participant than states with more stable low-income populations. For example, while California spent roughly 65 cents per eligible participant in 2003, South Dakota spent over \$5.00 per eligible participant.

Some state and local EFNEP providers delivered nutrition education in collaboration with other USDA nutrition education programs to broaden their reach, according to officials with whom we spoke. For example, in Michigan, EFNEP officials told us they leveraged program resources by working with the local FSNE initiative to ensure that the geographic areas where they provided services did not overlap.

WIC's Ability to Incorporate the Key Service Delivery Actions May Have Been Limited by Competing Program Requirements and Resource Constraints

WIC provides nutrition education services as a part of the program's overall nutrition assistance mission, but officials we spoke with told us several competing program requirements and resource constraints limited the program's ability to fully incorporate all of the service delivery actions. WIC staff we met with told us their educators, usually nutritionists or dietitians, routinely assessed participant needs and usually tailored the services to the needs of the WIC population in general.³¹ However, WIC had a limited ability to deliver frequent and ongoing nutrition education. In addition, other program requirements restricted the time and resources available for nutrition education.

WIC officials told us that by requiring participants to complete an intake form that helped providers identify their nutritional intake and dietary

³¹According to WIC regulations, physicians, registered nurses, physician's assistants, or state or local medically trained health officials may also provide WIC services.

behaviors, WIC routinely assessed participants' needs. WIC providers, which included local public and private nonprofit health clinics and nonprofit agencies, used these forms to identify high-nutritional-risk participants, who, according to federal officials, were slated for more intensive, one-on-one nutritional counseling.³² Some WIC providers we spoke with also used the intake forms to collect data on the characteristics and dietary needs of the program participants overall. Michigan has developed a computer system for collecting and tracking participant needs that, according to state officials, assisted the state's local providers in knowing what nutrition education services were most needed, the number of nutrition education interventions, the number of participants who refused WIC nutrition education, and the number of participants enrolled in other programs such as Temporary Assistance for Needy Families (TANF) and Medicaid.

Federal WIC officials told us that WIC providers try to tailor nutrition education to participant needs when possible, although in most cases, participants received nutrition education tailored to the needs of the overall WIC population. For example, a Michigan official stated that her staff designed nutrition education classes that were appropriate for the general WIC community, and participants generally received whatever pre-designed class happened to be offered on the day they were in the clinic. WIC officials told us that local WIC providers use participant data to help tailor services. For example, a Maryland WIC official said the state database included several data elements that are helpful in tracking local participant health trends, which allowed local clinics to adjust and develop their overall curriculum to address the needs of the local participants. Several officials stated that given the limited resources and time for WIC nutrition education, it was impossible to ensure participants received nutrition education that addressed their particular needs except for participants at the greatest nutrition risk.

Federal, state, and local WIC officials we interviewed said the WIC program had a limited ability to provide frequent and ongoing nutrition education because of competing program requirements. According to program rules, WIC providers are required to offer nutrition education to participants. However, those who do not attend nutrition education activities cannot be denied the other WIC benefits for their lack of

³²According to FNS officials, state officials have the flexibility to set criteria for their own state to determine what conditions constitute high nutritional risk.

participation. Moreover, the cost of nutrition education in WIC is a part of each local agency's administrative expenses, which, according to FNS officials, forces nutrition education activities to be in competition for resources with other administrative requirements and duties.³³ For example, WIC providers were required by law to provide services unrelated to nutrition education, such as voter registration and drug and alcohol counseling. Because of these competing demands on time and resources, the average WIC participant received approximately less than 20 minutes of nutrition education twice every 6 months.³⁴ WIC participants usually receive WIC services over the course of several years, which allows a more sustained participation in nutrition education services, according to FNS officials. However, WIC officials in both California and Michigan stated that there was little reason to believe such a limited exposure to nutrition education would produce meaningful changes in a participant's nutritional knowledge and dietary behavior.

In response to these challenges, FNS and the states we studied were developing technology-driven approaches to nutrition education. FNS, in partnership with other organizations, established the WIC Works Resource System in January 2000. This Web-based system includes an on-line searchable database of materials developed for WIC audiences and downloadable materials from the childhood obesity prevention initiative, Fit WIC. At the state level, Michigan officials told us they were trying to improve access to services by providing some participants with the option of receiving services through self-paced Internet classes. In addition, state WIC officials have collaborated with other USDA efforts to deliver nutrition education. State officials we interviewed cited examples of WIC officials working with other programs, such as EFNEP, to develop nutrition education curricula, but again time, resources, and other program priorities limited their efforts.

³³Although competing requirements limit the time and resources WIC educators are able to devote to nutrition education services, FNS officials told us that there is a spending floor for nutrition education in WIC, which states cannot go below in providing nutrition education services.

³⁴This is consistent with our prior review of the WIC program. In the study, we reviewed the services provided by six local WIC agencies, which were selected using a set of criteria, and found the length of time for nutrition education services ranged from 4 minutes to 17 minutes per intervention. See U.S. General Accounting Office, *Food Assistance: WIC Faces Challenges in Providing Nutrition Services*, [GAO 02-142](#) (Washington, D.C.: December 7, 2001).

FSNE's Incorporation of the Service Delivery Actions Varies Widely, and Food Stamp Recipients May Not Be Receiving FSNE Services

Designed as an optional service for states to provide in conjunction with other food stamp services, FSNE service delivery varies widely from state to state. Services in FSNE can range from one-on-one counseling to small group classes, to broad social marketing campaigns that reach large numbers of people at a low cost per participant. All of these delivery methods could incorporate the key delivery actions if implemented properly. However, not enough is known about the services delivered to determine whether the service delivery actions are consistently incorporated across the nation. Moreover, federal and state officials do not know whether FSNE services are provided to food stamp recipients, the original intended beneficiaries of the services.

