

Breastfeeding: Health and Economic Issues

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Breastfeeding is widely believed to be the most beneficial method of feeding for the health and well-being of most infants. Although not recommended for all mothers (such as those who use illegal drugs, are receiving cancer chemotherapy, or have tested HIV positive), breastfeeding is endorsed by many public health experts as the preferred infant feeding method. Most recently, the American Academy of Pediatrics issued a policy statement recommending that women breastfeed infants throughout the first year of the infants' lives.

The U.S. Department of Agriculture (USDA), which oversees the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), has promoted breastfeeding, both inside and outside WIC, including establishing a Breastfeeding Promotion Consortium to exchange information and collaborate on breastfeeding promotion activities. USDA initiated in August 1997 an ongoing national campaign by Federal, State, and local WIC programs to promote breastfeeding to WIC mothers and to support all women who choose to

breastfeed. The "Loving Support Makes Breastfeeding Work" National WIC Breastfeeding Campaign encourages WIC participants to begin and continue breastfeeding, increases referrals to WIC clinics for breastfeeding support, builds general public acceptance of and support for breastfeeding, provides support and technical assistance to WIC professionals in promoting breastfeeding, and calls on friends, neighbors, relatives, the medical and health community, and others to support breastfeeding mothers.

The Surgeon General aims to increase the proportion of mothers who breastfeed their babies in the early postpartum period to 75 percent nationally by 2000 and to increase the proportion who continue breastfeeding until their babies are 5 to 6 months old to at least 50 percent. Breastfeeding generally refers to feeding from the breast but also may refer to feeding breastmilk from a bottle. In 1997, about 62 percent of women giving birth in the hospital report initiating breastfeeding, and approximately 26 percent report continuing breastfeeding at 6 months. Women in lower socioeconomic groups are less likely to breastfeed and breastfeed for shorter lengths of time than higher socioeconomic groups and, thus, are far removed from the Surgeon General's goal. Recent data from a 1996

national survey, for example, indicate that only 42 percent of women from households with incomes less than \$10,000 breastfeed at all and only 12 percent breastfeed for 6 months.

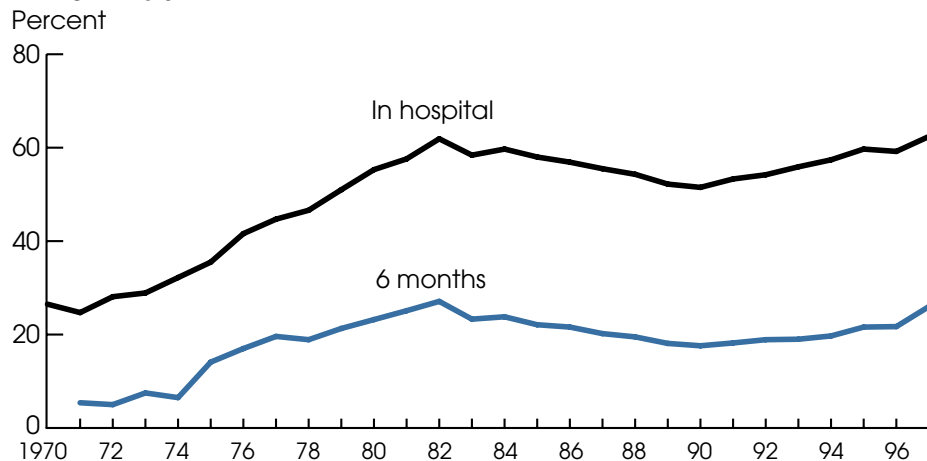
Breastfeeding Trends Have Fluctuated

Breastfeeding was the most common way to feed infants well into the 20th century United States. In the last 50 years, however, infant feeding has markedly changed. After World War II, with the development and large-scale manufacture of infant formula, formula feeding became the standard. The breastfeeding rate fell by half between 1946 and 1956, and by 1967, only 25 percent of American infants were being breastfed at the time of hospital discharge. The percentage of infants being breastfed when they left the hospital began to increase steadily from 1971 to 62 percent in 1982, declined approximately 16 percent from 1982 to 1990, and has increased slowly again to hover around 62 percent (fig. 1). Breastfeeding at 6 months has paralleled breastfeeding initiation, although at a considerably lower rate.

