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WIC NUTRITION EDUCATION ASSESSMENT STUDY

Final Report

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Acknowledgments

The WIC Nutrition Education Assessment Study is indebted to the staff and participants of the six local WIC agencies who supported the study through all of its various phases. Without their cooperation, the study could not have been implemented. Thanks are also due to staff in the three State WIC offices who provided information on State policies and procedures as well as information on local agency caseloads, both of which were critical in identifying potential sites for the study.

Staff of the Office of Analysis and Evaluation, Food and Nutrition Service, of the U.S. Department of Agriculture, have been responsible for oversight of the project. The Project Officer, Janet Tognetti Schiller, has overseen all stages of project planning and implementation and guided development of study reports. Jay Hirschman also made valuable contributions to study design. Staff from the WIC Division (J.P. Passino) and the Nutrition and Technical Services Division (Donna Blum) reviewed and critiqued study plans and reports.

The study was assisted by Laura Sims, a consultant who played a key role in the start-up phase of the project, and a Technical Advisory Group comprised of Christine Olson, Yvonne Bronner, and Jane Peacock. These individuals made valuable contributions to the development of study instruments and will also review and critique the study's final report.

Finally, several staff members at Abt Associates have played or are currently playing important roles on the project. Mary Kay Fox is the current Project Director. Michael Puma was the Project Director for first two and one-half years of the project. Other key staff members include Mary Ann Hartnett (Survey Director), Karin Carter and Gary Donzelli (Assistant Survey Directors), Connie Hare and Lynne McKenzie (Field Managers), Nancy Burstein (Director of Analysis), Gus Baker, Amy Fowler, Stephanie Gluckman, Jenny Golay, Robert Kornfeld, and Cristopher Price (Analysts), and Leiming Lee and Don Laliberty (Programmers). Eileen Fahey and Tracy Olcott served as contract secretaries and, in this capacity, coordinated production of all study reports.

Executive Summary

The WIC Nutrition Education Assessment Study was conducted by Abt Associates Inc. of Cambridge, Massachusetts, under contract to the Food and Nutrition Service (FNS) of the United States Department of Agriculture (USDA). The study was designed by FNS to fill several important gaps in information about the nutrition education component of the WIC Program. It was not designed to be a "best practices" study, nor was it meant to provide a nationally representative picture of nutrition education in the WIC Program. Rather, the study was exploratory in nature and examined processes and outcomes in six local WIC agencies that serve different populations and use a variety of different approaches to providing nutrition education. Findings from the study were intended to provide a focus for future research in this area.

The study is unique in that it included a longitudinal design, i.e., repeated measures from the same group of WIC participants over a period of time. In addition, the study employed a mixed-method approach to data collection that allowed for collection of comparable data from different sources. This feature provides broad coverage of important issues from different perspectives.

Six local WIC agencies participated in the study, which focused on pregnant and postpartum WIC participants. A separate report describes the nutrition-related knowledge, attitudes, and behaviors of study subjects at the time they enrolled in WIC (Fox, M.K., et al., 1998). This report describes the nutrition education services offered in study sites, participants' receipt of and satisfaction with these services, and changes in participants' knowledge, attitudes, and behaviors between the time of prenatal WIC certification and four-to-six-months postpartum.

Overview of the Study

The study had four key research objectives:

- To assess pregnant women's nutrition-related knowledge, attitudes, and self-reported behaviors at the time of WIC enrollment.
- To describe the processes used by local agencies in delivering WIC nutrition education to pregnant and postpartum women, and the type and amount of nutrition education actually received by these participants.
- To assess participants' satisfaction with WIC nutrition education services, materials, and staff.
- To the extent possible, to assess the impact of WIC nutrition education on participants' knowledge, attitudes, and behaviors.

The impact study encompassed in the study's fourth objective was exploratory in nature. Because program policies precluded establishment of a true control group, i.e., a group of WIC participants to whom WIC nutrition education services were not offered, a quasi-experimental design was used. Although this design does not permit a definitive assessment of the impact of WIC nutrition education, nor results that are generalizable to the WIC population nationwide, the study provides

useful insights about the potential magnitude and direction of changes in participants' knowledge, attitudes, and behaviors over time. Moreover, because the demographic characteristics of the study sample were quite similar to those of pregnant WIC participants nationwide, study findings have broad relevance for the WIC Program.

Participating Local Agencies

Six local agencies, located in three different States (two agencies per State) participated in the study. Sites were purposefully selected to include a variety of approaches to the delivery of WIC nutrition education, as well variability in community type (urban *versus* rural) and ethnic and cultural backgrounds of WIC participants.

Sample Recruitment

Newly enrolling pregnant women were recruited into the study just prior to WIC certification. A newly enrolling pregnant woman, while just being certified for her current pregnancy, may have participated in WIC during previous pregnancies and/or as caretaker of an infant or child WIC participant. To ensure that baseline information was collected before women received any nutrition education for their current pregnancy, recruitment and baseline interviews were completed *before* women met with any WIC staff.

Data Collection

In addition to the baseline survey, which was completed at the time sample members were certified for prenatal WIC participation, the study included two follow-up interviews, one completed at 32-36 weeks gestation (prenatal survey) and one completed at four-to-six months postpartum (postpartum survey). Identical measures of nutrition knowledge, attitudes, and behavior were included in all three surveys. The follow-up surveys included questions about experiences and satisfaction with WIC nutrition education.

In addition, data were abstracted from WIC administrative records to ascertain the number and type of nutrition education contacts provided to study respondents during prenatal and postpartum certification periods. Finally, to obtain a "real word" picture of WIC nutrition education in each site, to supplement background information provided by local agency directors, the study included a limited number of on-site observations of nutrition education contacts in each site.

Key Findings

Characteristics of Nutrition Education Offered in Study Sites

- Methods used to deliver nutrition education varied considerably across sites, including use of individualized counseling for all nutrition education contacts and use of a newsletter (distributed by voucher clerks) for follow-up contacts with low-risk women.

- Four of the six study sites experienced problems with participant no-shows for follow-up contacts. The problem was quite significant in two sites, so much so that local agency directors ultimately implemented procedures specifically designed to ensure that participants receive a second prenatal contact.

- A majority of sample members were certified for postpartum participation. Most certified during the six-week transition period allowed after the birth of the baby. The proportion of women who did *not* recertify in one site was notably higher than the other sites. This may be because women were required to attend separate certification appointments for themselves and their infants. The five other sites used joint appointments that allowed both certifications to be completed at the same time.

- The quality of staff/participant interactions was generally quite high. WIC nutrition educators did an excellent job of addressing participants' questions or concerns in a supportive manner; providing opportunity for questions, offering specific and appropriate ideas on how to implement recommended behaviors (e.g., ways to increase milk consumption other than drinking milk as a beverage); maintaining nonjudgmental attitudes; and providing positive feedback on current dietary intake (i.e., highlighting the positive before discussing needed improvements).

  At the same time, staff in five of six sites frequently did not assess participants' understanding of the information being communicated or attempt to determine whether there were barriers that might affect a participant's ability to adopt a recommended behavior. Staff in four of the six sites often did not ask about participants' willingness to make a recommended behavior change. And, in three sites, WIC staff tended to assign, rather than negotiate, goals for behavior change. Use of group contacts (classes) did not preclude these desirable interactions, nor did use of individual contacts ensure them.

- With one exception, the physical environment in which nutrition education was delivered was appropriate and comfortable.

- The topics covered in WIC nutrition education contacts were generally consistent with expectations. Most of the concepts included in the nutrition knowledge measure received widespread or moderate coverage. Certification contacts tended to cover a broad array of topics, with an emphasis on content of the WIC food package and, for prenatal certifications, recommended eating practices during pregnancy. Follow-up contacts tended to focus on a single or more limited number of concepts. In follow-up prenatal contacts the most frequent topic was recommended weight gain during pregnancy.

- Referrals to health and social services were relatively rare. Because referrals are supposed to be tailored to the individual needs of a participant, the absence of a referral does not necessarily imply that a referral was missed. The data suggest that the number and type of referrals offered in local WIC agencies is more reflective of the context or local environment in which programs operate, i.e., the extent to which participants are already hooked into needed programs and services before entry into WIC or through another arm of the agency in which the WIC program operates, than of the quality of nutrition education offered to program participants.

Participants' Receipt of Nutrition Education Contacts

- According to data from WIC administrative records, a majority (80% - 97% across study sites) of respondents had the opportunity to receive two nutrition education contacts between prenatal certification and the birth of their babies. The extent to which this goal was achieved varied across sites, and the pattern observed was entirely consistent with findings from the on-site observations. Overall, the percentage of women in each site who received two contacts during the prenatal period ranged from a high of 92 percent to a low of 24 percent.

  The two sites that did not have problems with participant no-shows during on-site observations (the two Mountain Plains sites) were more successful in providing the two required prenatal contacts than other study sites, despite the use of tri-monthly voucher issuance which, in theory, decreases the number of contact opportunities. This trend is entirely consistent with no-show rates documented during the on-site observations and with historical patterns reported by local agency directors.

- Although virtually all study subjects had the opportunity to receive two nutrition education contacts between postpartum certification and the time WIC record abstract data were collected (approximately six months postpartum), a large proportion received only one contact (the certification contact). The maximum percentage for receipt of two nutrition education contacts was 59 percent. The minimum was five percent.

- Respondent self-reports about information and advice received from WIC staff were largely consistent with findings from the on-site observation, i.e., topics that received widespread coverage in the on-site observations were generally reported frequently and topics that received less coverage were generally reported less frequently.

- Respondents reported few referrals from WIC staff. This finding is consistent with the on-site observations. Because most study sites did not record information about referrals in WIC records, it was not possible to cross-check participant self-reports with administrative data.

- The following types of women were significantly *less likely* to receive a second prenatal contact: women who had previously been pregnant but not enrolled in WIC; women who enrolled in their third trimester; and women who smoked. The following types of women were significantly *more likely* to receive a second prenatal contact: previous WIC participants; women with higher overall nutrition knowledge scores at baseline; women who reported regular use of prenatal vitamins; and women who were planning to breastfeed for at least six months at the time of WIC enrollment.

  These data suggest that the women most likely to return for a second prenatal nutrition education contact are those who already have higher levels of nutrition knowledge and, to some extent, already exhibit desirable health behaviors. Conversely, women who are theoretically most in need of services are less likely to return for a second prenatal contact (e.g., those with lower levels of nutrition knowledge).

Changes in Knowledge, Attitudes, and Behaviors Over Time

Nutrition Knowledge

- With the exception of one site that served a large population of recent immigrants, participants entered WIC with reasonably high levels of nutrition knowledge. Overall knowledge scores increased significantly in all sites between the baseline and prenatal surveys. Gains persisted through the postpartum survey and in most sites actually increased by a modest amount.

  The content areas that showed the greatest improvement were knowledge related to breastfeeding and knowledge related to recommended infant feeding practices. Mean scores for two other two content areas (general nutrition knowledge and healthy practices during pregnancy) also improved, however, changes were less substantial and did not always reach statistical significance. Overall, the pattern of change seen in these data is consistent with the notion that WIC nutrition education is effective in communicating key nutrition concepts to program participants. Two of the content areas in which gains were most substantial (breastfeeding and recommended infant feeding practices) were those in which women showed lower levels of baseline knowledge *and* which on-site observations and participant self-reports document as being well covered in WIC nutrition education contacts.

- In five of the six study sites, overall nutrition knowledge scores at baseline for women who participated in WIC during a previous pregnancy were significantly higher than scores for women who had not participated previously. Differences were largely attributable to differences in scores for breastfeeding knowledge (three sites) and knowledge about recommended infant feeding practices (five sites) — the two contact areas that showed the most substantial gain in this study. This finding suggests that at least some of the gains in nutrition knowledge noted in the preceding analyses may be attributable to the impact of WIC nutrition education.

