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WIC Infant Feeding Practices Study

Summary of Findings

Authors:

Nazli Baydar
Margaret McCann
Rick Williams
Eric Vesper
Patricia McKinney

Submitted by:

Battelle
Centers for Public Health
Research and Evaluation
4000 NE 41st Street
P.O. Box 5395
Seattle, WA 98105-0395

Project Director: Patsy Henderson

Submitted to:

Office of Analysis and Evaluation
USDA Food and Nutrition Service
3101 Park Center Drive, Room 208
Alexandria, VA 22302

Project Officer: Patricia McKinney

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Background



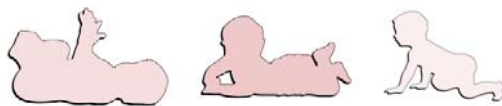
The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) gives Federal grants to States to administer the WIC program which provides supplemental foods, health care referrals, and nutrition education. These benefits are available for low-income pregnant women, breastfeeding and non-breastfeeding postpartum women, and to infants and children under the age of five who are found to be at nutritional risk.

Once the applicants are determined to be eligible to participate in WIC, they receive benefits based upon their category of eligibility. The amount of time participants may receive benefits (i.e., the certification period) may range from 6 months to a year. During a certification period, WIC participants receive vouchers that allow them to obtain a monthly food package designed to supplement their diets. In addition, WIC local agencies are required to offer all adult participants and caretakers of infants and children participants at least two nutrition education contacts during each certification period. For the infants who are certified for one year, WIC local agencies are required to offer two nutrition education contacts during each six-month period. However, participants cannot be denied WIC benefits if they do not attend or participate in nutrition education activities.

The WIC program encourages mothers to breastfeed their babies. A greater variety and quantity of food is offered to breastfeeding participants than to non-breastfeeding, postpartum participants. In addition, breastfeeding mothers who elect not to receive infant formula through WIC for their infants receive an enhanced food package that was added to the WIC food packages in 1992. *WIC breastfeeding women may receive benefits for up to one year while non-breastfeeding women are eligible for only six months postpartum. WIC breastfeeding women are always considered to be at a higher level of nutritional risk than non-breastfeeding postpartum women.

This publication is based on the WIC Infant Feeding Practices Study (WIC-IFPS) sponsored by the Food and Nutrition Service (FNS) of the United States Department of Agriculture. The WIC-IFPS is a one-year longitudinal study, which describes the infant feeding practices over the first year of life among a nationally representative sample of approximately 900 mothers who participated in WIC while they were pregnant. The mothers or caretakers of the infants were interviewed on a monthly basis in the first 7 months of these infants' lives, with additional interviews conducted when the infants were 9 and 12 months old. The interviews were conducted between August 1994 and December 1995. All data reported in this publication are based on the reports of the mothers' recall including information on mothers' participation in various WIC Program activities. The WIC-IFPS is designed to describe the changes in infant feeding practices over the first year of an infant's life and examine the factors that shape mothers' infant feeding decisions. Frequent contacts permitted the mothers to provide a detailed description of their feeding attitudes, beliefs, and practices.

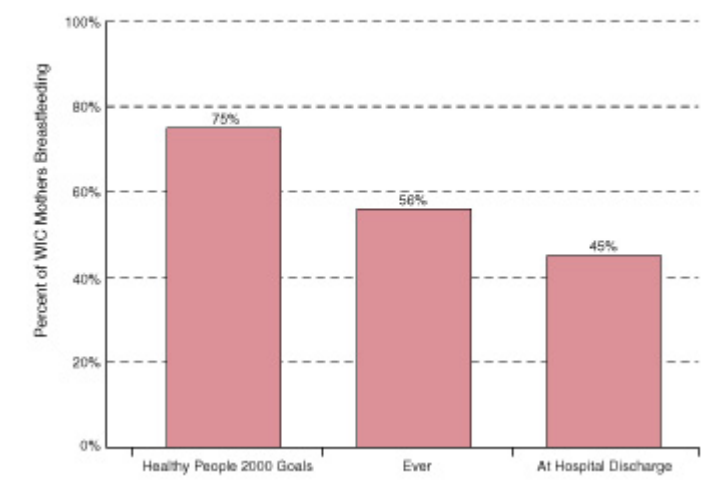
WIC Mothers' Choice Between Breastfeeding and Formula Feeding



More than one-half of WIC Mothers initiate breastfeeding. At the time of hospital discharge, less than one-half of all WIC mothers were still breastfeeding (Figure 1).