Federal FSNE officials stated that local FSNE educators have the option of conducting individual needs assessments or of assessing the needs of larger targeted populations. However, FNS does not provide standard needs assessment tools. In some cases, according to the same officials, local FSNE educators are able to use needs assessment tools they developed in their state or locality. In the states we studied, the state Cooperative Extension offices that administered EFNEP also administered FSNE. In these cases, FSNE used a service delivery model similar to EFNEP, which included individual needs assessments using either a food behavior checklist or other questionnaire. In California, the State Director of EFNEP told us these tools might ask about what the participant had eaten in the past 24 hours. FSNE educators reported using information from similar assessment tools in Michigan to help determine what nutrition education content participants needed and to identify what nutrition trends were present in the participant community. In some cases, FSNE used paraprofessionals to deliver nutrition education services, according to officials from two states.

On the basis of our site visits and conversations with officials, we found that FSNE efforts generally tailored most services to the needs of a targeted group. For example, Michigan FSNE officials told us their educators went to migrant farm communities to hold classes late at night, from 9 p.m. to 11 p.m., to accommodate the working and living circumstances of migrant families. Similarly, FSNE educators went to a Detroit homeless shelter to teach food safety and preparation relevant to individuals without stable housing. In California, FSNE officials reported that their educators tailored the interventions to meet the needs of non-English-speaking participants by providing information and giving cooking demonstrations in Vietnamese.

FSNE officials in the states we visited told us FSNE services typically came through one-time-only interventions. According to FNS officials, a series of classes provided through classroom instruction was not the usual form of delivery. Services provided via one-time-only methods can include media campaigns and other forms of nutrition education designed to reach participants through multiple channels. These efforts may incorporate the key service delivery actions, when implemented properly. However, federal FNS officials told us states' program plans vary widely in their quality and level of detail, and federal FNS officials did not have a clear picture of what services local officials provided.³⁵

FNS officials expressed concerns over the rapid growth in FSNE funding in recent years, combined with states' broad flexibility in implementing the program. In particular, from 1992 to 2002, the federal funds dedicated for FSNE services have increased, overall, more than for the other programs.³⁶ Moreover, every state FSNE provider has at least one approved waiver to allow the provision of nutrition education to non-food stamp recipients, according to FNS officials. While this waiver permits states to provide services to a wider range of low-income individuals and eliminates the administrative burden of checking for Food Stamp Program eligibility, it also limits any assurance that Food Stamp Program recipients receive FSNE nutrition education. In fact, FNS officials recognized that at the state and local level Food Stamp Program officials did not rely on, or coordinate with, FSNE efforts or officials in any systematic way.

FNS officials said they are currently in the process of proposing changes to FSNE to address these issues. One of the proposed changes would set clear policies and strategies for the delivery of services. This change includes developing a policy framework that describes the intended structure, target populations, and key behavior changes that FSNE intends to promote among participants. This policy framework would also set clear roles for the administrators and stakeholders of FSNE services at the federal, state, and local levels. In addition to developing this policy

³⁵ Although FNS has the ability to reject state plans based on noncompliance with federal guidelines, FNS officials told us this does not regularly happen.

³⁶ According to officials, state officials may identify noncash resources as a part of the state's match for federal FSNE funds. According to officials, the growth in FSNE funds might be due to this ability to identify public noncash matching funds and private cash donations, as well as a lack of a cap on the amount of matching funds a state may identify.

framework, FNS is developing systems to disseminate resources and technical assistance to support state and local FSNE services.

NSLP and CACFP Rely on Team Nutrition to Incorporate the Key Actions, and Its Capacity is Limited

Because NSLP and CACFP do not have resources or formal systems in place to provide nutrition education, program officials rely on Team Nutrition to promote and facilitate nutrition education. Unlike the other programs, NSLP and CACFP do not fund staff to provide nutrition education. Program funds are dedicated to the administration, preparation, and delivery of nutritious meals in school and child care settings. NSLP food service workers are primarily responsible for the preparation and delivery of school meals, and CACFP workers may be responsible for providing child care as well as meals in day care settings. As a result, FNS relies on Team Nutrition to develop and disseminate education materials and provide grants and guidance to states, and Team Nutrition is dependent upon the extent to which child care providers and school personnel find or make time to devote to nutrition education.

Team Nutrition, which is supported by staff in FNS headquarters, focuses on a broad array of activities intended to build school and community support for healthy eating, physical activity, and a healthy school nutrition environment.³⁷ By doing this, officials told us they hope to influence the complex set of environmental factors in schools that affect children's health and their motivation to change their behavior.³⁸ Team Nutrition promotes a nutrition education curriculum that uses multiple communication channels to reinforce positive nutrition messages and encourage students to make healthy choices. Officials we spoke with stated that Team Nutrition materials are of high quality. The nutrition education materials are tailored to the broad needs and interests of the children at specific age and grade levels. The materials use simple graphics to present complex nutrition messages to broad audiences including students, parents, and teachers. In addition, Team Nutrition also provides grants to schools to support their efforts to create a healthy school

³⁷To receive Team Nutrition materials, schools can enroll as a Team Nutrition school by affirming their commitment to take the lead in making nutritional changes, conducting nutrition education activities and events, and using materials from Team Nutrition. In addition, Team Nutrition makes certain materials and resources available to all schools, including those that have not enrolled as Team Nutrition schools, on its Web site.