Attitudes and Perceptions

- Five measures of attitudes and perceptions were included in the study. In general, changes over time, although statistically significant, were numerically small. The practical significance of these small changes is unclear. The general pattern observed in the data was no change to a modest increase in attitudes and perceptions during the prenatal period, with a subsequent decline during the postpartum period to levels that approximated or were less than baseline levels.

- Infant feeding preference scores (a measure of a woman's openness toward breastfeeding) increased in four of six study sites between the baseline and prenatal surveys. These improvements were transient, however, because the percentage of women who actually initiated breastfeeding was not significantly different from the percentage who entered the WIC program already intending to breastfeed.

Nutrition-related Behaviors

- With one exception, use of prenatal vitamins and iron supplements increased significantly in all six sites between the baseline survey and the prenatal survey.

- Reported daily consumption of milk, 100% fruit juice, and WIC cereals increased significantly in all six study sites between the baseline and prenatal surveys. Reported consumption of cheese, as well as peanut butter, beans, peas, and lentils, increased in four sites. Consumption of eggs increased in three sites. Increased consumption was maintained into the postpartum period only for WIC cereals. Intake of other WIC foods decreased to levels that were equivalent to or less than baseline levels. Changes in the composition of WIC food packages may contribute to differences between reported prenatal and postpartum consumption.

- Most women followed recommended infant feeding guidelines during the earliest months of life, however, some women offered their infants inappropriate fluids (primarily sweetened water) or solids (primarily infant cereal) before the age of two months. The percentage of women who offered inappropriate fluids ranged from a low of five percent to a high of 27 percent. The percentage who offered solid foods ranged from three percent to 18 percent.

- The prevalence of undesirable infant feeding practices increased sharply for older infants. More than 40 percent of women in each site offered their babies something other than breastmilk, formula, or plain water before the age of 4 months. In several sites, two-thirds to three-quarters of respondents reported this behavior. Use of solids (primarily infant cereal) before 4 months of age was also a common practice, although less common than use of inappropriate fluids (minimum of 39 percent and a maximum of 67 percent). Roughly one-third of respondents offered their infants something that is considered completely inappropriate for infants of any age, (e.g., fruit drinks, sodas, or desserts), or not appropriate until at least 6 months of age (e.g., fruits or vegetables, meats, and, in some cases, whole eggs or milk).

Other Behaviors

- Many women who smoked cigarettes prior to pregnancy reportedly quit after becoming aware of the pregnancy and before enrolling in WIC. Nonetheless, in all sites except one, where very few women smoked even before pregnancy, 20 to 41 percent of women reported using cigarettes at the time of the baseline survey. At the time of the prenatal survey, the prevalence of cigarette use was significantly lower in two of the five sites that had an appreciable number of smokers. There was no difference in the remaining two sites.

  A majority of women who stopped smoking before or after WIC certification resumed the habit by the time of the postpartum survey. In all six sites, the percentage of women using cigarettes at the time of the postpartum survey was significantly greater than at baseline. Although cigarette use had not returned to pre-pregnancy levels, there was a definite trend in this direction.

- Most women who used alcohol prior to pregnancy reportedly discontinued this practice prior to WIC certification. With one exception, fewer than ten percent of women reported use of alcohol at the time of the baseline interview. Over the course of prenatal WIC participation, use of alcohol decreased further (and significantly) in two sites. In the other three sites, the value of the estimates shifted somewhat, sometimes up and sometimes down, but these differences were not statistically significant.

  By the time of the postpartum survey, many women had resumed use of alcohol. In all six sites, the prevalence of reported alcohol consumption during the postpartum period was significantly greater than at baseline (but still substantially lower than prior to pregnancy).

- More than 70 percent of respondents in each site entered WIC already following the recommendation that over-the-counter medications should be taken only with physician approval. Nonetheless, adherence to the recommendation increased significantly in all sites between the baseline and prenatal surveys, reaching levels of 82 to 97 percent.

Participants' Satisfaction with WIC Nutrition Education

- Virtually all respondents reported receiving written nutrition education materials. At the time of the prenatal survey, three-quarters or more the respondents in each site reported reading all or most of the materials provided . Another ten to 23 percent of respondents reported reading some of the written materials. One percent or less of respondents indicated that they did not read any of the materials. The overall pattern of responses was similar for the postpartum survey data.

- Women who reported reading at least some of the written materials provided by WIC were asked to rate the relative usefulness of the materials. More than half of the prenatal survey respondents in each site rated the written materials as either extremely useful or useful. With one exception, roughly a third of respondents found written materials to be only somewhat useful. A small percentage of women (2-3%) judged the materials provided by WIC to be not very useful or useless. Again, the overall pattern of responses was similar for the postpartum survey data.

- More than 60 percent of prenatal survey respondents who attended a nutrition education class rated the class(es) as either very interesting or interesting. Postpartum assessments were somewhat more positive in two sites and somewhat more negative in three sites.

- With one exception (the site with a large, non-English speaking immigrant population), fewer than ten percent of respondents reported that their questions or concerns had not been addressed by WIC staff. In the site with the large immigrant population, the percentage of women who reported an unmet information need at the time of the prenatal survey (12%) was more than twice that of any other site. By the time of the postpartum survey, the prevalence of this problem had dropped considerably, to six percent, and was comparable to other study sites. This pattern suggests that language and/or cultural barriers may have complicated, but did not impede, communication of nutrition education messages in this site.

- Participants were asked directly whether they learned anything from WIC ("Did you learn anything that you did not know before you visited the WIC program?"). In most sites, less than half of the prenatal survey sample responded affirmatively. Results for the postpartum survey were similar.

- Respondents who reported learning something from WIC were asked to identify what was learned. Responses were consistent with findings regarding topics covered in WIC nutrition education. The topic areas in which most respondents reported knowledge gain were guidelines for healthy eating during pregnancy and breastfeeding.

- Respondents' self-reports about knowledge gain also corresponded well with changes in overall nutrition knowledge scores and infant feeding preference scores. Although knowledge scores increased significantly over time for both self-described learners and non-learners, respondents who said they had learned something from WIC (self-described learners) gained significantly more knowledge than respondents who said they had *not* learned anything from WIC (self-described non-learners). Mean overall knowledge scores for self-described learners increased 6.8 percentage points between baseline and prenatal surveys, compared to 4.5 percentage points for self-described non-learners. Likewise, between the baseline and postpartum surveys, overall knowledge scores increased 8.8 points for self-described learners compared to 6.3 percentage points for self-described non-learners.

  These data indicate that both learners and non-learners increased their nutrition knowledge over the course of the study. The fact that participants who reported learning something from WIC showed significantly greater gains in knowledge than participants who said they had not learned anything from WIC suggests that, for these participants, at least some of the knowledge gain realized over time is attributable to WIC nutrition education. A similar pattern was noted for the infant feeding preference score.

- Respondents were asked to identify up to three things they liked about the WIC program and up to three things they disliked. WIC supplemental foods ranked as the leading positive program attribute in all six sites in both prenatal and postpartum surveys. This was the only program characteristic that was consistently included in the top three positive aspects of the WIC program.

  The next most frequently cited program feature, included among the top three in four of six sites, was that the WIC program and/or its staff cares about participants. An argument can easily be made that the nutrition education component of the program plays a role in generating this perception. Other program characteristics that vied for third place on the top-three list for all sites combined included "learn about healthy eating," "talking to the nutritionist," and "talking with other WIC staff." All three of these responses are clearly related to the nutrition education component of the WIC program.

- Respondents in most sites found it more difficult to identify unfavorable aspects of the WIC program than favorable aspects. With one exception, more than two-thirds of

prenatal respondents were unable to identify anything they did not like about WIC. In the postpartum survey, this was true for more than half of all respondents in five of six study sites.

- Respondents were asked to provide specific suggestions for improving WIC nutrition education, however, few respondents were able to offer specific suggestions. In the prenatal survey, suggestions were offered by only four to 15 percent of respondents. The range for the postpartum survey was three to 19 percent. Among respondents who did offer suggestions, the specific recommendation made most often was to improve the content and/or delivery of nutrition education. Other recommendations were to increase individualized contact and to increase participants' awareness of, or opportunities for, nutrition education.

- Responses to a battery of items designed to assess program satisfaction indicate that, overall, the vast majority of respondents in all six study sites were quite satisfied with WIC nutrition education. In five of six study sites, more than 90 percent of prenatal and postpartum respondents found WIC staff to be helpful, as well as warm and friendly; believed that WIC staff respected them as individuals; found explanations offered by WIC staff to be readily understandable; had their questions answered; felt satisfied when they left the WIC clinic; and found the information offered to be helpful. Likewise, more than 90 percent of respondents in five of six sites, did *not* feel confused when they left the WIC clinic.

- Although the overall picture of participant satisfaction was highly positive, respondents did identify some areas of dissatisfaction. Five to 37 percent of respondents indicated a concern about the waiting time at WIC clinics (agreed or strongly agreed with the statement "the staff made me wait too long"). The percentage of respondents who said they had to wait too long increased between the prenatal survey and the postpartum survey in five of the six sites.

  Another area of dissatisfaction was the fact that some of the information and guidance provided by WIC staff conflicted with information provided by physicians (agreed or strongly agreed with the statement "Some of the advice I received contradicted what my doctor told me"). At the time of the prenatal survey, the percentage of respondents reporting such conflicts, ranged from 15 to 24 percent. Contradictory advice most often involved advice related to weight gain during pregnancy, the need for iron supplements (i.e., whether or not participants' were anemic), and breastfeeding.

  The prevalence of contradictory advice from physicians increased in the postpartum survey (range from 24% to 47%). Conflicts during the postpartum period most often involved breastfeeding — with WIC staff encouraging breastfeeding and local physicians either downplaying or actually discouraging breastfeeding.

- Analyses that explored relationships between overall satisfaction (a composite measure), individual measures of satisfaction, and participants' experiences with WIC nutrition education revealed that women who had the following types of experiences reported

significantly higher overall levels of satisfaction than women who had other experiences: strongly agreed that counselors helped in decision about how to feed baby; strongly *disagreed* that WIC staff made them wait too long; strongly *disagreed* that advice given by WIC was contradictory to advice given by physician; thought written nutrition education materials were useful or very useful; and did not have any outstanding issues/questions to discuss with a nutritionist. In addition, two factors—*not* having been referred to health or social services, and *not* learning anything new from WIC—were associated with slightly lower levels of lower overall satisfaction.

Chapter 1
Introduction

The WIC Nutrition Education Assessment Study was conducted by Abt Associates Inc. of Cambridge, Massachusetts, under contract to the Food and Nutrition Service (FNS) of the United States Department of Agriculture (USDA). The study was designed by FNS to fill several important gaps in information about the nutrition education component of the WIC Program. It was not designed to be a "best practices" study, nor was it meant to provide a nationally representative picture of nutrition education in the WIC Program. Rather, the study was exploratory in nature and examined processes and outcomes in six local WIC agencies that serve different populations and use a variety of different approaches to providing nutrition education. Findings from the study were intended to provide a focus for future research in this area.

The study is unique in that it includes a longitudinal design, i.e., repeated measures from the same group of WIC participants over a period of time. In addition, the study employed a mixed-method approach to data collection that allowed for collection of comparable data from different sources. This feature provides broad coverage of important issues from different perspectives.

Six local WIC agencies participated in the study, which focused on pregnant and postpartum WIC participants. A separate report describes the nutrition-related knowledge, attitudes, and behaviors of study subjects at the time they enrolled in WIC (Fox, M.K., et al., 1998). This report describes the nutrition education services offered in study sites and participants' receipt of and satisfaction with these services. The report also describes changes in participants' knowledge, attitudes, and behaviors between the time of prenatal WIC certification and four-to-six-months postpartum. The report also includes several exploratory analyses that examine the influence of exogenous attitudinal and social factors on behaviors of key interest to WIC nutrition educators, particularly the initiation and duration of breastfeeding. These analyses may be useful in focusing or targeting nutrition education efforts.

