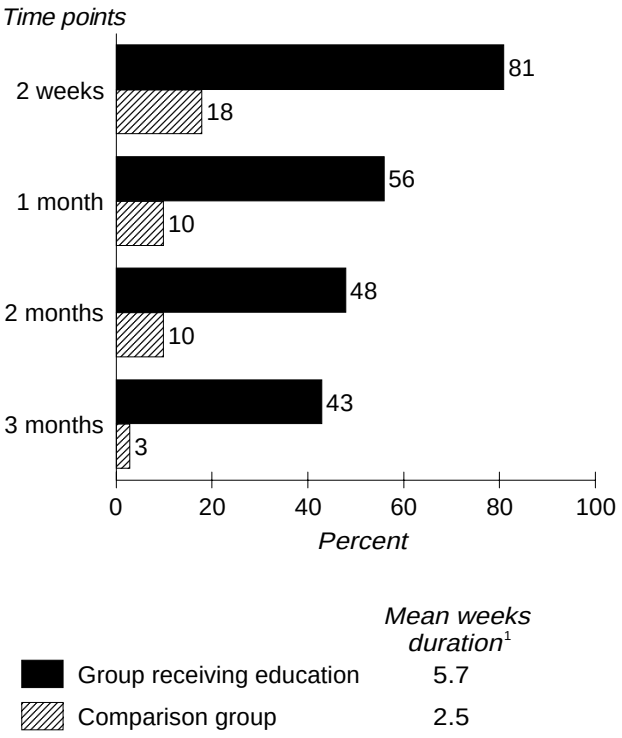
12 weeks, for example, 3 percent of control group participants were breastfeeding compared with 43 percent of treatment participants (fig. 2).

Reasons for Discontinuation of Breastfeeding

The most common reason for discontinuing breastfeeding was "inadequate milk" (22 percent of the mothers who initiated breastfeeding), closely followed by "too demanding" (19 percent) and by "physical discomfort" and "return to work or school" (both 16 percent). The Iowa project researchers felt that these most frequently cited reasons for discontinuing could be easily overcome with adequate information and support, and that these reasons were often the result of misinformation.

Figure 2
Iowa: Share of initiators still breastfeeding at various time points



[1]Records on duration kept until only 12 weeks after infant's birth.
Source: Compiled by Economic Research Service, USDA, from E. Schafer, 1996, "Building a Peer Network of Nutrition and Breastfeeding Support for Rural Iowans," unpublished Final Report for ES/WIC Nutrition Education Initiative, Iowa State University Extension.

Michigan

Given that, on a national level, lower socioeconomic groups have lower rates of breastfeeding initiation and duration than higher socioeconomic groups, Michigan project directors felt that geographic, economic, and racial/ethnic groups in the State would benefit from breastfeeding support programs. Six counties in the State with breastfeeding rates below the State average were selected. These counties were in the top quartile in number of families at or below the U.S. poverty level but had a high level of local commitment to the effort. The objective of the study was to develop a program that provided breastfeeding education and support to pregnant, Medicaid-eligible participants in the WIC program to increase the number of mothers who initiate breastfeeding and to increase the duration of breastfeeding.

Design Overview

Women with personal breastfeeding experience who were representative of the local WIC population were hired and trained as breastfeeding peer counselors to encourage and support WIC clients interested in breastfeeding their infants. WIC staff identified women who were considering breastfeeding based on their interest in breastfeeding information. Postpartum women entered the program at various stages of breastfeeding, usually because they were dealing with a problem related to breastfeeding. The average number of contacts made with women enrolled in the program was 6.3, with 3.5 being by phone and 3.1 in the mother's home. Many breastfeeding peer counselors visited mothers in the hospital before discharge, if invited to do so by the mother. Some contact was also made in the WIC clinic through nutrition education classes or support groups. Frequent contacts were made during the first 2 weeks postpartum, when many breastfeeding problems arise. Peer counselors attempted to make a home visit and observe breastfeeding within 48 hours of hospital discharge. Peer counselors referred problems beyond their expertise to lactation consultants or other skilled health care providers. Peer counselors wore pagers in order to increase their ability to respond quickly to mothers' questions and/or problems. The primary types of breastfeeding support offered were how to breastfeed (technique), preventing or solving breastfeeding problems, nutrition recommendations for the breastfeeding mother, and adding supplemental feedings and weaning.