The WIC program defines breastfeeding as "the practice of feeding a mother's breastmilk to her infant(s) on the average of at least once a day." Using this definition, 56 percent of WIC mothers initiate breastfeeding. At hospital discharge, 45 percent of all WIC mothers were breastfeeding. Of these, about 30 percent were exclusively breastfeeding and 15 percent were breast- and formula-feeding. The Healthy People 2000 goal for breastfeeding initiation is "to increase to at least 75 percent, the proportion of mothers who breastfeed their babies in the early postpartum period." If the "early postpartum period" is interpreted as the time of hospital discharge, the comparable percent for WIC mothers is 45 percent.

Figure 1. Breastfeeding Initiation Rate for WIC Mothers is Below the Goals Set by Healthy People 2000.

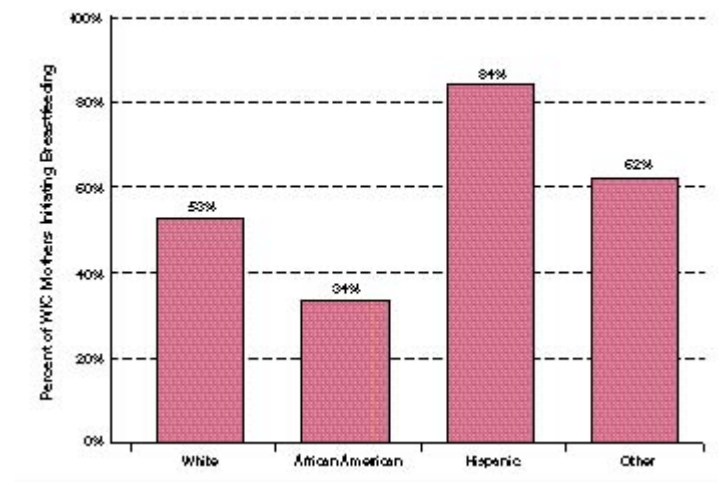


Mothers of different racial or ethnic background differ substantially in their likelihood of initiating breastfeeding (Figure 2).

Four race and ethnicity groups of mothers were examined: white, African American, Hispanic and other. This latter category consists of the mothers who identified themselves as Asian, Pacific Islander, American Indian, Alaskan Native, or declined providing information about their racial and ethnic origin. Among racial and ethnic groups, Hispanic mothers are the most likely to initiate breastfeeding (84%), followed by white mothers (53%) and African American mothers (34%).

Other characteristics of mothers are associated with the likelihood of breastfeeding. Other things being equal, mothers who are younger, mothers who are born in the United States, mothers who do not live with the father of their infant, mothers who have low levels of education, and mothers who have other children are less likely to choose to breastfeed than mothers who are older, born outside the United States, live with the father of their infant, have high levels of education, and have no other children.

Figure 2. Mothers' Breastfeeding Initiation Rates Differ by Race and Ethnicity.



Mothers are also more likely to breastfeed if they receive advice to breastfeed from their own mother or other relatives, and if they breastfed their previous children.

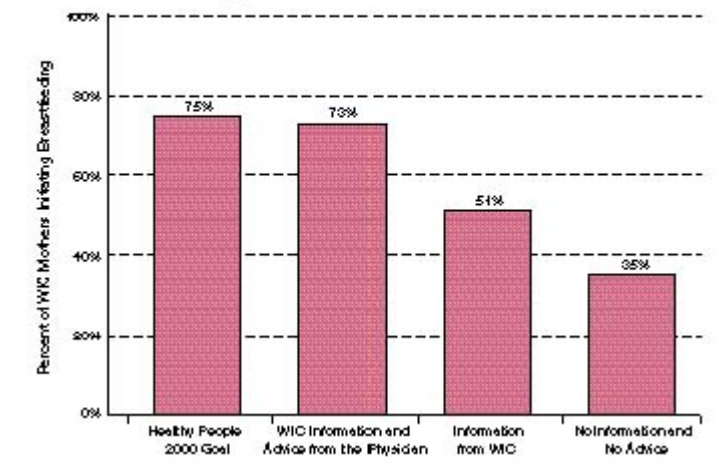
WIC Mothers' Choice Between Breastfeeding and Formula Feeding (Continued)

Breastfeeding advice or support from professional sources is an important factor in the initiation of breastfeeding (Figure 3).