The WIC Program

The Special Supplemental Nutrition Program for Women, Infants and Children (WIC) is a Federal nutrition assistance program that provides supplemental food, nutrition education, and referral to health care and social services to low-income women who are pregnant, postpartum, or breastfeeding; infants; and preschool children who are at nutritional risk. The WIC Program is designed to serve as an adjunct to good health care during critical periods of growth and development, and to counteract the potentially deleterious effects of poverty. In fiscal year (FY)1997, approximately 23 percent of WIC participants were pregnant, postpartum, or breastfeeding women.

Program Administration

WIC is administered by FNS and operates in all fifty States, the District of Columbia, Puerto Rico, Guam, American Samoa, the American Virgin Islands, and in 33 Indian tribal organizations (ITOs).

Eighty-eight State agencies and more than 2,200 local agencies provide services to participants through more than 10,000 service sites. Local WIC agencies are often city or county health departments, but a variety of public or nonprofit health or human services organizations, such as hospitals, maternal and child health agencies, or community action agencies, also serve as local WIC agencies. In FY 1997, WIC served more than 7.4 million participants per month at an annual cost of $3.8 billion.

Participant Eligibility

Eligibility for WIC is based on four factors. First, a participant must be a resident of the State in which she/he applies for benefits. Second, a participant must be a member of certain categorically eligible groups: pregnant women; postpartum non-breastfeeding women; breastfeeding women; infants; and children up to 5 years of age.

Third, a participant must be income-eligible. The specific income limit for eligibility is set by each State Agency; however, it must not exceed 185 percent, nor be less than 100 percent, of the Federal Poverty Income Guidelines, based on family size. As of July 1998, at the 185 percent threshold, a person from a family of four with an annual household income of $30,433 or less would be income-eligible for WIC.[1] In addition, applicants automatically meet WIC's income eligibility requirement if they are eligible to receive food stamps, Medicaid, or Temporary Assistance for Needy Families (TANF), or if certain members of their family are eligible to receive Medicaid or TANF.

Finally, a participant must be determined to be at nutritional risk based on a medical and/or nutritional assessment by a competent professional authority (such as a physician, nutritionist, nurse, or other designated health official). At a minimum, height (or length) and weight are assessed and, except for infants less than 6 months of age, a hematological test (most often hemoglobin) is administered to assess nutritional status. Program regulations allow State and local agencies to develop their own criteria for nutritional assessments and risk factors, within general Federal parameters.

WIC is not an entitlement program. Individuals who meet eligibility criteria may be served only as funds permit. Local agencies are assigned caseloads by State agencies and a priority system is used in making enrollment decisions when an agency is at caseload limit. The priority system ensures that individuals determined to be at the greatest nutritional risk are enrolled first when caseload slots are limited.

Program Benefits

The WIC Program provides supplemental foods, referrals to health and social services, and nutrition education to participants.

Supplemental Foods

The supplemental foods provided by the WIC Program are good sources of nutrients most likely to be lacking in the diets of low-income populations: protein, iron, calcium, and vitamins A and C. Foods available in WIC food packages include iron fortified infant formula, iron-fortified infant

1 This dollar value applies to the 48 contiguous States, Washington D.C., Guam, and the U.S. territories. Income thresholds are higher for Alaska and Hawaii.

cereal, infant juices high in vitamin C, milk, eggs, cheese, dried beans and peas, peanut butter, 100% fruit or vegetable juices, breakfast cereals that are high in iron and low in sugar, and, for certain breastfeeding women, carrots and canned tuna.

The type and quantity of foods provided varies according to participants' eligibility category, nutritional needs, and, to the extent possible, personal preferences. Most States operate retail food delivery systems where WIC participants receive food instruments (vouchers) to use in purchasing supplemental foods at local grocery stores. A small number of States operate direct delivery systems, where foods are delivered to participants' homes, or participants pick up foods at warehouses, in combination with or instead of a retail system.

Referrals to Health Care and Social Services

Local WIC agencies are expected to promote routine use of preventive health care services. They are also encouraged to provide referrals, as needed, to appropriate social services and programs (e.g., Food Stamps, Medicaid, AFDC[2], immunization programs, and other programs relevant to the participants' needs).

Nutrition Education

Nutrition education is seen as an essential part of the WIC Program; it provides a mechanism for ensuring that WIC participants achieve desired levels of knowledge and adapt desired attitudes and behaviors. Program regulations define two broad goals for WIC nutrition education:

- to stress the relationship between proper nutrition and good health, with special emphasis on the nutritional needs of the program's target populations; and
- to assist individuals at nutritional risk in achieving a positive change in food habits, resulting in improved nutritional status and the prevention of nutrition-related problems.

In practice, WIC nutrition education encompasses many other topics such as breastfeeding promotion and the use of cigarettes, alcohol, illicit drugs, and over-the-counter medications. Participants may be referred to smoking cessation programs or alcohol and drug treatment programs.

State agencies are required to earmark at least one-sixth of annual administrative funds for nutrition education. Local WIC agencies are required to offer all adult participants and caretakers of infant and child participants at least two nutrition education contacts during each certification period. Certification periods last six months, with the exception of infants, who may be certified for one year, and prenatal women, who are certified for the duration of their pregnancy and up to six weeks postpartum. For participants with certifications that extend beyond six months, nutrition education must be provided on a quarterly basis.

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2 Since the time study data were collected, the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (P.L. 104-193), replaced AFDC (Aid to Families with Dependent Children) with the Temporary Assistance to Needy Families (TANF) block grant to States. The term AFDC is used throughout the report because that was the name of the program at the time study data were collected.

Although all local agencies must provide nutrition education, participants are free to decline these services without affecting receipt of other program benefits. To maximize participation, local agencies tend to schedule nutrition education activities to coincide with issuance of WIC vouchers. State and local WIC agencies have broad autonomy to develop plans and procedures for providing nutrition education to WIC participants. Consequently, WIC nutrition education is quite diverse. A variety of different methods may be used to provide nutrition education. For example, participants may be counseled one-on-one, may attend classes, or may view videos, filmstrips, or slide presentations on a variety of health and nutrition-related topics. Providers are encouraged to ensure that nutrition education messages take into account participants' educational levels, nutritional needs, household situations, and cultural preferences. The 1988 Study of WIC Participant and Program Characteristics (PC88) found that the majority of local agencies offered the two required contacts; some agencies offered more sessions to high-risk participants. (Williams, R.L., et al., 1990). Most nutrition education was provided by nutritionists in one-on-one contacts.

Anecdotal evidence indicates that this pattern may have changed in recent years due to increased caseloads. The advent of formula rebates and increases in WIC funding have substantially increased the number of WIC participants. Nationwide, the number of WIC participants increased 45 percent between 1988 and 1994. To accommodate the increased number of participants, many local WIC agencies have modified the systems used to deliver nutrition education. Some local agencies have increased the use of paraprofessionals rather than nutritionists. Other local agencies have replaced individual nutrition education contacts with less labor-intensive contacts such as classes; group or individual viewing of videos or slide presentations; interactive computer programs; and newsletters.

Overview of the Study

The WIC Nutrition Education Assessment Study had four key research objectives:

- To assess pregnant women's nutrition-related knowledge, attitudes, and self-reported behaviors at the time of WIC enrollment.
- To describe the processes used by local agencies in delivering WIC nutrition education to pregnant and postpartum women, and the type and amount of nutrition education actually received by these participants.
- To assess participants' satisfaction with WIC nutrition education services, materials, and staff.
- To the extent possible, to assess the impact of WIC nutrition education on participants' knowledge, attitudes, and behaviors.

The impact study encompassed in the study's fourth objective was exploratory in nature. Because program policies precluded establishment of a true control group, i.e., a group of WIC participants to whom WIC nutrition education services were not offered, a quasi-experimental design was used. The original design called for a comparison of sites providing higher- and lower-intensity nutrition education. If WIC nutrition education was effective, it was hypothesized, then participants in higher-intensity sites should show greater improvements than participants in lower-intensity sites (e.g., larger gains in nutrition knowledge or an increased prevalence of recommended behaviors).

This analysis plan was ultimately abandoned because anticipated differences between sites in the intensity of nutrition education did not hold up in actual practice. Consequently, the impact analysis presented in this report is limited to a description of changes over time in each of the six sites. Although these data are not generalizable to the WIC population nationwide, nor indicative of the impact of WIC per se, they provide useful insights about the potential magnitude and direction of changes in participants' knowledge, attitudes, and behaviors over time. Moreover, because the demographic characteristics of the study sample were quite similar to those of pregnant WIC participants nationwide, as discussed later in this chapter, findings from the impact study have broad relevance for the WIC Program.

The study design does not permit a definitive assessment of the impact of WIC nutrition education. Without a control group, changes observed over time, whether positive or negative, can not be attributed to WIC nutrition education. It is possible, for example, that a significant increase in participant knowledge may be due to information participants obtained from sources other than WIC.

Selection of Study Sites

Site selection was structured to include three sets of site pairs reflecting varying approaches to the delivery of WIC nutrition education. To control for State-level variation in nutrition education policies, study sites were concentrated in three States (one pair of sites per State). The three States selected for the study, one in the Southeast region, one in the Mountain Plains region, and one in the Midwest, used standardized food packages for pregnant women and had a number of local WIC agencies with enrollments large enough to support the sample size requirements of the study.

Within each of the three selected States, numerous factors were considered in selecting two local agencies to participate in the study. Prime among these was the local agency's ability to satisfy sample size requirements. To be included in the study, a local agency had to be large enough to ensure that a minimum of 300-450 newly enrolling pregnant women could be recruited into the study over a period of approximately seven months. While FNS' original criteria called for the higher end of this range, study requirements were adjusted to allow for somewhat smaller samples in two study sites. This accommodation was made to ensure that the study would not be limited to urban local agencies with very large caseloads.

In addition to monthly enrollment of pregnant women, characteristics of local nutrition education programs figured prominently in decisions about site selection. Directors of local agencies that met sample size requirements were interviewed to gather information on policies and procedures used in delivering nutrition education to pregnant and postpartum women. This information was used to create a profile of the nutrition education delivery system used in each local agency and to classify agencies as either lower-intensity or higher-intensity with regard to their planned nutrition education program. (As noted above, the higher- vs. lower-intensity classification was an integral part of the original study design but the dichotomy was dropped during the analysis phase of the project.)[3]

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3 Higher-intensity sites generally met one or more of the following criteria: provided opportunities for more than the two nutrition education contacts mandated by current regulations; offered more individual (as opposed to group) contacts; and/or reported longer average contact time (minutes), particularly for the second contact. Most sites designated as higher-intensity also reported a more comprehensive breastfeeding promotion program

Once designations of lower- and higher-intensity were assigned to each candidate local WIC agency within a State, two local agencies in each State, one higher-intensity and one lower intensity, were selected to participate in the study. Site selection was structured to ensure ethnic and cultural diversity across the sample, as well as variability in level of urbanicity.

Characteristics of the six study sites are summarized below:

Southeast Region

Site 1 Large county health department in an urban area. Participant population is comprised largely of Hispanics and Blacks, many of whom are recent immigrants.

Site 2 Large county health department in a primarily suburban area. Participant population includes roughly equivalent proportions of Blacks and Whites.

Mountain Plains Region

Site 1 Large multi-county health department in an urban area. More than half of the participants are White; roughly equivalent proportions of the remainder are Black and Hispanic.

Site 2 Small city health department in a rural area. More than half of the participants are Hispanic; most of the others are White.

Midwest Region

Site 1 Large community health center in an urban area. About two-thirds of the participants are White.