A number of reasons have been suggested for why more mothers don't breastfeed: aggressive formula

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Figure 1
Breastfeeding in the United States Rebounded From Low Rates in the 1970's



Source: "Mothers" Survey, Ross Products Division, 1997. Note: The percentage of infants being breastfed at 6 months was not measured in 1970.

product marketing, lack of support from family and friends, insufficient knowledge among medical professionals of breastfeeding techniques and hurdles, maternity hospital practices (such as emphasis on short maternal stays), religious beliefs, cultural attitudes, and lack of public acceptance. All or some of these factors may come into play, but it is interesting that the increase in formula feeding parallels a rapid increase in the number of women entering the formal work force.

Breastfeeding and working outside the home are commonly believed to be incompatible. For a woman working outside the home to provide her baby with breast milk, she must have the place and time to nurse the baby or express and store her milk for bottle feeding. Increased female participation in the labor force is frequently blamed for the relatively low duration rates of breastfeeding.

The increase in the number of working women since World War II has been one of the most significant social and economic trends in modern U.S. history. In the United States between 1950 and 1985, for example,

female participation in the labor force increased by 178 percent, while the number of men in the work force increased by only 47 percent. By 1997, 59 percent of women (16 years and older) were in the work force, compared with 28 percent in 1940. In 1995, 41 percent of the women employed in the labor force had children under 18 years old, with 55 percent of this group returning to the workplace before their children were 1 year old. Many workplaces seem to lack policies supporting breastfeeding or pumping at job sites, inhibiting continuation of breastfeeding after women return to work.

Breastfeeding Provides Health Advantages

Although some past studies have provided conflicting results about the protective effects of breastfeeding (see box), more recent studies have conformed to important methodological standards and better document the protective effect of breastfeeding against a variety of health problems during infancy and early childhood. Endorsement of breastfeeding from the prestigious American Academy of Pediatrics

and American Dietetic Association, among others, reflects two decades of research that shows that breastfeeding improves infants' general health, growth, and development and significantly decreases risk for a large number of acute and chronic diseases. As reported in a 1997 policy statement issued by the American Academy of Pediatrics, research in the United States, Canada, Europe, and other developed countries suggests that breastfeeding decreases the incidence and/or severity of diarrhea, lower respiratory infection, otitis media (ear infection), bacterial meningitis, botulism, urinary tract infection, and necrotizing enterocolitis. For example, breastfeeding is estimated to reduce the incidence of otitis media by one-fourth to one-third in breastfed infants as compared with formula-fed infants (table 1).

According to the Academy, a number of other studies show a possible protective effect of breastfeeding against sudden infant death syndrome, insulin-dependent diabetes mellitus, Crohn's disease, ulcerative colitis, lymphoma, allergic diseases, and other chronic digestive diseases. Breastfeeding also has been related to possible enhancement of cognitive development. A number of studies indicate possible health benefits for mothers—specifically, a reduction in hip fractures in the postmenopausal period, less postpartum bleeding, and reduced risk of ovarian cancer and premenopausal breast cancer.

Economic Benefits Difficult to Accurately Quantify

In addition to individual health benefits, breastfeeding may provide significant economic benefits, both to the individual families and to the Nation. Breastfeeding provides mostly primary and, to a lesser

Table 1

Breastfeeding Has Protective Effects

Illness	Estimated reduction in breastfed infants ¹
Gastrointestinal/diarrhea	1/3-1/2
Otitis media	1/4-1/3
Urinary tract infection	1/5
Bacterial meningitis	1/4-1/16
Necrotizing enterocolitis	1/10

¹Compared with the rates of occurrence for formula-fed infants.

extent, secondary prevention. Primary prevention is any activity that prevents a disease from ever starting while secondary prevention cures or reduces the severity of a disease. As described above, breastfeeding provides primary and some secondary protection against viral, bacterial, and allergic diseases.