³⁸For example, in addition to developing nutrition education materials, FNS officials reported that federal staff from Team Nutrition and CDC collaborate on an ongoing basis to develop materials that address issues such as offering and promoting nutritious food and beverage options in vending machines, school stores, and a la carte venues.

environment. However, its financial support for state and local activities was limited to 21 new competitive grants totaling about \$4 million in fiscal year 2003.

In schools, teachers are uniquely positioned to provide nutrition education, and Team Nutrition materials are designed for them to use. However, there is little assurance that these materials systemically reach teachers and food service workers at the local level. For example, one school food authority official told us she often does not distribute Team Nutrition Materials because it is not clear to whom they are targeted. In addition, principals, teachers, and other officials have stated that teachers focus classroom time almost entirely on making sure that students meet state academic standards, leaving little time to include subjects or information not included on the state academic standards test.³⁹ Moreover, because NSLP and CACFP have no systems or infrastructure in place to support nutrition education delivery at the local level, nutrition education efforts in schools can often depend on the leadership of only a few individuals. One California official stated that the NSLP nutrition education efforts in one particular school district would immediately end if the school teacher leading the efforts were to leave.

Although food service workers in schools have limited time available for nutrition education, FNS officials reported that Team Nutrition has initiated efforts to further promote nutrition education among food service staff. Team Nutrition staff have attended state meetings of food service workers and offered to provide local training and resources to help these staff further incorporate nutrition education into their daily activities. As of February 2004, FNS had more than 100 requests to conduct the training at local sites.

Regarding CACFP facilities, officials told us a limited amount of nutrition education takes place in their program and that children are the primary recipients of nutrition education services when they are provided. This further limits the nutrition education provided to adults and the elderly program participants. In addition, the National Food Service Management Institute, whose mission is to provide information and services that promote the continuous improvement of Child Nutrition Programs, provides information and support for school food service and CACFP providers.

³⁹Also see [GAO-03-506](#).

Programs Generally Did Not Incorporate Key Nutrition Education Evaluation Actions, Leaving Officials with Limited Information about Program Results

The programs we reviewed generally did not fully incorporate the monitoring and evaluation actions that are key to performance-based management and likely to contribute to successful nutrition education. Most of the programs—with the exception of EFNEP—did not systematically collect data at the federal level on the types of nutrition education services provided, who received these services, and the outcomes of the services. Moreover, none of the programs we reviewed conducted regular nationwide evaluations of its nutrition education efforts, largely because such research can be difficult and costly. Despite the lack of regular nationwide evaluations, we identified some more limited or smaller-scale evaluations and studies of the nutrition education efforts conducted by USDA and others over the last 10 years. However, these studies were not of sufficient scope or quality to allow us to determine whether the programs have met their nutrition education goals. As a result, federal and state officials have limited information about the nature of nutrition education, potential outcomes of nutrition education efforts, and the impact of their investments in nutrition education.

Most Programs Did Not Systematically Collect Data on Nutrition Education Services or Recipients

Most of the programs that provide nutrition education did not systematically collect data on nutrition education services or recipients at the federal level. For example, WIC does not systematically collect data at the federal level on the number and characteristics—such as age, gender, or income level—of participants receiving nutrition education.⁴⁰ Nor does it collect data on the types of nutrition education provided or the length or frequency of nutrition education. Team Nutrition tracks the overall numbers of educational materials sent to schools but does not have a mechanism for tracking whether and how the materials are used. FSNE requires states providing nutrition education to submit some information on the number of contacts with people or households and on the services provided, but there is wide variation in the types of information provided. Moreover, federal officials do not have information about the demographic characteristics of FSNE recipients or about whether recipients are also food stamp recipients. Nor do they have a system for tracking the nationwide frequency of delivery methods such as individual meetings, classes, media campaigns, or other means. One FSNE official said that while some states may use the EFNEP data-reporting system to collect

⁴⁰While WIC collects data on participants in the overall WIC program, the federal office does not have information on the number or characteristics of participants who receive nutrition education.

information, FSNE officials do not know how many states use the system and do not receive data collected through the system unless states choose to include them in their annual plans.

However, EFNEP, the one program we reviewed that focuses primarily on nutrition education, regularly collected output data on both services and recipients. EFNEP gathers a variety of data, including data on the race, ethnicity, gender, and family size of recipients; whether nutrition education is provided through group or individual instruction; and the number of lessons provided.⁴¹ The data are collected as part of a performance reporting system developed to respond to congressional requests for data on program results. To facilitate data collection and to produce tailored federal and state reports, the national program office provides state and local offices with software to record and analyze client data. Although EFNEP does not require states to use the software, almost all of the states participating in EFNEP use the software to provide data on services and recipients.

Without systematic data on nutrition education services and recipients in each program, federal offices receive inconsistent and incomplete information about what or how nutrition education is implemented at the local level and who is being served. A 1996 USDA report noted that the paucity of data on the department's nutrition education efforts was an obstacle to effective evaluation of those efforts, and one USDA official told us that current data collection and monitoring of the nutrition education efforts continue to be limited. However, some Team Nutrition officials said they were concerned that requiring states to provide detailed data on services and recipients would further reduce the limited resources states have for providing services and might impose reporting burdens that would discourage states from participating in Team Nutrition.

⁴¹We have not reviewed the quality—including the validity and reliability—of data collected by EFNEP.