Site 2 Small county health department in a rural area. About 80 percent of participants are White.

Sample Recruitment

Newly enrolling pregnant women were recruited into the study just prior to WIC certification. A newly enrolling pregnant woman, while just being certified for her current pregnancy, may have participated in WIC during previous pregnancies and/or as caretaker of an infant or child WIC participant. To ensure that baseline information was collected before women received any nutrition education for their current pregnancy, most sample members were recruited and interviewed in WIC delivery sites on the day they came in for certification appointments. Interviews were completed *before* women met with any WIC staff.

In two sites (Mountain Plains Site 1 and Southeast Site 2), the use of large group certification appointments made it difficult for study staff to recruit and interview all potential respondents before they met with WIC staff. Consequently, the recruitment strategy in these two sites was changed so that women were interviewed in their homes two to three days prior to their certification appointments.

Sample recruitment began in August 1994 and was completed in July 1995. The final baseline sample included 2,100 newly certified pregnant WIC participants. Sample distribution across the six study sites is shown below:

Southeast Region	Site 1	400
	Site 2	400
Mountain Plains Region	Site 1	400
	Site 2	300
Midwest Region	Site 1	300
	Site 2	300

The smaller samples for Mountain Plains Site 2 and Midwest Site 2 reflect the fact that these are small, rural sites. The target sample size for Midwest Site 1 was reduced from 400 to 300 because the rate of new enrollments was substantially lower than originally reported by site staff and the rate of failed certification appointments (no shows) was much higher than anticipated.

Data Collection Components and Schedule

As noted above, baseline interviews were conducted just before women were certified as prenatal WIC participants. The study also included two follow-up interviews, abstraction of data from WIC records, and, to obtain additional information about the delivery of nutrition education services in each site, interviews with local agency directors and on-site observations of nutrition education sessions. Each of these study components is described in detail below. Data collection components and schedule are summarized in Exhibit 1.1.

Follow-up Interviews

Sample members were re-interviewed at two points in time. The first follow-up interview, referred to as the *prenatal survey*, was completed when women were at approximately 32-36 weeks gestation. The second follow-up interview, referred to as the *postpartum survey*, took place approximately 16-24 weeks postpartum, when infants born to study participants were between 4 and 6 months of age. Follow-up interviews were completed by telephone unless the respondent did not have a phone. Respondents who did not have phones were interviewed in person.

Both the prenatal and postpartum surveys included measures of knowledge, attitudes, and behavior identical to those included in the baseline survey. (Measures are discussed in more detail in a subsequent section of this chapter). In addition, respondents were asked to report the number and type of WIC nutrition education contacts received; the topics covered in these nutrition education contacts; and their satisfaction with WIC nutrition education staff and services. The postpartum survey also included items about infant feeding decisions made at birth and infant feeding practices between birth and 4 - 6 months of age. A sample prenatal survey is provided in Appendix A.

WIC Record Abstractions

Information about nutrition education contacts received by study subjects was abstracted from WIC records. Trained field staff used a standardized form to collect information on the date of WIC certification (prenatal and postpartum); the date of each nutrition education contact; the type of

Exhibit 1.1

Data Collection Components, Timing, and Schedule

Component	Timing	Schedule
Recruitment and baseline interviews	Prior to WIC certification	Aug. 1994 - July, 1995
Prenatal surveys	Approximately 32-36 weeks gestation	Sept. 1994 - Feb. 1996
Postpartum surveys	Approximately 4-6 months postpartum	Mar. 1995 - July, 1996
WIC record abstractions	After postpartum survey	June - Sept. 1996
Interviews with local agency directors	During prenatal survey data collection period	Spring, 1995
Observations of nutrition education sessions	During prenatal survey data collection period	June - Aug. 1995

contact (individual or class/group); the name and, if available, title and/or credentials of the person providing the nutrition education; topics covered; and referrals made to health care and social service agencies or programs. A sample record abstract form is provided in Appendix C. Record keeping policies varied across sites, so not all information could be documented in each site. Record abstractions in each site were completed shortly after the final postpartum surveys were completed.

Staff Interviews and Observations of Nutrition Education Contacts

Staff interviews and on-site observations of nutrition education contacts were used to augment information on nutrition education practices obtained during site recruitment. Interviews were completed in Spring 1995 and observations, approximately 30 in each site, were conducted between June and August, 1995. Sample observation forms are provided in Appendix B.

Study Instruments

In developing study instruments, a concerted effort was made to ensure that theories of health behavior were considered and that, to the extent possible, existing measures, i.e., instruments used successfully in previous research, were used or adapted.

A comprehensive review of the literature was conducted to identify studies, published in English between 1987 and Spring 1993, that focused on pregnant and/or postpartum women and their nutrition knowledge, attitudes, and/or behaviors (e.g., dietary intake, use of prenatal iron and multi-vitamin supplements, and infant feeding decisions). In selecting papers or reports for review, an emphasis was given to studies with experimental and quasi-experimental designs. Non-experimental research or reports were also reviewed if the instrumentation was potentially useful.

Measures of Nutrition Knowledge

A total of seven different knowledge instruments were identified through the literature search. Although all instruments reportedly had good reliability, none was suitable for use in the WIC Nutrition Education Assessment Study because they were too long; focused on only one aspect of nutrition knowledge, e.g., breastfeeding; or were designed to measure only the specific information imparted in the nutrition education intervention under study.

All available instruments were reviewed by FNS staff who then prepared a series of 21 items designed to measure concepts or facts thought to be central to most WIC nutrition education efforts. This battery of nutrition knowledge items includes some that were taken verbatim from existing instruments, some that were adapted from existing items, and others that were developed by FNS staff. Four content areas are covered: general nutrition knowledge (food sources of nutrients and recommended eating patterns); healthy practices during pregnancy (diet, weight loss, and use of alcohol, cigarettes, and over-the-counter medications); breastfeeding; and recommended infant feeding practices.

Measures of Attitudes and Perceptions

Thirteen of the instruments identified through the literature search measured attitudes toward healthy eating during pregnancy, attitudes toward breastfeeding, and/or related constructs. These instruments were used to develop several different sets of survey questions.

A battery of items used by Rosander and Sims (1981) was adopted, with minor modifications, to assess attitudes about the effect of diet on health and general attitudes about control over eating habits. In addition, a series of items was specifically included to measure women's attitudes toward breastfeeding and bottle feeding. The items were adapted from those used in three papers premised on the *theory of reasoned action* (Gielen, A.C., et al., 1992; Manstead, A.S., et al., 1983; and Matheny, R.J., 1987). The *theory of reasoned action* (Fishbein, M. and Azjen, I., 1975) assumes that individuals consider the implications of their actions before they decide to engage in a given behavior. The key construct is *behavioral intention*, which is measured by assessing, in this study, a woman's beliefs about the advantages and disadvantages of breastfeeding (behavioral beliefs) and the relative value she placed on each belief (evaluation factors).

The study instrument also included items designed to measure participants' *self-efficacy*. Self-efficacy is a key construct in the *social learning theory* of health behavior, which holds that behavior change is influenced by an individual's observation of other people in their environment (Bandura, A., 1977). Measures of self-efficacy reflect the relative level of confidence an individual has in his or her ability to implement a particular behavior. Self-efficacy can be influenced by an individual's beliefs about the anticipated approval or support of significant others (e.g., husband, mother, other family members).

A published but untested set of items designed to measure self-efficacy with regard to healthy eating practices was adapted for use in this study (IOX Assessment Associates, 1988). A separate survey item was developed to provide a limited assessment of perceived social support, i.e., participants' perceptions about whether anyone in their life might make it difficult for them to implement desired behaviors. The need to limit the length of the survey, in order to promote adequate response rates, precluded use of a separate measure of self-efficacy related to breastfeeding or a more elaborate measure of social support.

Measures of Dietary Intake

Because participants' dietary intake is likely to be directly affected by the food package, and all participants received food packages, the study's ability to examine the independent influence of nutrition education on dietary intake was limited. Consequently, the measure of dietary intake selected for the study provided general information about usual patterns of food consumption rather than detailed estimates of nutrient intake.

A variety of different food frequency and checklist instruments were examined, with an emphasis on those that were brief, simple to administer, and designed for use with pregnant and/or postpartum women. None of the instruments used in published research fit the needs of the study exactly, and most were too lengthy for inclusion in the multi-faceted survey instrument. Ultimately, an abbreviated food frequency was developed, based on an instrument used by Rosander and Sims (1981). The food frequency measured usual consumption of WIC foods as well as a number of specific non-WIC foods (meats, poultry and fish; fried foods; fruits and vegetables other than those provided by WIC; sweetened beverages; sweets; and alcoholic beverages).

Use of Cigarettes and Alcohol

Measures of cigarette and alcohol use were included, along with an item that assessed the prevalence of use of over-the-counter medications without physician approval, because these topics are frequently covered in WIC nutrition education contacts. Survey items used in the National Maternal and Infant Health Survey (NMIHS) were adopted, with minor modifications, to assess these behaviors. To reduce the likelihood of respondents giving socially desirable answers, questions about use of cigarettes and alcohol were imbedded in a series of questions that covered a broad range of topics.

The Study Sample

As noted above, the baseline sample was comprised of 300-400 pregnant women in each of the six study sites. Exhibit 1.2 shows sample sizes and response rates for each of the other data collection components. The overall response rate for the prenatal survey ranged from 72 to 82 percent. The primary reasons for non-response were early delivery and terminated pregnancies (miscarriages and abortions).[4] In both cases, respondents were no longer pregnant at the time the prenatal survey was attempted and were considered ineligible for the interview. Among eligible respondents, the

4 In the two Mountain Plains sites, as well as in Midwest Site 1, some of the respondents classified as terminated pregnancies may actually not have been pregnant at the time of WIC certification and enrollment into the study. The Mountain Plains sites do not require proof of pregnancy and Midwest Site 1 allows women to participate for up to 90 days without proof of pregnancy.

Exhibit 1.2

Sample Sizes and Resporse Rates by Data Collection Component

	SOUTHEAST		MOUNTAIN PLAINS		MIDWEST	
Study Components	**Site 1**	**Site 2**	**Site 1**	**Site 2**	**Site 1**	**Site 2**
Baseline Sample	400	400	400	300	300	300
Prenatal Survey						
Number completed	324	329	333	237	216	233
Overall response rate	81%	82%	83%	79%	72%	78%
Response rate among eligible respondents[1]	93%	98%	92%	92%	89%	93%
Postpartum Survey						
Number completed	301	344	310	218	216	239
Overall response rate	75%	86%	78%	73%	72%	80%
Response rate among eligible respondents[2]	79%	91%	82%	79%	77%	88%
WIC Record Abstraction						
Number completed	377	397	380	277	292	286
Overall response rate	94%	99%	95%	92%	97%	95%

[1]Excludes respondents who gave birth, had miscarriages, or terminated their pregnancies before the prenatal survey. Also excludes one respondent who died.

[2]Excludes respondents who had miscarriages or terminated their pregnancies. Also excludes two respondents who died.

response rate for the prenatal survey ranged from 89 to 98 percent. Reasons for non-response to the prenatal survey are summarized in Exhibit D.1 (Appendix D).

The overall response rate for the postpartum survey ranged from 72 to 86 percent. Among eligible respondents, i.e., those who had live births and maintained custody of the infant, the response rate was 77 to 91 percent. Reasons for non-response are summarized in Exhibit D.2.

The response rate for the WIC record abstracts was quite high, ranging from 92 to 99 percent.

Sample Characteristics

Demographic characteristics of the baseline sample were fairly consistent across study sites (Exhibits 1.3 and 1.4) and, for the total sample, were similar to those reported for pregnant WIC participants nationwide (Exhibit 1.5). The fact that the study sample resembled WIC participants nationwide suggests that study findings, although not generalizable to all WIC participants, do have brood relevance to the WIC population as a whole.

