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

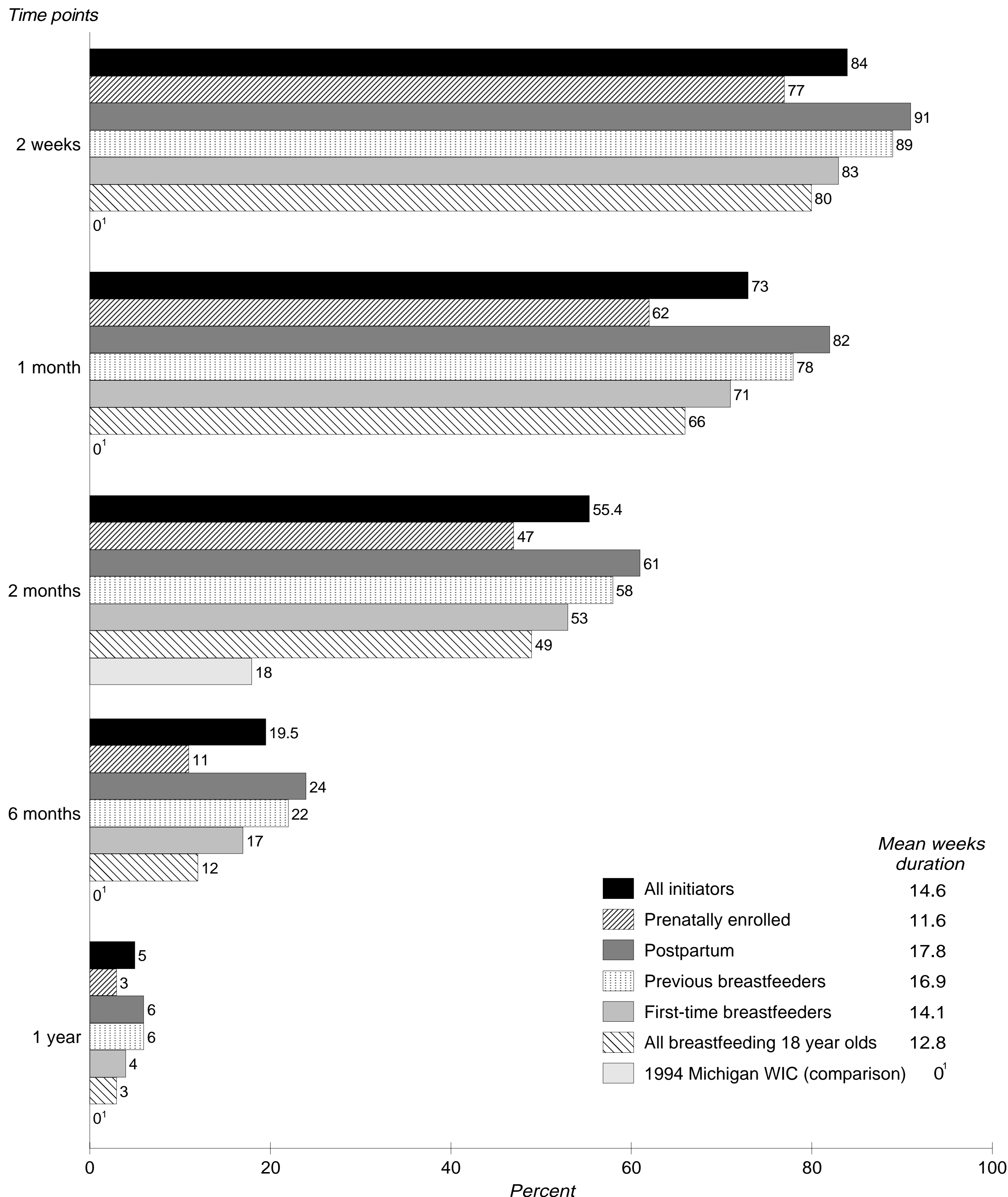
The rate of infant mortality in North Carolina is higher than the national average. The State infant mortality rate is 12 per 1,000 births compared with a national infant mortality rate of 7.2 per 1,000 births (U.S. Department of Health and Human Services, 1997b). For infants born to teenaged mothers, 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.