Most Programs Did Not Systematically Collect Outcome Data on Their Nutrition Education Efforts

Most of the programs we reviewed did not systematically collect outcome data on their nutrition education efforts.⁴² For example, WIC and Team Nutrition did not systematically collect data on changes in the nutrition knowledge or dietary behavior of nutrition education recipients.⁴³ While most of the programs we reviewed do not require states to provide data on potential outcomes of nutrition education, states and localities can choose to collect and assess data themselves. But because such data collection is optional, most of the programs do not have reliable national outcome data in consistent formats. For example, Michigan regularly collects data on FSNE participants' nutrition status before and after receiving nutrition education in order to track progress toward goals. But FSNE's federal office does not require such data from participating states and does not have consistent nationwide outcome data.

However, EFNEP programs across the country measured participants' nutrition-related knowledge and dietary behavior through a behavior checklist and a 24-hour recall of food consumption administered at program entry and exit and reported the data to USDA through their common software system. EFNEP annually summarizes the outcome data reported by the states, including the extent to which the nutrient intake of nutrition education recipients changed after receiving services.⁴⁴

We have noted in past reports that federal programs that are intended to influence the behavior of individuals or that provide grants to states have particular difficulty producing outcome measures.⁴⁵ For example, we have

⁴²While outcome data are intended, and generally assumed, to measure the results of nutrition education services, they do not necessarily include evidence that the observed changes are caused by the nutrition education intervention and not by other external factors.

⁴³While WIC collects some data on outcomes of breast-feeding education, it does not collect other outcome data on the results of nutrition education.

⁴⁴We have not reviewed the validity or reliability of these outcome measurement tools. However, one study we reviewed that used EFNEP outcome data noted that the reliance on self-reported data may lead respondents to provide socially desirable answers to some questions. See Catherine Greenwald Arnold and Jeffery Sobal, "Food Practices and Nutrition Knowledge after Graduation from the Expanded Food and Nutrition Education Program (EFNEP)," *Journal of Nutrition Education*, Volume 32, Number 3, May-June 2000.

⁴⁵U.S. General Accounting Office, *Grant Programs: Design Features Shape Flexibility, Accountability and Performance Information*, GAO/GGD-98-137 (Washington, D.C.: June 22, 1998) and U.S. General Accounting Office, *Food Assistance: Performance Measures for Assessing Three WIC Services*, GAO-01-339 (Washington, D.C.: February 28, 2001).

noted that officials faced obstacles in developing and implementing outcome measures for WIC nutrition education, including difficulties identifying effective measures and resource constraints affecting their ability to collect the data. However, the lack of reliable and systematic outcome data in most of the programs we reviewed limits the potential for ongoing monitoring of the nutrition education efforts and for formal national program evaluation.

None of the Programs Conducted Regular or Nationwide Impact Evaluations of the Nutrition Education Efforts

None of the programs we reviewed conducted regular nationwide evaluations assessing the impact of nutrition education efforts. While outcome data alone provide information about apparent program results, impact evaluation studies provide stronger evidence that the observed changes in outcomes—such as improvements in nutrition knowledge and dietary behavior—are in fact the results of the nutrition education provided. Without centralized, consistent data on changes in participants' knowledge and behavior, program officials will have difficulty determining whether nutrition education efforts are meeting their goals and holding states accountable for the value of public investments.

Nevertheless, evaluating the nationwide impact of nutrition education can be challenging because (1) the flexibility and variation within each nutrition education effort can make it difficult to assess national progress toward common goals, (2) the lack of consistent national data makes it difficult to track individual participants' progress and to expand the scope of an evaluation beyond one state or region, and (3) it is difficult to isolate a program's effects from other influences. For example, it may be difficult to determine whether changes in nutrient intake following nutrition education in the WIC program are due to the education rather than to the food assistance itself. In addition, it may be quite challenging to determine to what extent environmental factors, such as the availability of fresh fruits and vegetables in a particular area, are responsible for differences in program impact among states and regions.

Moreover, designing and conducting evaluations that overcome these challenges can be costly. For example, one official noted that studies that randomly assign participants to receive either nutrition education or some other treatment are particularly expensive. USDA officials said that they are unable to conduct nationwide evaluations of the nutrition education efforts on a regular basis, largely because of limited funding. None of the programs we reviewed have funding designated specifically for research evaluations of their nutrition education efforts. Instead, USDA conducts research on these efforts using funding for general research needs.

However, the department must balance the resources needed for nutrition education research and evaluation with competing demands for research on other topics.

Instead of regularly evaluating the impact of nutrition education efforts, the programs conduct occasional studies. Team Nutrition recently conducted a nationwide evaluation of a comprehensive nutrition education demonstration program for students, but program officials do not know if and when a future evaluation will be conducted. Officials noted that the study consumed about one-half of the total funding that otherwise would have been available for Team Nutrition state grants in one fiscal year. In addition, researchers in some states conduct evaluations of aspects of the USDA nutrition education efforts, but such evaluations are sometimes limited in geographic scope and in their research designs.

USDA recognizes deficiencies in its current data collection and evaluation of nutrition education efforts and has taken steps to improve monitoring and evaluation. A 1996 USDA report to the Secretary found that “a combination of factors—such as a paucity of data, inadequate funding, and a change in expected evaluation outcomes—has created a challenging environment for USDA to assess the overall effectiveness of its nutrition education activities.”⁴⁶ In addition, FNS’s 1999 report to Congress stated that “the evaluation system for FNS nutrition education is fragmented and minimal, and lacks outcome measures.”⁴⁷ Noting that reliable data and evaluation are essential to effective nutrition education planning, FNS highlighted the need to establish a system for routine data collection to improve nutrition education planning, management, and outcomes, as well as ongoing investments in evaluation studies.