All analytic subsamples were comparable to the full baseline sample. Mean baseline demographic and prenatal history variables for analytic subsamples virtually never differed from the full baseline sample by more than one percentage point (Exhibit D.3).[5] The comparability of the full baseline sample and the final analysis samples demonstrates that non-response and sample attrition did not bias the study sample.

Organization of This Report

This report includes five additional chapters. Chapter 2 presents information on the processes used by participating local agencies in delivering nutrition education to prenatal and postpartum WIC participants.

Chapter 3 describes the nutrition education received by study participants and the types of information and advice provided by WIC staff. Chapter 3 also presents results of an exploratory analysis that examined the relationship between participant characteristics and receipt of a second nutrition education contact.

Chapter 4 describes changes in participants' nutrition-related knowledge, attitudes, and behaviors between WIC certification and the two follow-up surveys.

Participant satisfaction is the focus of
Chapter 5. This chapter presents participant responses to a variety of survey items that assessed satisfaction with the WIC Program in general and with the nutrition education component of the program in particular. The development of a composite measure of satisfaction is described, as are results of analyses that examined relationships between participants' nutrition education experiences and their overall level of satisfaction.

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5 The sole exception was the "other non-White race" indicator. This variable flagged clients whose race was other than Black, Hispanic, or White, or whose race was unknown because the WIC record was missing this information. When the sample is restricted to cases for which the record abstraction was carried out, this miscellaneous category dwindles from six percent to three percent.

Exhibit 1.3

Demographic Characteristics of Baseline Sample

	Southeast		Mountain Plains		Midwest		All Study Sites
	Site 1	Site 2	Site 1	Site 2	Site 1	Site 1	
	(n=400)	(n=400)	(n=400)	(n=300)	(n=300)	(n=300)	(n=2100)
Age							
Less than 15 years	0.0%	1.0%	1.0%	1.3%	0.3%	1.0%	0.8%
15-17 years	6.3	8.8	13.0	13.7	11.0	14.0	10.9
18-34 years	83.3	85.3	83.0	76.7	82.0	78.7	81.8
35 or more years	10.0	4.5	2.3	6.7	4.7	3.7	5.3
Not reported	0.5	0.5	0.8	1.7	2.0	2.7	1.2
Mean (years)	26.4	23.9	22.5	23.5	23.0	22.7	23.8
Race							
Black (non-Hispanic)	13.8%	41.3%	18.0%	1.3%	15.3%	14.7%	18.4%
Hispanic	73.0	1.3	20.3	53.3	13.3	0.0	27.5
White (non-Hispanic)	1.3	53.3	53.5	37.0	67.7	80.0	47.0
Other/not reported	12.0	4.3	8.3	8.3	3.7	5.3	7.1
Marital status							
Single, never married	56.0%	48.5%	50.8%	49.3%	57.3%	56.0%	52.8%
Married/living w/partner	32.8	37.3	37.8	39.0	30.7	32.3	35.1
Divorced	3.8	6.5	5.8	6.0	10.0	8.3	6.5
Legally separated	7.5	7.3	5.8	5.0	2.0	2.3	5.2
Widowed	0.0	0.5	0.0	0.7	0.0	1.0	0.3
Employment status							
Currently employed	21.8%	31.0%	31.3%	34.3%	27.3%	35.0%	29.8%
Not employed	78.3	69.0	68.8	65.7	72.7	65.0	70.2

Exhibit 1.3
(continued)

	Southeast		Mountain Plains		Midwest		All Study Sites
	Site 1	Site 2	Site 1	Site 2	Site 1	Site 1	
	(n=400)	(n=400)	(n=400)	(n=300)	(n=300)	(n=300)	(n=2100)
Hours worked per week							
Not working	78.3%	69.0%	68.8%	65.7%	72.7%	65.0%	70.2%
< 20 hours	3.3	3.3	4.8	6.0	6.0	5.7	4.7
20-39 hours	9.0	16.1	17.3	16.6	14.0	19.3	15.2
40 or more hours	9.5	11.8	8.8	11.7	7.3	10.0	9.9
Mean (hours/week)[1]	30.7	30.6	29.8	28.7	27.7	30.7	29.8
Education							
Less than 8th grade	9.5%	0.8%	3.3%	2.3%	1.3%	2.3%	3.4%
Completed 8th grade	4.3	2.0	2.5	4.3	3.7	3.7	3.3
Some high school	34.8	24.8	36.8	28.0	32.3	34.0	31.8
Completed HS/GED	32.8	38.8	21.8	25.3	34.7	30.7	30.7
Some college or post-HS	9.3	24.5	18.5	27.7	21.7	19.7	19.8
Associates', vocational or technical degree	7.5	7.5	16.8	11.7	5.0	8.3	9.6
Bachelor's degree or higher	2.0	1.8	0.5	0.7	1.3	1.3	1.3
Current schooling							
In school	12.3%	23.3%	19.8%	19.7%	23.3%	22.3%	19.9%
Not in school	87.8	76.8	80.3	80.3	76.7	77.7	80.1

[1]Means based on sample members reporting employment.

Exhibit 1.4

Household Characteristics of Baseline Sample

	Southeast		Mountain Plains		Midwest		All Study Sites
	Site 1	Site 2	Site 1	Site 2	Site 1	Site 2	
	(n=400)	(n=400)	(n=400)	(n=300)	(n=300)	(n=300)	(n=2100)
Number of children in household							
None	30.8%	35.8%	40.0%	34.0%	33.0%	39.0%	35.4%
1 child	35.8	32.5	29.3	33.0	33.7	34.0	33.0
2-3 children	27.3	25.5	27.5	27.7	29.0	23.0	26.7
4 or more children	6.3	6.3	3.3	5.3	4.3	4.0	5.0
Mean (children)	1.2	1.2	1.1	1.2	1.2	1.0	1.2
Number of other adults in household							
None	10.8%	19.0%	15.0%	16.0%	20.0%	17.7%	16.2%
1 other adult	42.5	58.0	45.5	57.0	53.0	53.7	51.2
2-3 other adults	41.0	21.8	34.0	25.3	24.3	26.0	29.2
4 or more other adults	5.8	1.3	5.5	1.7	2.7	2.7	3.4
Mean (other adults)	1.6	1.8	1.5	1.2	1.5	1.2	1.5
Total household size							
1 person	2.3%	5.5%	5.0%	4.7%	7.0%	7.3%	5.1%
2 persons	16.3	28.0	27.3	26.7	22.7	25.3	24.3
3 persons	27.3	29.8	24.8	27.7	30.3	33.3	28.6
4 persons	26.8	19.0	20.3	20.7	21.3	18.3	21.2
5 persons	14.0	8.5	9.8	7.3	9.0	8.0	9.6
6 or more persons	13.5	9.3	13.0	13.0	9.7	7.7	11.1
Mean (persons)	3.9	3.3	3.5	3.4	3.4	3.2	3.5
Household receipt of AFDC and Food Stamp benefits							
AFDC and Food Stamps	15.5%	23.0%	12.5%	22.3%	30.3%	19.3%	20.0%
AFDC only	2.0	4.5	2.5	2.0	4.3	8.7	3.9
Food Stamps only	14.3	21.3	13.0	16.3	15.7	17.0	16.2
Neither AFDC nor Food Stamps	67.8	51.0	70.8	59.0	49.3	54.3	59.3
Not reported	0.5	0.3	1.3	0.3	0.3	0.7	0.6

Exhibit 1.4
(continued)

	Southeast		Mountain Plains		Midwest		All Study Sites
	Site 1	Site 2	Site 1	Site 2	Site 1	Site 2	
	(n=400)	(n=400)	(n=400)	(n=300)	(n=300)	(n=300)	(n=2100)
Household Income ($ per month)							
Less than $250	19.8%	8.8%	7.3%	9.0%	9.7%	5.3%	10.2%
$251 - $500	25.0	15.8	14.3	24.3	19.0	14.3	18.7
$501 - $750	20.8	15.0	10.5	16.0	15.3	18.3	15.9
$751 - $1,000	20.0	19.0	14.5	23.0	17.0	13.3	17.8
$1,001 - $1,250	7.8	10.8	8.8	10.7	8.7	8.3	9.1
$1,251 - $1,600	3.5	12.3	12.0	7.7	6.3	10.7	8.8
$1,601 - $2,500	1.0	7.0	8.3	7.7	10.3	8.7	6.9
More than $2,500	0.3	1.8	5.0	1.0	2.0	3.3	2.2
Not reported	2.0	9.8	19.5	0.7	11.7	17.7	10.2
Distribution of percent of poverty level[1]							
0 - 50	57.0%	29.0%	23.5%	39.7%	33.3%	23.0%	34.6%
51 - 100	31.5	27.0	23.3	32.3	27.3	25.0	27.7
101 - 130	6.0	13.3	11.0	13.0	10.7	12.7	11.0
131 - 150	1.3	10.0	8.0	6.3	7.0	10.0	7.0
151 - 185	1.3	5.8	6.8	4.7	4.7	4.3	4.6
More than 185	0.8	5.3	7.5	3.3	5.3	7.3	4.9
Not reported	2.3	9.8	20.0	0.7	11.7	17.7	10.4

[1]Poverty level calculations are based on income, income period, and household size.

Exhibit 1.5

Characteristics of Baseline Sample Members In Comparison to Data from 1994 Census of WIC Participants

	Baseline Sample (n=2100)	Pregnant WIC Participants in 1994[1] (n=823, 604)
Age		
Less than 15 years	0.8%	1.0%
15-17 years	10.9	11.2
18-34 years	81.8	81.7
35 or more years	5.3	5.0
Not reported	1.2	1.0
Race		
American Indian or Alaskan Native	0.0%	1.5%
Asian or Pacific Islander	1.0	2.6
Black (non-Hispanic)	18.4	23.9
Hispanic	27.5	27.7
White (non-Hispanic)	47.0	43.8
Other/not reported	6.2	0.6
Household receipt of AFDC and Food Stamp benefits		
AFDC and Food Stamps	20.0%	24.1%
AFDC only	3.9	3.0
Food Stamps only	16.2	12.7
Neither AFDC nor Food Stamps	59.3	52.3
Not reported	0.6	7.8

Exhibit 1.5
(continued)

	Baseline Sample (n=2100)	Pregnant WIC Participants in 1994[1] (n=823, 604)
Total household size		
1 person	5.1%	17.8%
2 persons	24.3	26.5
3 persons	28.6	25.0
4 persons	21.2	15.1
5 persons	9.6	7.7
6 or more persons	11.1	6.9
Not reported	0.0	0.7
Mean (persons)	3.5	3.0
Distribution of percent of poverty level		
0 - 50	34.6%	31.2%
51 - 100	27.7	27.8
101 - 130	11.0	11.0
131 - 150	7.0	5.5
151 - 185	4.6	5.8
More than 185	4.9	1.0
Not reported	10.4	17.7
Annualized household income		
Mean	$10,523	$9,017
Median	$9,317	$7,800
Not reported	10.4%	17.7%
Trimester at time of WIC enrollment		
First trimester	42.1%	38.9%
Second trimester	46.4	40.1
Third trimester	11.4	10.7
Not reported	0.1	10.3

[1]Source: Randall, B., L. Boast, and L. Holst (1995), *Study of WIC Participant and Program Characteristics: 1994*. Report prepared by Abt Associates Inc. for the U.S. Department of Agriculture, Food and Nutrition Service.

Finally, Chapter 6 summarizes results of analyses that examined the influence of attitudinal and social factors on selected behaviors. Emphasis is given to the influence of beliefs and values related to breastfeeding on the intention to breastfeed and the actual initiation and duration of breastfeeding. More limited assessments of the influence of perceived self-efficacy on selected eating behaviors and the influence of negative social support on cigarette and alcohol use are also included.