Further study could more accurately assess the economic advantages of promotion and support of breastfeeding initiation and early intervention to help women extend breastfeeding duration. Estimating and comparing costs and benefits of a particular method of infant feeding poses methodological challenges. The health benefits of breastfeeding can extend across a number of conditions, with both benefits to the child and maternal benefits and costs. Several significant economic considerations factor into breastfeeding.

Costs of Breastfeeding Versus Formula

Breastfeeding may bring direct economic benefits to the family by significantly reducing or eliminating the cost of purchasing infant formula. Formula prices rose more than 150 percent during the 1980's, and several studies compared breastfeeding and formula costs. A study reported in a 1993 medical journal article, for example, found that feeding an infant formula costs

approximately \$260-\$400 extra a year than breastfeeding the infant. This differential included the cost of extra food that mothers require for lactation.

USDA's WIC Program is the largest purchaser of infant formula, buying approximately 40 percent of all formula sold in the United States. The cost of infant formula distributed to WIC mothers in 1997 was \$567 million after formula company rebates of about \$1.2 billion to WIC. Advocates of breastfeeding contend that if more of these women breastfed, overall WIC food costs would decrease.

A 1989 reauthorization of the WIC Program, providing both a mandate and funding, has allowed States to substantially increase breastfeeding promotion. Note, however, that WIC is explicitly promoting breastfeeding because of its health benefits, not because of its possible effects on food costs.

In 1993, the General Accounting Office (GAO) studied the extent that the WIC Program promotes breastfeeding and examined the effects of increased breastfeeding on WIC food costs for a year. Estimating the effect of increased breastfeeding on overall WIC food costs was complicated by a number of factors, including the amount of supplemental formula breastfeeding infants sometimes use, the cost of food packages given to different participants (food packages provided to breastfeeding women often cost

more), and the number of women served.

GAO concluded that if WIC were fully funded and serving all eligible recipients, any increases in breastfeeding would decrease total food costs as long as formula-supplemented breastfed infants received no more than 25 percent of the monthly amount of formula given to formula-fed infants. GAO estimated total WIC food costs for fiscal year 1992, using 16 scenarios under varied assumptions. For one scenario, for example, GAO estimated that a 10-percent increase in breastfeeding rates, with breastfed infants receiving 25 percent of the monthly amount of formula given to formula-fed infants, would save the WIC Program almost \$408,000. If breastfed infants received 10 percent of the formula allowed to formula-fed infants, a 10-percent increase in breastfeeding rates would save the program approximately \$750,000.

Health Care Benefits

Given that breastfeeding decreases the incidence and/or severity of specific illnesses in infants, it may significantly defray or reduce health care costs. An economic analysis of the health care savings of breastfeeding and formula feeding would be complex. Several of the illnesses that breastfeeding and formula feeding purportedly affect are chronic, with costs and savings that could accrue over several years and, in some cases, over a lifetime. Otitis media, for example, if recurrent or not promptly treated, may lead to hearing loss, tinnitus, and brain abscess. Another problem is obtaining comprehensive data on treatment costs (hospital or outpatient) for various childhood illnesses for which breastfeeding may help to defray. Existing studies relate to specific illnesses and locales—for example, local

clinics, a local hospital, a survey of local physicians. Therefore, extrapolating national estimates would be necessary.

Other Benefits and Costs

When considering the economic benefits of breastfeeding versus formula feeding, the cost of mothers' absenteeism from work should be considered in addition to those incurred by the health system. Many women return to work while their infants are less than 6 months old. When these women miss work, it is often because their infants are ill. As breastfed infants have been shown to be less likely to catch common infectious illnesses than formula-fed infants, it is possible that

mothers who breastfeed may have to miss fewer days from work to care for a sick child than mothers who are formula feeding. Attributing costs to time and wages lost by mothers (and fathers) attending to a sick child should be considered when estimating the possible economic benefits of breastfeeding.