Since then, USDA has begun taking steps to collect more useful data and to improve evaluations of program results. Its efforts to improve FSNE data collection include a national review of what and how food assistance and nutrition services are being provided and the development of a uniform data-reporting system for all states participating in FSNE.⁴⁸ In

⁴⁶U.S. Department of Agriculture, *The State of Nutrition Education in USDA: A Report to the Secretary* (Washington, D.C.: October 1996), ii.

⁴⁷*Promoting Healthy Eating: An Investment in the Future*, ii.

⁴⁸According to FNS, data that may be collected under the new Education and Administrative Reporting System include demographic characteristics of participants receiving nutrition education benefits, information about state goals, topics covered, outlets, education strategies, and resource allocations and use.

addition, through efforts including studies, workshops, and an interagency working group, USDA initiated development of methodology and validation of instruments for evaluation of FSNE; funded the development of a methodology for evaluating Team Nutrition; and provided grants and technical assistance to states to encourage more effective nutrition education assessment, among other activities. However, we found that these efforts were generally preliminary steps toward improving monitoring and evaluation practices.

Available Research Provides Little Information about whether the Programs Have Met Their Nutrition Education Goals

Despite the lack of regular nationwide evaluations, USDA and others have conducted some limited or smaller-scale evaluations and studies of the nutrition education efforts.⁴⁹ We reviewed this research in order to determine whether the USDA programs were meeting their nutrition education goals (see app. II for the programs' nutrition education goals). However, the research we reviewed is not of sufficient scope and quality to allow us to determine whether the programs have met their national nutrition education goals, making it difficult for program officials to know whether their efforts have been effective.⁵⁰ We reviewed 20 studies by USDA and others conducted over the last 10 years that evaluated nutrition education in the USDA programs (see app. I for a description of our method for identifying studies and our study review methodology). We eliminated five studies with major research design limitations that prevented us from concluding that improvements in nutrition knowledge or dietary behavior were measured appropriately and were due to the nutrition education provided rather than to other factors.⁵¹ After eliminating the studies with major research design limitations, 15 studies

⁴⁹In addition to identifying several multistate evaluations of USDA nutrition education efforts, we identified more limited studies that assessed aspects of the nutrition education efforts.

⁵⁰In order to assess the extent to which USDA nutrition education efforts were meeting their goals, we reviewed research that specifically evaluated the USDA nutrition education efforts. In contrast, the key nutrition education actions we describe in figure 2 are based on an analysis of research on nutrition education in general. Also, some research has assessed the impact of certain nutrition assistance programs. See research cited in [GAO-02-142](#) and Phil Gleason and Carol Suitor, *Children's Diets in the Mid-1990s: Dietary Intake and Its Relationship with School Meal Participation* (Alexandria, Virginia: Mathematica Policy Research Inc. for the U.S. Department of Agriculture, Food and Nutrition Service, 2001). However, these studies did not isolate the impact of nutrition education efforts from the overall nutrition assistance programs.

⁵¹Given the methodological challenges of measuring the impact of nutrition education services on overall health and well-being, studies we reviewed generally measured the impact of these services on nutrition knowledge and behavior.

remained in our review, as shown in table 6 (see app. I for a list of these studies).

Table 6: Studies of the Nutrition Education Efforts Included in Our Review

| Program | Studies reviewed | Studies excluded because of major research design limitations | Program studies | Special intervention studies^a | Total |
|----------------|-------------------------|--|------------------------|---|--------------|
| EFNEP | 10 | (2) | 7 | 1 | 8 |
| FSNE | 2 | (1) | 0 | 1 | 1 |
| WIC | 7 | (2) | 2 | 3 | 5 |
| Team Nutrition | 1 | (0) | 1 | 0 | 1 |
| Total | 20 | (5) | 10 | 5 | 15 |

Source: GAO analysis.

^aSome of the studies we reviewed assessed the impact of special interventions or demonstration programs, such as a specially funded effort to increase fruit and vegetable consumption among WIC nutrition education recipients, rather than the standard nutrition education efforts.

Of these 15 studies, 8 evaluated nutrition education efforts in EFNEP. However, 1 of these studies did not assess the impact of standard EFNEP services; instead, it assessed the impact of an EFNEP special intervention. While such studies may be useful in developing strategies to change or strengthen nutrition education, they do not allow us to determine whether a program as it currently exists is meeting its nutrition education goals. The remaining 7 studies we reviewed found that EFNEP improved participants' nutrition knowledge or dietary behavior. However, because each of these studies was limited to one city or state, they do not allow us to determine whether EFNEP as a whole is meeting its goals. Given that states and localities have substantial flexibility in implementing nutrition education interventions, the program may be meeting its nutrition goals in some states or regions and not in others. In addition, most of the EFNEP studies do not compare changes in the nutrition knowledge and dietary behavior of participants with those of nonparticipants, limiting their ability to demonstrate that the observed improvements in knowledge and behavior resulted from the EFNEP services.