Chapter 2
Characteristics of WIC Nutrition Education Offered in Study Sites

This chapter describes the nutrition education offered to pregnant and postpartum women in the six local agencies that participated in the WIC Nutrition Education Assessment Study. The information presented was obtained primarily through direct observation of a sample of nutrition education contacts in each local agency. Some information was provided by local agency directors in interviews conducted during the site selection process and the first year of the project.

The chapter begins with a description of the methodology used in conducting observations of WIC nutrition education contacts and then turns to a discussion of how the nutrition education component of the WIC Program was implemented in each of the six study sites at the time study data were collected. The discussion focuses on five aspects of the nutrition education offered to prenatal and postpartum women in each local agency:

- **General characteristics:** the type(s) of contacts offered (e.g., individual contacts, classes, videos); average duration; policies for high- and low-risk participants; schedule for voucher pick-up; staff used to provide nutrition education; features of breastfeeding promotion programs; and problems with participant no-shows.
- **Quality of staff/participant interactions:** the extent to which WIC staff exhibited positive behaviors during general nutrition education contacts and in breastfeeding promotion efforts.
- **Quality of the environment**: the extent to which the environment in which WIC nutrition education was delivered was conducive to participant comfort and participation.
- **Content**: topics covered during observed nutrition education contacts.
- **Referrals**: referrals to health and social services provided by WIC staff during observed nutrition education contacts.

Nutrition Education Observations

As described in Chapter 1, detailed information about procedures used in providing nutrition education was obtained during the site selection process. This information was augmented by on-site observations of actual nutrition education contacts in each site. The on-site observations provided a real-world "snapshot" of the nutrition education offered to pregnant and postpartum women in each site. In combination with the information obtained from local agency directors, these observations provide a context for interpreting other study data.

Observers recorded the start and end time of each contact; the topics covered (either discussed by a WIC staff member or included in videos or written materials); and any referrals made. In addition,

in order to assess the relative *quality* of nutrition education contacts, observers evaluated staff/participant interactions, as well as the environment in which nutrition education contacts were conducted. Measures of staff/participant interaction and environmental quality were identified jointly by FNS, Abt, and members of the project's technical advisory group. Wherever possible, items were adapted from instruments used in previous studies. Items were worded to minimize the chance of subjective variation among observers. Specific rating criteria for each quality measure were taught during the observation training session.

Observations were conducted by nutritionists familiar with the WIC Program. All observers completed a one-day training session which included coding of videotaped nutrition education contacts from other WIC sites. Standardization was achieved by having observers code videotapes of actual WIC nutrition education sessions.

One observer was assigned to each site for a period of four to six weeks. In each site, the goal was to observe 30 nutrition education contacts provided to pregnant and postpartum women. Observations were to be spread across prenatal certifications (n=8), prenatal follow-up or secondary contacts (n=7), postpartum certifications (n=8), and postpartum follow-ups (n=7). Observers developed weekly observation schedules based on scheduled appointments and classes and worked until the various quota were satisfied. In some cases, problems with participant no-shows resulted in fewer observations (in total, or of a particular type) than planned.

General Characteristics of Nutrition Education Contacts

Every WIC site has defined procedures for delivering nutrition education to participants through two basic types of contacts–certification contacts and follow-up contacts. For pregnant participants, the certification contact is the point of entry into the program. For postpartum participants, most of whom have participated in WIC during pregnancy, the certification contact initiates a new phase of participation in the program and reclassifies the participant as either a postpartum participant or a breastfeeding participant. In this chapter, and for the remainder of the report, the term postpartum (participant) is used to refer to both postpartum and breastfeeding participants.

Follow-up contacts generally coincide with participants' visits to the WIC clinic to pick up vouchers. Women with specific high-risk characteristics may be asked to come in for nutrition education on a more frequent basis.

Prenatal Certification Contacts

Study sites used a variety of methods to complete prenatal certification contacts (Exhibit 2.1). Certification contacts in two sites (Southeast Site 1 and Midwest Site 1) included both group and individual interactions. Women first viewed one or more videos in a group setting, without WIC staff, and then went on to an individual counseling session. In the observed contacts, videos ran for approximately 15 minutes.

Certifications in two other sites (Southeast Site 2 and Mountain Plains Site 1) used group contacts exclusively. In these sites, women watched one or more videos as a group (average of 15 to 40 minutes

Exhibit 2.1

Characteristics of Prenatal Nutrition Education Contacts in Study Sites

	SOUTHEAST		MOUNTAIN PLAINS		MIDWEST	
	Site 1	Site 2	Site 1	Site 2	Site 1	Site 2
Prenatal Certification						
Type of contact	Video and individual	Video(s) and class	Video and class	Individual	Video and individual	Individual
Length of contact						
Mean/Range (min.)	48 (30-75)	70 (55-93)	84 (70-120)	66 (55-78)	30 (15-95)	29 (12-32)
Prenatal Follow-up						
Voucher issuance	Bimonthly	Bimonthly	Trimonthly	Trimonthly	Bimonthly	Bimonthly
Low-risk Participants						
Type of contact	Newsletter	Class	Individual	Individual	Class	Class
Length of contact						
Mean/Range (min.)	N/A	20 (20-22)	21 (15-25)[1]	21 (16-32)[1]	75[2]	65 (50-80)[3]
High-risk participants						
Type of contact	Individua	Irdividual, class, or both	Individual	Individual	Individual	Individual
Length of contact						
Mean/Range (min.)	30 (25-45)	36 (15-65)	21 (15-25)[1]	21 (16-32)[1]	40[2]	15[2]
No. of Contacts Observed						
Certification	8	8	8	8	8	12
Follow-up	5[4]	4 classes/3 individual	7	7	1 class/1 individual	2 classes/1 individual

Notes: Participants in Southeast Site 2 may also attend brief nutrition education classes offered in the waiting room (see text). These contacts are not counted toward the two required contacts and are not documented in the WIC record.

[1]Mean and range for all observed individual contacts, both low- and high-risk.
[2]Only one contact observed.
[3]Only two contacts observed.
[4]Includes only individual follow-up contacts. Distribution of newsletters was not "observed."

Source: On-site observations.

in observed contacts) and then attended a class. The videos were usually (but not always) discussed during the class.

The remaining two sites (Mountain Plains Site 2 and Midwest Site 2) used individual counseling for all certification contacts. Women in these sites did not view videos during the certification process.

Follow-up Prenatal Contacts

As noted above, follow-up nutrition education contacts were generally planned to coincide with voucher pick-ups. Voucher pick-up occurred every two months in the Southeast and Midwest sites and every three months in the Mountain Plains sites (Exhibit 2.1). In all sites, women with specific high-risk characteristics or conditions might be asked to come in more frequently for monitoring or for additional nutrition education/counseling. This was especially true in the Mountain Plains sites because of the tri-monthly voucher issuance schedule.

With the exception of the two Mountain Plains sites, which used individual counseling for all follow-up contacts, local agencies had different policies for follow-up nutrition education for participants classified as high-risk and for other (low-risk or non-high-risk) participants. As Exhibit 2.1 illustrates, the most common policy was to provide individual counseling for high-risk participants and to provide classes for other participants.

The policy was somewhat more fluid in Southeast Site 2, where high-risk participants may have received individual counseling, attended a class, or both, depending on the reason for high-risk designation, extent of previous nutrition education, and clinic schedules. In addition, women in this site had the opportunity to receive additional nutrition education through brief (10-15 minute) "topic of the month" classes taught in the waiting room throughout the day. These brief classes were not counted toward the required two nutrition education contacts and were not documented in WIC records.

The policy for follow-up contacts with low-risk women in Southeast Site 1 differed markedly from the other five sites. Here, follow-up contacts were comprised of monthly newsletters that covered different nutrition education topics. Newsletters were distributed by clerks when participants came in to pick up vouchers.

Participant No-shows

Experience during the on-site observation period indicated that participants' receipt of follow-up nutrition education may be affected by no-shows, i.e., failure to show up for or attend a planned nutrition education activity. Problems with no-shows were noted in four of the six study sites. Only the Mountain Plains sites did not seem to suffer from this problem.

In Southeast Site 1, about one-quarter of the participants scheduled for individual follow-up appointments did not keep their appointments. This is consistent with the usual no-show rate reported by the local agency director. The no-show rate was somewhat higher in Southeast Site 2, where about 45 percent of the women scheduled to attend four observed classes did not show up. This no-show rate was about twice the usual rate reported by the local agency director. Some of the difference between reported and observed no-show rates was attributable to a hurricane that affected the local area for about a week during the six-week observation period.

No-shows were not a problem in either of the Mountain Plains sites. This is consistent with, although somewhat better than, the usual no-show rates reported by local agency directors (4% and 8%, respectively). The low no-show rate in these sites may be influenced by tri-monthly voucher issuance, i.e., participants have to come into WIC less often and may therefore be more cooperative.

During the observation period, there was a severe no-show problem in both Midwest sites. As shown in Exhibit 2.1, despite six weeks on site, observers were only able to observe two follow-up contacts in Site 1 (the goal was 7) and three in Site 2. In both sites, classes scheduled for observation were canceled because no one showed up. In addition, women in both sites were observed openly refusing to attend nutrition education classes.

Directors in both of these local agencies reported long-standing problems with no-shows and attributed the behavior to low levels of interest among participants. In Midwest Site 1, lack of transportation to WIC clinic sites also reportedly impeded some participants' ability to participate in nutrition education activities. Administrative policies related to scheduling and use of proxies for voucher pick-ups may also have contributed to high no-show rates. Neither agency set up specific appointments for individual follow-ups for high-risk women. Rather, the need for a follow-up contact was noted on a card that women were required to show each time they picked up vouchers. As a consequence, women who came to the WIC clinic to pick up vouchers may have been unprepared to spend additional time in a nutrition education contact. In addition, both of the Midwest sites were more liberal about the use of proxies to pick up WIC vouchers than the other four sites, where use of proxies was discouraged and carefully monitored. The frequency of proxy voucher pick-ups was much higher in these sites (see Chapter 3). Obviously, if a woman does not come in to pick up her vouchers, she is not able to participate in nutrition education activities.

Toward the end of the study period, local agency directors in both Midwest sites had become so concerned about the no-show problem that they instituted policies to deal with it. Site 1 instituted a system that required participants to read a handout with a specific nutrition education message and to sign a paper documenting the contact before vouchers were disbursed. Site 2 required women who did not receive a second contact during their prenatal certification period to watch a video before receiving their first set of postpartum vouchers.

Postpartum Certification Contacts

WIC benefits for pregnant participants extend for up to six weeks postpartum. Women are encouraged to apply for benefits as a postpartum or breastfeeding participant during this extension period in order to avoid loss of WIC food package benefits. Infants born to WIC mothers are automatically eligible for WIC but must be certified in order for the mother to begin receiving WIC benefits, which include infant formula for the infant and nutrition education for the mother. Thus, after their baby is born, pregnant WIC participants must be certified for their own continued participation and must also arrange for their infants' certification.

With the exception of the two Southeast sites, certifications for both postpartum women and their infants were accomplished in one individual contact (Exhibit 2.2). In-hospital certifications for both mothers and infants were available for women who gave birth in selected hospitals in Southeast Site 2 and in both Midwest sites. These contacts could not be observed.