Material Use and Development

All breastfeeding clients were introduced to material from a lesson developed jointly by the State WIC Lactation Consultant and Breastfeeding Counselor

Program Manager (*Eating Right for Two,* and *Feeding Your New Baby (0-4 months)*). All breastfeeding peer counselors incorporated teaching concepts from a parenting curriculum, Building Strong Families. In general, however, the Michigan project found structured curriculum had limited use in a peer counseling setting. Counselors felt that effective counseling came from asking open-ended questions, actively listening, and assessing the client's needs. Training efforts emphasized the importance of providing encouragement and support and addressing client concerns rather than formal instruction.

Evaluation Design and Project Results

The Michigan project did not use a control group but, rather, compared client breastfeeding initiation and duration rates with Michigan WIC reference data. For this project, 2,263 clients had been provided breastfeeding peer support. Completed data were obtained for 1,343 clients.

Initiation of Breastfeeding

Of the 560 participants enrolled prenatally, 87.5 percent initiated breastfeeding. This breastfeeding initiation rate appears high compared with Michigan WIC reference data (32 percent), but determining the true effect of the breastfeeding intervention on initiation is difficult due to lack of a true control group. The project participants represent, in essence, a self-selected group who are considering breastfeeding and are interested in joining a support program. The Michigan State WIC program, on the other hand, does not have a standard mechanism by which women are identified as "considering breastfeeding." Michigan researchers found that the factor most strongly related to initiation was previous breastfeeding experience—that is, initiation rates were higher for women who had previously breastfed than for those women who had not (table 1).

Duration of Breastfeeding

Women who had peer support breastfed longer than the general Michigan WIC population. The mean duration was 14.6 weeks, with 55 percent of breastfeeders still breastfeeding at 2 months compared with only 18 percent of the general Michigan WIC population (fig.3). Again, the same caveat about comparing data with the WIC reference group applies. Among the project's breastfeeding clients, the average duration was significantly higher for women who entered the program after their babies were born and for women with previous breastfeeding experience. Black women had the longest average duration of any ethnic group (17.1 weeks).

Reasons for Discontinuation of Breastfeeding

The most frequently cited reason for discontinuing breastfeeding in the Michigan project was "returning to school" (20 percent), a reason given most often by teens under 18 years of age, followed by "too demanding" (19 percent) and "baby self-weaned" (18 percent).

North Carolina

The rate of infant mortality in North Carolina is higher than the national average. The State infant mortality rate is 12 per 1,000 births compared with a national infant mortality rate of 7.2 per 1,000 births (U.S. Department of Health and Human Services, 1997b). For infants born to teenaged mothers, the mortality rate rises to 17 per 1,000 births. Of particular concern is the very high rate of infant deaths among minority populations. During 1985-89, the average rate of infant deaths for minority families in North Carolina was 17.5 percent compared with 9.3 percent for white infants. This State project saw promotion of breastfeeding to be the best method for feeding an infant and thus a strategy for reducing infant mortality in the State. The targeted population for this project was WIC clients in five counties who intended to breastfeed their infants. The objective of the project was to

Table 1—Michigan: Breastfeeding initiator rates of women enrolled prenatally

Participants	Initiators
	Percent
All prenatal women	87.5
Women with no breastfeeding experience	87.4
Women with previous breastfeeding experience	97.3
Teens less than 18 years old	81.4
By race:	
White	88.0
Black	85.0
Hispanic	89.0
1994 Michigan WIC	32.0

Source: Compiled by Economic Research Service, USDA, from B. Mutch and C. McKay, 1996, "Michigan's ES/WIC Nutrition Education Initiative: Breastfeeding Peer Counselor Initiative (BFI)," unpublished Final Report for ES/WIC Nutrition Education Initiative, Michigan State University Extension.