Thirty-nine percent of the mothers recall receiving advice from their physicians to breastfeed and even more mothers report receiving information about breastfeeding from WIC (64%). Almost all mothers who receive advice to breastfeed from their physicians also receive information from WIC about breastfeeding. Slightly more than one-half of the mothers (58%) receive information about breastfeeding from a professional source other than WIC.

The mothers who receive advice from their physicians to breastfeed are more likely to breastfeed than those who do not receive such advice. Similarly, the mothers who receive information about breastfeeding from a professional source other than WIC are more likely to breastfeed than those who do not receive such information. Among the mothers who do not receive breastfeeding advice from their physicians, receiving information about breastfeeding from WIC is associated with a 62 percent increase in the likelihood of initiation of breastfeeding.

Figure 3. Mothers Who Receive Information About Breastfeeding From WIC and Advice From Their Physicians Have Higher Breastfeeding Initiation Rates.

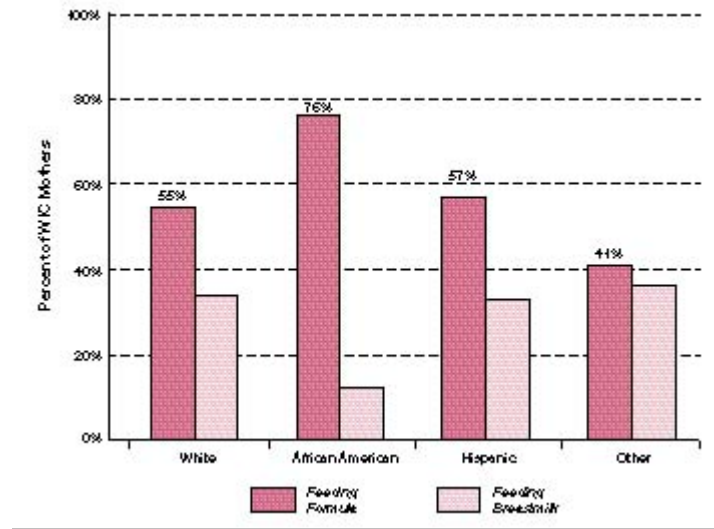


Only 30 percent of the WIC mothers report that they know about the special WIC breastfeeding food package that mothers can get if they elect not to receive infant formula from WIC. Mothers who report that they know about this special WIC food package are almost twice as likely to breastfeed than mothers who report that they do not know about it.

Mothers experience a variety of circumstances in the hospital that are unsupportive of the establishment of breastfeeding.

Something other than breastmilk as the first feeding, delayed timing of first breastfeeding, lack of rooming-in arrangements and hospital gift packages that contain formula, bottle, or a pacifier, are examples of neonatal circumstances that may be unsupportive of the establishment of breastfeeding. Only twenty-nine percent of WIC mothers give their infants breastmilk as the first feeding. Sixty percent of WIC infants receive formula as the first feeding and 10 percent receive either sugar water or plain water. The type of first feeding differs by the race and ethnicity of the mother. Only 12 percent of African American mothers breastfeed at the first feeding (Figure 4). Among the mothers who ever initiate breastfeeding, 19 percent do so within one hour after birth.

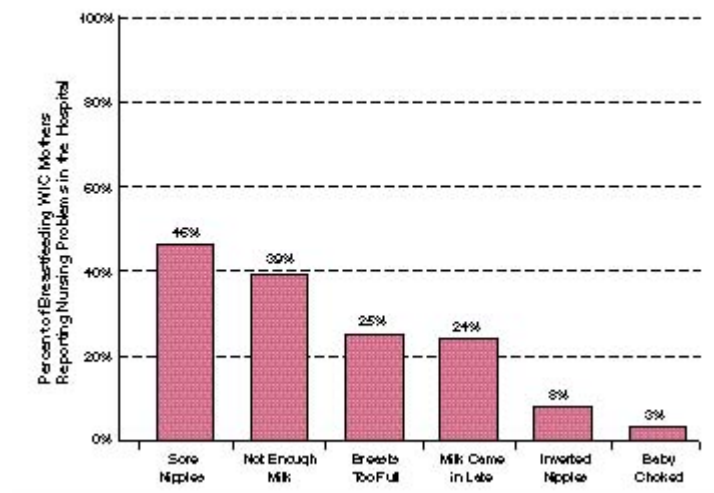
Figure 4. First Feeding Differs by Race and Ethnicity of the Mother.