Relatively few studies in the United States have attempted to assess the economic benefits of breastfeeding. The few studies reported in the literature generally looked at the economic effect of breastfeeding within the context of a WIC program operating at a specific State site, with net savings expressed either in terms of reduced overall Medicaid expenditures for infants, reduced formula purchases,

or decreased infant morbidity and health care costs associated with a specific illness (gastrointestinal problems and ear infection). For example, a 1997 study looked at whether breastfeeding of infants enrolled in WIC was associated with a reduction in Medicaid expenditures during the first 6 months of life. The two researchers found that, compared with formula feeding, breastfeeding each infant enrolled in Colorado's WIC Program saved \$478 in WIC costs and Medicaid expenditures during the first 6 months of the infant's life, or \$161 after considering the formula manufacturer's rebate.

Comprehensive Assessment Needed

Proponents of breastfeeding view promotional efforts and active support systems as key components in a strategy to improve the well-being and health of both mothers and infants. A number of approaches have been suggested to increase breastfeeding: promotional campaigns to correct misconceptions about or overcome barriers to breastfeeding; increased training for physicians and professional health care providers who, in turn, could more actively promote breastfeeding; hospital and/or professional home support visits to expecting mothers or mothers in the early postpartum stage; and enlightened employer practices that reduce possible conflicts between maternal employment and day-time lactation (for example, breastfeeding or breast-pumping breaks, onsite day care, or telecommuting).

Despite the health benefits to both mothers and their infants, some policymakers remain skeptical about the cost effectiveness of breastfeeding promotion and support efforts. Policymakers may be reluctant to

Past Studies Conflict on Merits of Breastfeeding

Some studies contradict one another and have contributed to the controversy about the importance of breastfeeding to public health. A number of the earlier studies used small samples and inappropriate statistical analyses. Some of the following methodological and analytical limitations of some earlier studies (particularly those conducted between 1970 and the mid-1980's) resulted in ambiguous findings:

Lack of control of confounding variables. Short of random assignment to be breastfed or formula fed, which is not ethically or practically feasible, it is important to match the groups as much as possible for as many potentially confounding variables that may independently affect infant health, such as family size, maternal education, socioeconomic status, parental smoking, and use of day care. In some earlier studies, groups were not carefully matched by these important variables.

Problems related to the definition and duration of breastfeeding. Explicit definitions of breastfeeding practices are important for understand-

ing and comparing studies. In some studies, infants have been classified as "breastfed" if they received any amount of breastmilk at any time in their lives. As a result, groups of "breastfed" infants may have included infants who were offered breastmilk only once or twice in the hospital as well as those who were exclusively breastfed for 4-6 months. Such a mixing of treatment groups could mask the protective effects of breastfeeding.

Problems related to "assignment" or reverse causality. In studies of infant feeding and health, this bias can stem from the fact that infant health can affect infant feeding. So, if the mode of feeding is measured after an illness has already begun, it may not be clear whether a formula-fed infant, for example, experienced that illness as a result of formula feeding or whether previous breastfeeding was curtailed as a result of the illness. The illness in question, then, must be unambiguously associated with the feeding method used just *before* the onset of illness.

fund breastfeeding promotion and support activities and may need proof that breastfeeding will help the "bottom line" or is cost effective. Support for breastfeeding must be balanced against an organization's potential financial costs and benefits of an increase in the number of breastfeeding patients/clients/employees. Mothers who continue breastfeeding report fewer infant illnesses and less absenteeism than do mothers who do not breastfeed when they return to work. Mothers who receive support for continued breastfeeding as they re-enter the workplace tend to return earlier after their babies' births. An employer might want to balance these benefits against such factors as costs related to the time spent by working mothers to express milk onsite and the costs of providing the facilities (breastpump, private room, cold storage). Without health and cost-benefit studies, the Nation's employers, health and life insurance companies, and Federal health policymakers may not provide financial incentives to employees and insurance subscribers to breastfeed or to health providers to support and competently care for breastfeeding mothers.

A principal mission of USDA's Economic Research Service (ERS) is to provide an economic framework for examining public policy issues. ERS intends to comprehensively assess the economic benefits of breastfeeding, information that is critical to performing cost-benefit analyses of breastfeeding promotion and support efforts.

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