Finally, the other 7 studies assessed nutrition education in the nutrition assistance programs—NSLP and CACFP (through Team Nutrition),⁵² WIC, and FSNE. However, these studies do not allow us to determine whether the programs have met their nutrition education goals because few evaluate standard nutrition education efforts and because results were sometimes mixed. Four of the studies assessed the impact of special interventions or demonstration programs rather than the standard nutrition education efforts. Of the remaining studies, none evaluated FSNE. And while 1 study of Team Nutrition among fourth-graders found modest increases in nutrition knowledge and motivation,⁵³ we did not identify any other studies that could help us determine whether Team Nutrition had met its program goals. Finally, we identified 2 studies of standard WIC nutrition education, but the results of these were mixed. One multistate study found that the nutrition education efforts improved knowledge and behavior, while another multistate study found that neither standard WIC nutrition education efforts nor a special intervention improved knowledge among prenatal participants.

Conclusions

Over the past few decades, the negative health consequences of poor nutrition have grown dramatically in the United States. USDA's nutrition education efforts alone cannot be expected to halt the growing rate of poor nutrition in the country. However, these efforts could make valuable contributions to improving nutrition knowledge and positively influencing dietary behaviors among low-income individuals and schoolchildren.

While only EFNEP is specifically designed to provide nutrition education, the other nutrition assistance programs are uniquely positioned to provide nutrition education to a broad range of participants. However, USDA faces challenges providing nutrition education through these multiple programs and incorporating the key actions likely to contribute to success. Moreover, USDA has recognized the need for a cross-program integrated approach to nutrition education in multiple documents, including its recent budget proposal. However, although USDA is taking a number of steps to improve the department's nutrition education activities, it does not have an overarching strategy for increasing coordination efforts and

⁵²Because CACFP and NSLP provide nutrition education through Team Nutrition, we identified studies that evaluated Team Nutrition rather than the two programs.

⁵³This study assessed Team Nutrition efforts that officials said were more comprehensive than but generally representative of Team Nutrition efforts nationwide.

strengthening the linkages across its many nutrition education activities. Without strategies for a more unifying approach to designing, delivering, and evaluating services across all programs, officials have missed opportunities to take advantage of the lessons learned from other nutrition education efforts and are less likely to make efficient use of limited resources.

In addition, most of the nutrition education efforts did not fully incorporate the monitoring and evaluation actions likely to contribute to successful nutrition education. Specifically, USDA lacks reliable data on what nutrition education is provided, the outcomes of the services, and how they impact nutrition knowledge and dietary behaviors. Properly developed outcome measures can provide useful information to program officials, given limited resources for larger program evaluations. USDA has recognized deficiencies in its current monitoring and evaluation of certain nutrition education efforts and is taking preliminary steps to improve them. However, the agency has not developed a comprehensive agencywide strategy for incorporating the monitoring and evaluation actions key to successful nutrition education. Such a unified strategy could help the department manage the costs associated with monitoring. However, without a strategy to ensure that programs collect reliable data on services and recipients, share lessons learned in measuring outcomes, and conduct periodic evaluations, officials will have difficulty holding programs accountable for meeting their nutrition education goals. Without holding programs accountable, USDA officials will be unable to maximize the impact of future investments in nutrition education.

Recommendations for Executive Action

To help overcome the challenges associated with USDA's nutrition education efforts and to help programs incorporate the key actions related to successful nutrition education, we recommend that the Secretary of Agriculture ensure that the department develop a unifying strategy that, at a minimum:

- Identifies ways to improve coordination efforts and strengthen the linkages among the nutrition education efforts, which would include examining options ranging from more systematically sharing nutrition education resources across programs to identifying and promoting approaches for federal, state, and local officials to implement cross-program strategies to more efficiently use existing resources. In developing a unifying strategy, the department may need to submit requests for program changes to Congress.

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- Explores options to collect reliable data on services delivered and recipients served, and to identify and disseminate lessons learned. A longer-term evaluation strategy could include planning periodic and complementary evaluations of the impact of the nutrition education efforts to the extent possible, in order to make the most efficient use of the resources available for such evaluations.

Agency Comments

We provided a draft of this report to the U.S. Department of Agriculture for review and comment. On April 6, 2004, FNS officials, including representatives from each FNS program discussed in the report, provided us with their oral comments. The officials were in general agreement with the recommendations. However, they expressed concern about several elements in the draft report. First, they viewed our description of the key actions that are likely to contribute to the success of nutrition education as too restrictive because it gave the impression that there was only one desirable way to provide nutrition education. They pointed out that research supports a variety of approaches to providing nutrition education. For example, the FSNE program permits both classroom activities as well as broader social marketing approaches, which can reach more people at a lower cost per person. We agree that various approaches can be used to provide nutrition education, as long as the key actions in figure 2 are incorporated in some way, and we added language in the report in response to this comment.

Second, FNS officials believed that our description in the draft report of the extent to which the programs under review incorporated the key actions unfairly held their programs to a standard that was not appropriate, given the role of nutrition education in the various programs, the variety of appropriate approaches to delivering nutrition education, and the current funding levels. We agree that nutrition education plays a different role in each of the programs and adjusted our report to better reflect that reality and to avoid comparing the programs with one another.

Third, FNS stated that some of the models for nutrition education are much more expensive than others, and we have more fully acknowledged this in the report. FNS officials also pointed out that conducting large-scale impact evaluations would be a very costly and difficult endeavor. We agree with this point and have not recommended that USDA conduct numerous large-scale evaluations. Instead, we believe that USDA can more carefully develop a longer-term evaluation strategy that includes plans to conduct periodic and complementary evaluations of the various programs.