Exhibit 2.2

Characteristics of Postpartum Nutrition Education Contacts in Study Sites

	SOUTHEAST		MOUNTAIN PLAINS		MIDWEST	
	Site 1	Site 2	Site 1	Site 2	Site 1	Site 2
Postpartum Certification						
Type of contact	Individual for mother and class for infant (2 appointments)	Individual for mother and infant OR Individual for mother and class for infant (2 appointments)[1]	Individual for mother and infant	Individual for mother and infant	Individual for mother and infant[1]	Individual for mother and infant[1]
Length of contact						
Mean/Range (min.)	Class: 49 (40-60) Individual: 42 (35-50)	Class: 21 (15-30)[2] Individual: 23 (20-30)	46 (25-65)	54 (41-66)	30 (24-38)	26 (8-41)
Postpartum Follow-up						
Low-risk Participants						
Type of Contact	Newsletter	Class	Individual	Individual	Class	Class
Length of contact						
Mean/Range (min.)	N/A	22 (20-25)	35 (15-50)[3]	21 (14-30)[3]	N/A[4]	62[5]
High-risk participants						
Type of Contact	Individual	Individual	Individual	Individual	Individual	Individual
Length of contact						
Mean/Range (min.)	N/A[4]	20[5]	35 (15-50)[3]	21 (14-30)[3]	18 (14-21)[2]	22 (18-26)[2]
No. of Contacts Observed						
Certification	4 classes/3 individual	2 classes/5 individual	8	8	6	10
Follow-up	0	1 class/3 individual	7	7	2 individual	1 class/2 individual

Note: Participants in Southeast Site 2 may also attend brief nutrition education classes offered in the waiting room (see text). These contacts are not counted toward the two required contacts and are not documented in the WIC record.

[1]Site also offers in-hospital certifications for both mother and infant. These contacts could not be observed.
[2]Only two contacts observed.
[3]Mean and range for all observed individual contacts, both low-risk and high-risk.
[4]No contacts available for observation during the six-week observation period.
[5]Only one contact observed.

Source: On-site observations.

In Southeast Site 1, group appointments, the focal point of which was a class on infant feeding, were used to certify infants. At that time, women received a referral and were required to return to the WIC clinic at a later date for a separate individual appointment to complete their own postpartum certification. During the on-site observation period, the no-show rate for these (women-only) postpartum certification appointments was quite high (42% compared to 22% for the infant groups). Anecdotal reports from site staff indicate that some women do not return for these appointments and never certify as postpartum participants. Data from WIC record abstracts (Chapter 3) are consistent with these reports.

Southeast Site 2 used a number of different approaches to certify postpartum women and their infants. An infant feeding class, comparable to the class in Southeast Site 1, was offered and some certifications (infant only or mother and infant, depending on attendance and participant schedules) were completed at the class. Individual appointments which included certification for both mother and infant were also used.

Follow-Up Postpartum Contacts

Policies for follow-up postpartum nutrition education contacts were essentially the same as for follow-up prenatal contacts. During the observation period, no-show rates for postpartum follow-up contacts were quite high in all sites except the two Mountain Plains sites. As shown in Exhibit 2.2, the two Mountain Plains sites were the only sites in which the desired seven postpartum follow-up contacts were observed. The small number of observations in the other four sites was directly attributable to high no-show rates.

It should be noted that postpartum women are also required to attend nutrition education contacts for their infants and any other participating children. Program requirements mandate that every participant (woman, infant, or child) receive a minimum of two nutrition education contacts per certification period. While the study protocol did not include a detailed assessment of the requirement for and receipt of nutrition education contacts not explicitly directed at sample women, it appears that contacts were not double counted, i.e., follow-up contacts were credited either for the postpartum woman or her infant, but not both. This approach is designed to ensure that each participant receives a minimum of two unique nutrition education contacts during the certification period. This is consistent with general practice in many WIC clinics (Peacock, J., 1998).

Nutrition Education Staff

With the exception of Southeast Site 1 and Midwest Site 1, all sites used a combination of staff to provide nutrition education. Nutritionists conducted all nutrition education contacts observed in Southeast Site 1 except follow-ups for low-risk participants, which consisted of a newsletter distributed by voucher clerks. Nurses completed all nutrition education in Midwest Site 1. According to information provided by local agency directors, paraprofessionals were reportedly involved in follow-up postpartum contacts in Southeast Site 1, however, this could not be documented because no postpartum follow-up contacts were available for observation, as discussed in the preceding section. Similarly, nutritionists reportedly provide follow-up contacts for high-risk participants in Midwest Site 1, however, the few high-risk follow-ups available for observation were conducted by a nurse.

Southeast Site 2 and both Mountain Plains sites used nutritionists and paraprofessionals to deliver nutrition education. Nutritionists were generally responsible for select high-risk follow-up contacts

and often co-led group certification contacts. Paraprofessionals—diet technicians in Southeast Site 1 and specially certified WIC nutrition educators in the Mountain Plains sites—participated in certification contacts and were primarily responsible for some high-risk follow-ups and all low-risk follow-ups. Southeast Site 2 also had a lactation consultant on staff who participated in all prenatal certification classes and ran breastfeeding support groups, including one for women's partners.

In Midwest Site 2, nutrition education was provided by a combination of nurses, paraprofessionals, and nutritionists. Participants met individually with both a nurse and a paraprofessional during prenatal certification appointments. Follow-up classes, when taught, were conducted by either a paraprofessional or a nutritionist. The few individual high-risk follow-up contacts observed were conducted by nutritionists.

Breastfeeding Promotion Programs

The techniques used to promote breastfeeding varied widely across sites, as shown in Exhibit 2.3. Southeast Site 1 had the least expansive program, however, as noted elsewhere in this report, the need for breastfeeding promotion was lower here than elsewhere because a high percentage of women entered the WIC Program already intending to breastfeed. The same is true, but to a lesser extent, for Mountain Plains Site 1. The other four sites had fairly comprehensive breastfeeding promotion programs in place at the time data were collected.

Four sites had certified lactation consultants on staff. Four sites offered special classes or support groups for women interested in breastfeeding and for breastfeeding mothers. Southeast Site 2 offered a support class for women's partners.

The breastfeeding promotion program in Mountain Plains Site 2 had several unique features. First, staff used a specially-developed protocol to assess women's motivation to breastfeed and then tailored counseling accordingly. The agency distributed a breastfeeding newsletter and had interactive question-answer displays in all waiting areas. In addition, each WIC delivery site reserved two hours per week for first-time breastfeeders to facilitate access to clinic staff when needed. Finally, staff tried to schedule three or more individual follow-ups with all breastfeeding women.

Other less common characteristics of breastfeeding promotion programs in study sites included distribution of free manual breast pumps in the two Midwest sites; a lending program for electronic breast pumps in Southeast Site 2; and peer counseling programs in Southeast Site 2 and Midwest Site 2. Peer counseling programs provide women who are interested in or initiating breastfeeding with the opportunity to receive advice from peers who have successfully breastfed. A peer counseling program in Midwest Site 1 was discontinued some time prior to the study, reportedly because of problems with misinformation disseminated by peer counselors.

Staff/Participant Interactions

The on site observation form (Appendix B) included a list of 15 specific characteristics believed to be indicative of high-quality staff/participant interactions. As described previously, these characteristics were identified jointly by FNS, Abt, and members of the project's technical advisory group. On-site

Exhibit 2.3

Characteristics of Breastfeeding Promotion Programs in Study Sites

	SOUTHEAST		MOUNTAIN PLAINS		MIDWEST	
Characteristic	**Site 1**	**Site 2**	**Site 1**	**Site 2**	**Site 1**	**Site 2**
Lactation consultant on staff[1]		✓	✓	✓		✓
Breastfeeding support classes/groups[2]		✓		✓	✓	✓
Peer counseling program		✓				✓
Lend electronic breast pumps		✓				
Free manual breast pumps					✓	✓
Inservices for staff	✓	✓	✓	✓	✓	✓
Promote breastfeeding to local MDs, hospitals	✓	✓			✓	✓
All participants assessed individually following written protocol				✓		
Interactive educational displays				✓		
Special policy for access to WIC staff				✓		

[1]Midwest Site 1 did not have a lactation consultant on staff because this service was offered in the hospitals used by WIC participants.

[2]Breastfeeding support classes in Southeast Site 2 included one for women's partners.

Source: Local agency director interviews.

observers documented the presence or absence of each characteristic in each observed nutrition education contact.

To provide an overall picture of the quality of interactions in each site, as well as information about each of the specific indicators, data for all observations were combined, within sites, and the number of contacts in which each indicator was observed was tallied. One indicator that applied only to classes ("uses one or more interactive activities") was excluded from this tabulation because in four of the six study sites fewer than five classes were observed, either because the site didn't offer classes (Mountain Plains Site 2) or, as discussed above, because scheduled classes were canceled due to high no-show rates. An indicator that assessed the prevalence of participant questions or participant-initiated lines of discussion was also omitted because, as discussed below, results for this indicator were not consistent with other indicators and may reflect something other than the quality of staff/participant interactions.

Next, a rank was assigned to each indicator, based on the percentage of observations in which the positive behavior was exhibited, with a higher rank indicating greater frequency. The ranks used were:

- 4: Indicator observed in 75% or more of all observed contacts;
- 3: Indicator observed in 50 - 74% of observed contacts;
- 2: Indicator observed in 25 - 49% of observed contacts; and
- 1: Indicator observed in less than 25% of observed contacts.

Finally, rank scores for each indicator were tallied to compute a total score for each site—the higher the score, the more often the desired behavior was observed. The range of possible scores was 13 (13 x 1) to 52 (13 x 4).

An all-sites score was also computed for each indicator to facilitate identification of trends across sites. The maximum possible score was 24 (i.e., if all six sites received an individual score of 4) and the minimum possible score was 6 (i.e., if all six sites received an individual score of 1). Results are shown in Exhibit 2.4.

The data indicate that, overall, WIC nutrition educators did an excellent job in:

- addressing participants' questions or concerns in a supportive manner;
- providing opportunity for questions;
- offering specific and appropriate ideas on how to implement recommended behaviors (e.g., ways to increase milk consumption other than drinking milk as a beverage);
- maintaining non-judgmental attitudes; and
- providing positive feedback on current dietary intake (i.e., highlighting the positive before discussing needed improvements).

At the same time, staff in five of six sites frequently did not assess participants' understanding of the information being communicated or attempt to determine whether there were barriers that might affect a participant's ability to adopt a recommended behavior. Staff in four of the six sites often did not ask about participants' willingness to make a recommended behavior change. And, in three sites, WIC staff tended to assign, rather than negotiate, goals for behavior change.

It is interesting to note that use of group contacts (classes) did not preclude the assessment of participants' willingness to change or negotiation of goals for behavior change. Nor did use of individual contacts ensure these desirable interactions. For example, the relative frequency of these behaviors was substantially lower in Southeast Site 1 and in both Midwest sites, in comparison to Southeast Site 2, even though observations in the former sites were almost all individual appointments while more than half of the observations in the latter site were classes. Obviously, the nature of classes precludes detailed interaction and negotiation with each individual participant,

Exhibit 2.4

Quality of Staff/Participant Interactions in Observed Nutrition Education Contacts

	SOUTHEAST		MOUNTAIN PLAINS		MIDWEST		ALL SITES
	Site 1	Site 2	Site 1	Site 2	Site 1	Site 2	
WIC Nutrition Educator...	Number of Contacts in Which Positive Behavior/Interaction Was Observed						
Introduces self by name	1	4	3	4	1	3	16
Has a name tag for identification	2	4	1	1	1	1	10
Provides general overview of session	2	3	1	2	2	1	11
Investigates barriers to recommended behaviors	2	4	2	2	2	2	14
Investigates willingness to make behavior changes	1	4	2	3	2	2	14
Investigates understanding of key concepts	1	3	2	1	1	2	10
Offers specific and appropriate ideas on how to implement recommended behaviors	4	4	3	4	3	4	22
Provides opportunity for questions	4	4	4	3	4	4	23
Addresses questions or concerns in a supportive manrer	4	4	4	4	4	4	24
Maintains a non-judgmental attitude at all times	3	3	3	3	4	4	20
Provides positive feedback about current dietary intake[1]	4	4	1	4	4	3	20
Discusses all risk factors[1]	4	4	1	2	2	3	16
Works cooperatively with participant to negotiate goals for behavior change/improvement[1]	1	4	1	3	1	3	13
TOTAL SCORE	**33**	**49**	**28**	**36**	**31**	**36**	**N/A**
Number of contacts observed	21	26	30	30	18	28	153
Individual (including individual preceded by video)	17	11	22	30	17	25	122
Classes	4	15	8	0	1	3	31

[1]Considered only in observations of individual contacts.