Figure 3
Michigan: Share of initiators still breastfeeding at various time points



[1] Information not provided.
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.

increase the number of WIC clients who continued breastfeeding up to and beyond 2 months postpartum.

Design Overview

This project was designed to test the replication of an earlier pilot program conducted in 1991. The intervention in the pilot study and this project consisted of community-based support for breastfeeding WIC clients by one of two specially trained EFNEP paraprofessionals, one to take the primary role and the other to provide backup help as needed. Participants were contacted in the hospital after delivery, which helped to establish a relationship of trust and confirmed the client's location after hospital discharge.

The paraprofessional visited WIC mothers in their homes within the first 72 hours after hospital discharge. The mothers could call the paraprofessional's pager number for earlier help if needed. During home visits, the paraprofessional assessed progress with breastfeeding, explained supply and demand in lactation, checked on the baby's physical condition, corrected poor techniques, alleviated the mother's anxiety about breastfeeding ability, checked the adequacy of the mother's diet, and offered help in planning simple family meals. Additional visits were made as needed or at the client's request. The most frequent contacts came during the first 2 weeks postpartum and with mothers who were breastfeeding for the first time. For some experienced breastfeeding mothers, the only face-to-face contact was in the hospital and other contacts were made by telephone. A WIC nutritionist with lactation training was the consultant for questions concerning complications and the need for medical referral. The number of teaching contacts ranged from 1 to 13, averaging between 3 and 4.

Material Use and Development

Mothers received the pamphlet *Breastfeeding—Getting Started in 5 Easy Steps.* The paraprofessionals also taught maternal and breastfeeding material from the *Eating Right is Basic 2* curriculum developed by the Extension Service. However, as was the case in Michigan, the training in North Carolina emphasized formal instruction less than it did providing encouragement and support and addressing specific client concerns.

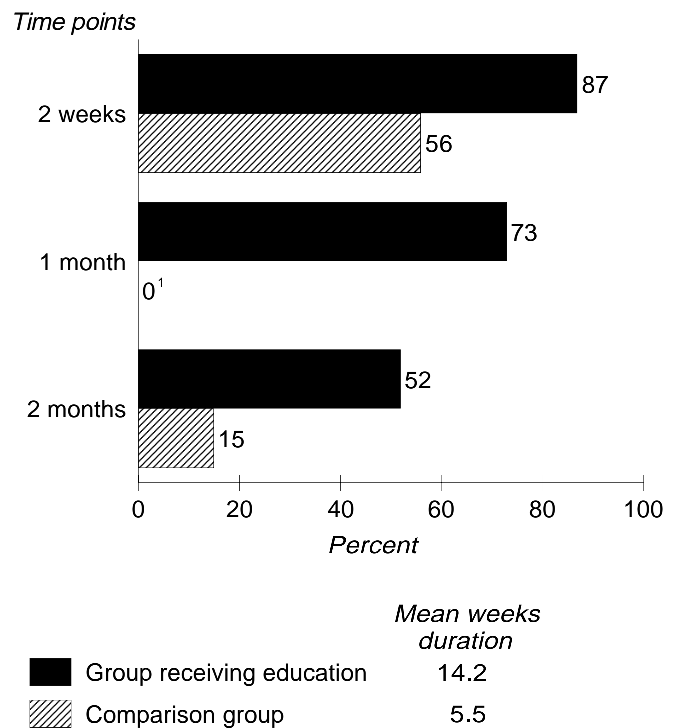
Evaluation Design and Project Results

Evaluation of this project was designed to compare breastfeeding duration with duration in the earlier pilot study. The earlier study used a comparison group of clients from a county that contained a similar WIC population, but that did not have an EFNEP program or special breastfeeding support. Completed data were obtained from 2,267 WIC clients who received the breastfeeding support intervention. The comparison group consisted of 115 WIC clients.

Duration of Breastfeeding

Average duration of breastfeeding among the intervention group was 14.2 weeks compared with 5.5 weeks among the control group. Eighty-seven percent of the intervention group was breastfeeding at 2 weeks compared with 56 percent among the control group. And 52 percent of the intervention group was breastfeeding at 8 weeks compared with 15 percent among the control group (fig. 4).