Finally, FNS officials raised concerns over our discussion of the benefits of program consolidation and the need for more coordination in the draft report. They pointed out that each program has its own broad mission, and it would be difficult to pinpoint opportunities for consolidation. Also, officials highlighted a number of ways that they coordinate on nutrition education message, resources, and so forth. In response, we included additional examples of coordination. However, although FNS has taken measures to increase coordination efforts and strengthen linkages between its programs, we believe opportunities exist for increased coordination efforts and stronger linkages among the FNS programs and between FNS and EFNEP. For example, USDA could encourage EFNEP and the FNS programs to take a more systematic approach to planning and program development, as well as compiling and sharing nutrition education curricula and lessons learned. Coordination at the state level also poses ongoing challenges. Our recommendation provides the department with flexibility to determine the most appropriate means to strengthen coordination and improve linkages.

On April 14, 2004, we also received oral comments from the National Program Leader for EFNEP on behalf of CSREES. CSREES agrees with our recommendations, and stated that the report provides a balanced and useful account of the five key nutrition education programs. CSREES also noted that we clearly articulated the similarities and differences between the programs, noting the variation in size, longevity, administrative oversight, funding, and degree of local adaptation among the programs. CSREES also particularly noted the relationship between FSNE and the state and local Cooperative Extension Service, stating that a substantial portion of FSNE's required 50 percent match comes from universities and the Cooperative Extension Service. Also, CSREES has taken several steps to enhance the coordination and accountability of FSNE when its services are administered through Cooperative Extension offices, including providing training to FSNE providers and developing a tool to enhance the communication and evaluation of nutrition education efforts.

In addition, FNS and CSREES also provided us with technical comments, which we incorporated where appropriate.

We will send copies of this report to the Secretary of Agriculture, appropriate congressional committees, and other interested parties. In addition, the report will be available at no charge on GAO's Web site at <http://www.gao.gov>.

If you or your staff have any questions or wish to discuss this material, please call me at (415) 904-2272 or Kay E. Brown at (202) 512-3674.

A handwritten signature in cursive script that reads "David D. Bellis".

David D. Bellis
Director, Education, Workforce,
and Income Security Issues

Appendix I: Scope and Methodology

To identify the key components believed to contribute to successful nutrition education, we reviewed key research on the topic, reviewed GAO reports and other documents on performance-based management, and conducted interviews with experts in the field of nutrition education.¹ Specifically, in our review of nutrition education research, we relied primarily on one comprehensive research review of 217 nutrition education studies at the recommendation of USDA officials and academic nutrition education experts.² We also relied on additional input of several nutrition education experts. Finally, we reviewed GAO reports and other documents on performance-based management in order to identify program design and evaluation strategies related to successful program management.

To answer the questions related to USDA's nutrition education efforts and program planning elements, we conducted interviews with federal officials from each of the five USDA programs, examined program reports and studies, and reviewed relevant laws and regulations. We also conducted interviews with cognizant state and local officials from each of the five programs in three states; we conducted site visits in Maryland and California and conducted telephone interviews with Michigan officials. We selected these states because they represented a range of geographic locations and received a range of funding resources for nutrition education. Our observations on the delivery of nutrition education are primarily based on our site visits and cannot be generalized to the programs nationwide.

To identify recent studies that evaluate nutrition education within the five USDA programs we reviewed, we searched relevant databases through September 2003, such as Agricola, ABI/Inform, Food Science & Technology, Educational Resources Information Center, and National Technical Information Service, and reviewed related GAO reports. We also spoke with nutrition education experts to identify relevant research. While these programs all offer services in addition to nutrition education, our report focuses on the nutrition education components of the evaluations.

¹Nutrition education experts we interviewed included Tom Baranowski of Baylor College of Medicine's Children's Nutrition Research Center, Leslie Lytle of the University of Minnesota's Division of Epidemiology, Isobel Contento of Columbia University, and officials of the American Dietetic Association, the American School Food Service Association, and the Society for Nutrition Education, among others.

²Contento. We also incorporated information from Dr. Contento's draft 2004 review of nutrition education research.

In order to focus on recent research on the nutrition education components of the USDA programs and to target articles for detailed review, we identified studies that met the following criteria:

- The document is an original research study or an analysis of research data, not only a descriptive study, evaluating nutrition education in one or more of the five programs.
- The document has been published in a refereed medium (for example, a journal article, book or book chapter, or USDA-issued report).
- The document's publication date is 1994 or later.³
- The document is in English.

We also asked USDA officials to identify any research assessing whether the five programs were meeting their nutrition education goals. We then compared the lists they provided with our own list of studies to ensure that all studies meeting our criteria were included in our review.

Altogether, 20 items met our criteria for review. Many of the items we eliminated were published prior to 1994 and therefore do not satisfy our definition of recent studies. Some items were eliminated because they were published as reviews or summaries of original research but did not include any original research. Other items provide descriptive information about nutrition education recipients and staff but do not evaluate the nutrition education efforts.

We then conducted detailed reviews of the 20 studies. These reviews entailed an evaluation of each study's research methodology, including its research design, sampling frame, selection of measures, data quality, limitations, and analytic techniques, as well as a summary of its major findings. We also assessed the extent to which each study was relevant to assessing whether a program was meeting its nutrition education goals.

One-quarter (5) of the 20 studies had major research design limitations that prevented us from including their conclusions in our report. For example, a number of studies included the use of inappropriate comparisons and comparison groups, and some studies failed to analyze data collected both before and after nutrition education was provided. For example, one study of WIC nutrition education in New Mexico was based on data collected after, but not before, nutrition education was provided,

³A substantial number of studies of EFNEP were published prior to 1994.

allowing a comparison of different delivery methods but not an evaluation of overall effectiveness. A study of FSNE in Texas used pretest data collected retrospectively, at the same time as post-test data, limiting the validity of the data. After eliminating the studies with major research design limitations, 15 studies remained in our review, as listed in table 7.