Source: On-site observations.

however, the general process of investigating barriers and discussing possible means for making desired behavior changes can and did take place in group settings.

Nutrition educators in five of the six study sites often overlooked attention to general courtesies such as wearing a name tag and providing an overview of what to expect before commencing with a contact. Staff in two sites rarely introduced themselves by name.

Participant questions and participant-initiated lines of discussion were rarely observed in any site. Although WIC staff apparently did an excellent job of providing an opportunity for questions, and addressed questions that did come up in a supportive manner, relatively few participants spoke up during nutrition education contacts. Being in a group setting did not affect this behavior. In fact, the highest rate of participant involvement, although still less than 50 percent, occurred in Southeast Site 2, where more than half of the nutrition education contacts involved classes. Although the available data do not permit a detailed assessment of reasons for this lack of direct interaction on the part of WIC participants, the data presented above, as well as data on participant satisfaction presented in Chapter 5, suggest that it is not related, in a direct or substantial way, to the behavior of WIC staff.

Interactions Related to Breastfeeding Promotion

The on-site observation form included five items that focused specifically on interactions related to breastfeeding promotion. These items were coded in all prenatal certification contacts. Data were tabulated and scored using the system described above. Sample sizes for this analysis are quite small, however, so findings should be viewed with some caution.

The available data suggest that staff in all sites advocated breastfeeding and remained supportive and non-judgmental if participants indicated a preference for bottle feeding or expressed concerns about breastfeeding (Exhibit 2.5). In addition, with the exception of Southeast Site 1, WIC staff investigated potentially problematic beliefs about breastfeeding among women who were hesitant or resistant. (The number of women in Southeast Site 1 who expressed some concern about breastfeeding was comparable to the other sites)

WIC staff in most sites did not tend to ask how family and friends' felt about breastfeeding. The only site in which this was noted with any frequency was Southeast Site 2 which, as noted in a preceding discussion, had a special class for partners of women interested in breastfeeding.

Physical Environment

Five aspects of the physical environment were assessed in all observations, including factors such as privacy, temperature, and noise level. The data were analyzed using the scoring procedure described in previous sections, and are presented in Exhibit 2.6. As the data illustrate, most study sites had appropriate and adequate space in which to conduct nutrition education contacts. Facilities were private enough for conversation, temperatures were comfortable, and staff were not interrupted by telephones or the comings and goings of other clinic staff.

The only site in which the physical environment may have affected the quality of nutrition education contacts was Mountain Plains Site 2. In this site, only one of the 30 observed contacts was conducted in a space that was both private and quiet. All other contacts were conducted in large

Exhibit 2.5

Quality of Staff/Participant Interactions Related to Breastfeeding Promotion

	SOUTHEAST		MOUNTAIN PLAINS		MIDWEST		ALL SITES
	Site 1	Site 2	Site 1	Site 2	Site 1	Site 2	
WIC Nutrition Educator...	Number of Contacts in Which Positive Behavior/Interaction Was Observed						
Advocates breastfeeding	4	4	4	4	4	4	24
Remains supportive and non-judgmental if participant reports preference for bottle feeding	2	4	3	4	4	3	20
Addresses concerns about breastfeeding in a supportive manner	4	4	4	4	4	4	24
Investigates beliefs about potential barriers to breastfeeding	2	4	3	4	4	3	20
Investigates family/friends' support of breastfeeding	1	3	1	2	1	2	10
TOTAL SCORE	**13**	**15**	**15**	**18**	**17**	**16**	**N/A**
Number of contacts observed	8	8	8	8	8	12	52

Note: Interactions related to breastfeeding promotion were observed and coded only for prenatal certification contacts.

Source: On-site observations.

Exhibit 2.6

Environmental Characteristics of Observed Nutrition Education Contacts

	SOUTHEAST		MOUNTAIN PLAINS		MIDWEST		ALL SITES
	Site 1	Site 2	Site 1	Site 2	Site 1	Site 2	
Environmental Characteristic	Number of Sessions in Which Positive Characteristic Was Observed						
Space is private enough so that others cannot easily overhear conversation	4	4	4	1	4	4	21
Temperature is comfortable not too warm or too cold	4	4	4	4	4	4	24
Noise level is low enough that counselor and participant(s) can converse easily without strain or distraction	4	4	4	1	4	4	21
Session is not interrupted more than once by children	4	4	4	4	3	4	23
Session is not interrupted more than once by telephone or other clinic staff	4	4	4	4	4	4	24
TOTAL SCORE	**20**	**20**	**20**	**14**	**19**	**20**	**N/A**
Number of contacts observed	21	26	30	30	18	28	153

rooms where several nutrition educators met with participants at separate desks or tables without benefit of dividers or other barriers. The local agency director indicated that inadequate and inappropriate space was the most significant problem the program faces in providing nutrition education to its participants.

Toys and other activities for children were not consistently available. This did not seem to cause a particular problem, however. Disruptions caused by children were rare (one to six per site) and occurred even when toys were available (data not shown).

Topics Covered in WIC Nutrition Education Contacts

Observers recorded the topics covered in WIC nutrition education contacts using a pre-coded list (see Appendix B). Because a variety of techniques were used to transmit information, items considered "covered" may have been discussed by a WIC nutrition educator, mentioned in a video, or included in a pamphlet or other handout given to the participant.

The data show that WIC nutrition education contacts in study sites covered a broad array of topics. In general, results were consistent with expectations, i.e., most topics included in the observation checklist received widespread or moderate coverage. Similarly, all of the topics included in both the observation checklist and the nutrition knowledge measure used in this study (developed by FNS staff) received widespread or moderate coverage.

Exhibit 2.7 summarizes the specific topics that received widespread, moderate, limited, and very limited coverage in observed prenatal certification contacts. (Detailed summaries of topics covered in both certification and follow-up contacts are provided in Exhibits D.4 - D.6). As shown, in-depth topics related to breastfeeding, e.g., importance of adequate fluid intake, dealing with common breastfeeding problems, and breastfeeding techniques and positions, were rarely covered in prenatal certification contacts.

Follow-up prenatal contacts covered many fewer topics than certification contacts. Although topics covered in follow-up contacts mirrored those covered in certification contacts, few specific topics were covered in more than 50 percent of sessions (detailed summaries are provided in Exhibits D.4 - D.6). This is an anticipated pattern because, in most sites, follow-up visits comprised brief individual contacts focused on issue(s) that were relevant to the individual participant, or classes devoted to a specific topic area. The single topic most often covered in observed prenatal follow-up contacts was recommended weight gain during pregnancy.

Postpartum certification contacts covered fewer topics than prenatal certifications (Exhibits D.7 - D.9). Given that the majority of postpartum WIC participants participate in WIC during pregnancy (and therefore receive at least some of the prenatal nutrition education services offered), this finding is not surprising. The two most common topics in postpartum certification contacts were foods included in WIC food packages (availability of different food packages for breastfeeding and nonbreastfeeding women and differences between these packages and the package received during pregnancy) and recommended infant feeding practices. It is not possible to comment on topics covered in postpartum follow-up contacts because so few of these contacts were observed.

Exhibit 2.7

Topics Covered in Prenatal Certifications

Widespread Coverage: All or Most Observed Prenatal Certifications

Types and amounts of food to eat while pregnant*

Recommended weight gain*

Foods you can get with WIC vouchers

How to use WIC vouchers

Importance of prenatal vitamin and mineral supplements

Infant feeding preference

Benefits of breastfeeding*

Effects of smoking during pregnancy*

Effects of alcohol and drugs during pregnancy

Dealing with complications of pregnancy

Iron: intake, food sources, absorption*

Moderate Coverage: Half to Two-thirds of Observed Prenatal Certifications

Effects of caffeine during pregnancy

Participants' relative rate of weight gain* [1, 2]

Combining breastfeeding and bottle feeding[1]

Importance of prenatal care[1]

Need to consult physician before taking over-the-counter medications while pregnant*

Rationale for WIC foods/Supplementary Nature of Food Package (major WIC nutrients)*

Limited Coverage: Less than Half of Observed Prenatal Certifications

Importance of adequate fluids while breastfeeding

Dealing with common breastfeeding problems

Breastfeeding support services

Breastfeeding techniques and positions

Very Limited Coverage: Less than One in Five Prenatal Certifications

Infant growth spurts

Need to consult physician before taking over-the-counter medications while breastfeeding

Breastfeeding in the hospital

Effects of alcohol, smoking, drugs on breastfed infant

Referrals to Health and Social Services

The protocol for on-site observations called for a simple tally of referrals provided during observed nutrition education contacts. Because referrals are supposed to be tailored to the individual needs of a participant, the absence of a referral does not necessarily imply that a referral was missed. Rather, the participant may not have needed a referral, e.g., because she was already receiving food stamps, enrolled in Medicaid, etc. Consequently, the data presented in this section represents an unqualified frequency or prevalence estimate of referrals made by WIC staff in the nutrition education contacts observed for this study. The data *do not* provide any information about the appropriateness of the referral patterns observed.

As Exhibit 2.8 shows, few referrals to health care or social service programs or agencies were observed. Midwest Site 1 had the largest number of referrals. Every participant in this site received at least one referral and most received referral information for a variety of programs and services (AFDC, Food Stamps, Medicaid, and health care services other than prenatal care) during the prenatal certification appointment. According to the local agency director, this is done because local services for low-income women are inadequate. Many doctors and dentists in the area refuse to take Medicaid, for example, so the WIC clinic distributes contact information for practitioners who are willing to accept such patients. A similar situation was described in the other Midwest site.

In contrast, directors in the other four sites, all county or city health departments, indicated that WIC participants had access to a wide variety of services and were generally well-integrated in the system of support programs and services before coming to WIC. In these settings, many referrals that might come from the WIC Program were covered by other programs in or affiliated with the health department.

These data suggest that the number and type of referrals offered in local WIC agencies is more reflective of the context or local environment in which programs operate than of the quality of nutrition education offered to program participants.

Exhibit 2.8

Referrals Made During Observed Nutrition Education Contacts

	SOUTHEAST		MOUNTAIN PLAINS		MIDWEST		ALL SITES
	Site 1	Site 2	Site 1	Site 2	Site 1	Site 2	
Referral	Number of Contacts in Which Referral Was Observed						
None	19	14	26	18	0	16	93
Prenatal care	0	0	0	0	2	1	3
AFDC and/or Food Stamps	0	5	0	4	16	0	25
Medicaid	0	5	1	2	16	0	24
Other family/persona assistance	0	5	0	0	1	0	6
Counseling for smoking, alcohol, drugs	0	3	1	2	13	1	20
Child birth classes	0	0	0	1	0	0	1
Breastfeeding support	2	9	3	4	3	8	29
Health care services (other than prenatal care)	0	6	2	4	16	4	32
Other	0	5	0	0	1	1	7
Number of contacts observed	**21**	**26**	**30**	**30**	**18**	**28**	**153**
Percent of contacts with at least one referral	10%	46%	13%	40%	100%	43%	39%

Notes: Data reflect simple tally of referrals made during observed nutrition education contacts. Lack of referrals does not necessarily mean referrals were overlooked. Participants may not have needed referrals because they were already receiving needed services prior to WIC enrollment.

Numbers of referrals may not total to number of observations because participants may have received more than one referral.

Source: On-site observations.