Figure 4
North Carolina: Share of initiators still breastfeeding at various time points



[1]Information not provided.
Source: Compiled by Economic Research Service, USDA, from N. Van Eck, 1996, "North Carolina EFNEP/WIC Breastfeeding Support Program," unpublished Final Report for ES/WIC Nutrition Education Initiative, North Carolina State University.

Discussion

Figures 5 and 6 encapsulate some of the key results from these four projects. The Guam, Iowa, and Michigan studies suggest that prenatal breastfeeding education was associated with an increase in breastfeeding in the immediate postpartum period. All four projects indicate that early postpartum breastfeeding support may be effective in increasing the duration of breastfeeding for a low-income minority population.

The Iowa, Michigan, and North Carolina studies reinforce the results of some earlier studies that suggest that peer counselors, well trained and with ongoing supervision, can have a positive effect on breastfeeding practices among low-income women who intend to breastfeed. Home support appears to be an especially effective way to encourage breastfeeding, particularly for low-income women for whom breastfeeding concerns can be identified and resolved by a trained person. A recent study, for example, found that breastfeeding support from lay people increased the odds of breastfeeding 3.3 times (Giugliani and others, 1994). Two studies (Serafino-Cross and Donovan, 1992; Seidel and others, 1993) examined in-home support by lactation consultants and found that breastfeeding duration significantly improved compared with control groups.

Personal one-on-one support may be even more appropriate now that the current practice of short hospital stays after giving birth results in less institutional support for the breastfeeding mother, whose milk supply may not be fully established before hospital discharge. In the initial planning and development of the three ES/WIC projects that used paraprofessional aides in the home, there was concern that low-income women in WIC would not be receptive to other people coming into their homes to talk about breastfeeding. The subject area may have been too intimate or too invasive, and women on public assistance were already inundated with home visitors. Apparently, this was not the case.

All four ES/WIC breastfeeding projects cited community coalitions as being essential for successful breastfeeding programs among low-income women and for sustainability beyond the 3-year funding of the Initiative. And the North Carolina project, specifically, cited the need to convince local government officials that breastfeeding promotion and support are cost effective.

Economics Involved

In addition to individual health benefits, breastfeeding may provide significant economic benefits to the Nation, including reduced health care costs and reduced employee absenteeism for care attributable to child illness. The significantly lower incidence of illness in the breastfed infant may allow the parents more time for attention to siblings and other family duties and reduce parental absence from work and lost income. The direct economic benefits to the family may also be significant. It has been estimated, for example, that the cost of purchasing infant formula for the first year after birth is about $1,000 (Tuttle and Dewey, 1996).

Costs of medical care continue upward. The Nation's total spending for health care in 1995 was nearly $1 trillion ($988.5 billion), an increase of 5.5 percent from the previous year, reflecting an estimated average of $3,621 per person. This figure represents 13.6 percent of the gross domestic product, a percentage approximately double that of any other developed nation (U.S. Department of Health and Human Services, 1997a). Although breastfeeding has been shown to provide immunologic protection against a variety of illnesses, it has not been included in the U.S. Department of Health and Human Services' Agency for Health Care Policy and Research (AHCPR) or other Federal cost-control deliberations. The aforementioned Health Objectives for Year 2000 are nonbinding. Also, employers have been reported to provide little support to working women who breastfeed (Fredrickson, 1993).

More evidence is needed showing that promotion and support of breastfeeding initiation and early intervention to help women (particularly low-income) extend breastfeeding duration are economically advantageous as well as nutritionally sound. Without health and cost-benefit studies, the Nation's employers, health and life insurance companies, and Federal health policymakers are unlikely to provide financial incentives to employees and insurance subscribers to breastfeed or to health providers to support and competently care for breastfeeding mothers. Many physicians and nurses, for example, are poorly trained in breastfeeding techniques and may not be motivated to care for breastfeeding mothers, perhaps because of the lack of financial reimbursement for such care by health insurance providers (Fredrickson, 1993; Michelman and others, 1990).