Table 7: 15 Studies on Nutrition Education in WIC, FSNE, Team Nutrition (NSLP and CACFP), and EFNEP

WIC Studies

Feldman, Robert H. L., Dorothy Damron, Jean Anliker, Michael Ballesteros, Patricia Langenberg, Carlo DiClemente, and Stephen Havas. "The Effect of the Maryland WIC 5-A-Day Promotion Program on Participants' Stages of Change for Fruit and Vegetable Consumption." *Health Education & Behavior* 27:5 (October 2000):649-663.

Fox, Mary Kay, Nancy Burstein, Jenny Golay, and Cristofer Price. *WIC Nutrition Education Assessment Study: Final Report*. Alexandria, Virginia: Abt Associates Inc. for the U.S. Department of Agriculture, Food and Nutrition Service, 1998.

Havas, Stephen, Jean Anliker, Dorothy Damron, Patricia Langenberg, Michael Ballesteros, and Robert Feldman. "Final Results of the Maryland WIC 5-A-Day Promotion Program." *American Journal of Public Health* 88:8 (1998): 1161-1167.

Randall, Bonnie, Kim Sprague, David B. Connell, and Jenny Golay. *WIC Nutrition Education Demonstration Study: Child Intervention*. Alexandria, Virginia: Abt Associates Inc. for the U.S. Department of Agriculture, Food and Nutrition Service, 2001.

Randall, Bonnie, Kim Sprague, David B. Connell, and Jenny Golay. *WIC Nutrition Education Demonstration Study: Prenatal Intervention*. Alexandria, Virginia: Abt Associates Inc. for the U.S. Department of Agriculture, Food and Nutrition Service, 2001.

FSNE Studies

Joy, Amy Block, Nancy Feldman, Mary Lavender Fujii, Linda Garcia, Mark Hudes, Rita Mitchell, Sybille Bunch, and Diane Metz. "Food Stamp Recipients Eat More Vegetables after Viewing Nutrition Videos." *California Agriculture* 53: 5 (September-October 1999): 24-28.

Team Nutrition (NSLP AND CACFP) Studies

The Story of Team Nutrition: Pilot Study Outcome Report. Alexandria, Virginia: Prospect Associates and Westat for the U.S. Department of Agriculture, Food and Nutrition Service, 1998.

EFNEP Studies

Arnold, Catherine Greenwald, and Jeffery Sobal. "Food Practices and Nutrition Knowledge after Graduation from the Expanded Food and Nutrition Education Program (EFNEP)." *Journal of Nutrition Education* 32:3 (May-June 2000): 130-138.

Brink, Muriel S., and Jeffery Sobal. "Retention of Nutrition Knowledge and Practices among Adult EFNEP Participants." *Journal of Nutrition Education* 26:2 (March-April 1994): 74-78.

Burney, Janie, and Betsy Haughton. "EFNEP: A Nutrition Education Program that Demonstrates Cost-Benefit." *Journal of the American Dietetic Association* 102 (2002): 39-45.

Cox, Ruby Hurley, Maria Carmen Rita V. Gonzalez-Vigilar, Mary Ann Novascone, and Irma Silva-Barbeau. "Impact of a Cancer Intervention on Diet-related Cardiovascular Disease Risks of White and African-American EFNEP Clients." *Journal of Nutrition Education* 28:4 (July-August 1996): 209-218.

Dollahite, Jamie, and Michelle Scott-Pierce. "Outcomes of Individual vs. Group Instruction in EFNEP." *Journal of Extension* 41:2 (April 2003).

Luccia, Barbara H. D., Mary E. Kunkel, and Katherine L. Cason. "Dietary Changes by Expanded Food and Nutrition Education Program (EFNEP) Graduates Are Independent of Program Delivery Method." *Journal of Extension* 41:3 (June 2003).

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Source: GAO analysis.

Appendix II: Nutrition Education Goals of Key USDA Programs

| Program | Nutrition education goals |
|---------|---|
| EFNEP | To assist low-income families and youths in acquiring the knowledge, skills, attitudes, and changed behavior necessary for nutritionally sound diets, and to contribute to their personal development and the improvement of the total family diet and nutritional well-being. |
| WIC | To (1) stress the relationship between proper nutrition and good health with special emphasis on the nutritional needs of pregnant, postpartum, and breast-feeding women; infants; and children under 5 years of age; and raise awareness about the dangers of using substances during pregnancy and while breast-feeding; and (2) assist the individual who is at nutritional risk in achieving a positive change in food habits, resulting in improved nutritional status and in the prevention of nutrition-related problems through optimal use of supplemental foods and other nutritious foods. |
| FSP | To provide educational programs that increase, within a limited budget, the likelihood of food stamp recipients making healthy food choices and choosing active lifestyles consistent with the most recent advice reflected in the Dietary Guidelines for Americans and the Food Guide Pyramid. |
| NSLP | CACFP and NSLP do not have explicit nutrition education goals. However, both programs use materials developed and disseminated by USDA's Team Nutrition initiative, which has the goal of improving children's lifelong eating and physical activity habits by using the principals of the Dietary Guidelines for Americans and the Food Guide Pyramid. In addition, |
| CACFP | NSLP encourages schools to use the school food service program to teach students about good nutrition practices. |

Source: USDA.

Appendix III: GAO Contacts and Staff Acknowledgments

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