Seventy-two percent of WIC infants sleep away from their mothers at least for one night during their hospital stay. Ninety-three percent of WIC mothers receive a gift package from the hospital. The gift packages of almost all WIC mothers contain items that are detrimental to the establishment of breastfeeding, such as formula, a bottle, or a pacifier. Among the mothers who receive a gift package, 86 percent get some formula in that package.

Many WIC mothers who start breastfeeding in the hospital report experiencing some nursing problems (Figure 5) such as sore nipples (46%), not having enough milk (39%), or milk coming in late (24%). Altogether, three-quarters of breastfeeding mothers experience one or more nursing problems while they are still in the hospital. However, 33 percent of the mothers who experience nursing problems in the hospital receive no help from the hospital staff. For example, thinking that one does not have enough milk for the infant is one of the major predictors of stopping breastfeeding. Yet, 25 percent of WIC mothers who think that they do not have enough milk while in the hospital receive no nursing help from the hospital staff.

Figure 5. The Perception of Not Having Enough Milk is the Second Most Common Nursing Problem Reported by WIC Mothers.



Breastfeeding Duration, Attitudes and Practices

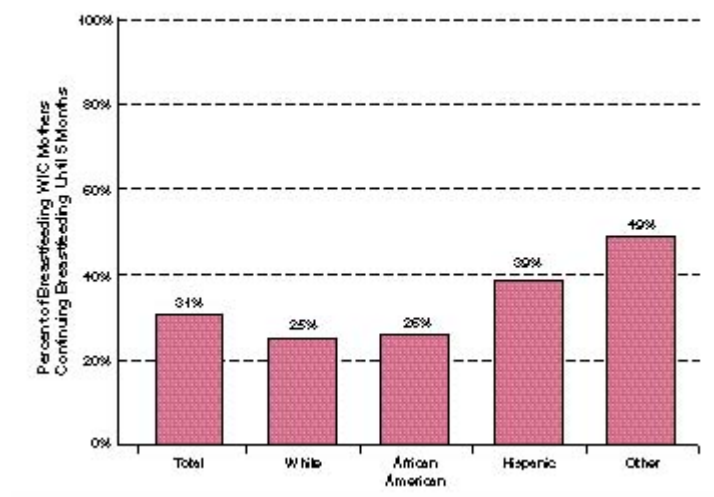


One-half of the breastfeeding WIC mothers stop breastfeeding by the end of the second month.

The breastfeeding duration goal in the Healthy People 2000 report is that at least 50 percent of infants are to be breastfed until 5-6 months of age. Thirty-one percent of WIC mothers who initiated breastfeeding, and only 16 percent of all WIC mothers continue breastfeeding until their infant is 5 months old.

By 13 days of age, one-quarter of the infants whose mothers initiated breastfeeding are weaned from the breast. One-half of the breastfeeding WIC mothers stop breastfeeding by the end of the second month (57 days). Among the WIC mothers who initiate breastfeeding, some subgroups breastfeed for longer durations than others. African American and white mothers are less likely than others to breastfeed until their infant is 5 months old (Figure 6).

Figure 6. Percent of Mothers Breastfeeding Until Their Infant is 5 Months Old Differs by Race and Ethnicity.



Mothers who are young and who have low levels of education are likely to stop breastfeeding earlier than other mothers. For example, one-half of breastfeeding mothers who are not yet 20 years old stop breastfeeding by 19 days after the birth. Mothers who were born outside the United States, and mothers who have more than a high school education stop breastfeeding later than other mothers. For example, one-half of the breastfeeding WIC mothers who were born abroad continue breastfeeding 96 days or longer after the birth of the infant.

Large proportions of WIC infants who are breastfed also receive formula. Furthermore, formula supplementation of breastfeeding WIC infants starts very early in life.

At any given month during the first year of life, only about one-half or fewer of breastfeeding WIC mothers breastfeed without supplementing with formula. At one month of age, only 13 percent of all WIC infants are breastfed without formula, another 20 percent are fed breastmilk and formula, and almost two-thirds are fed formula only.

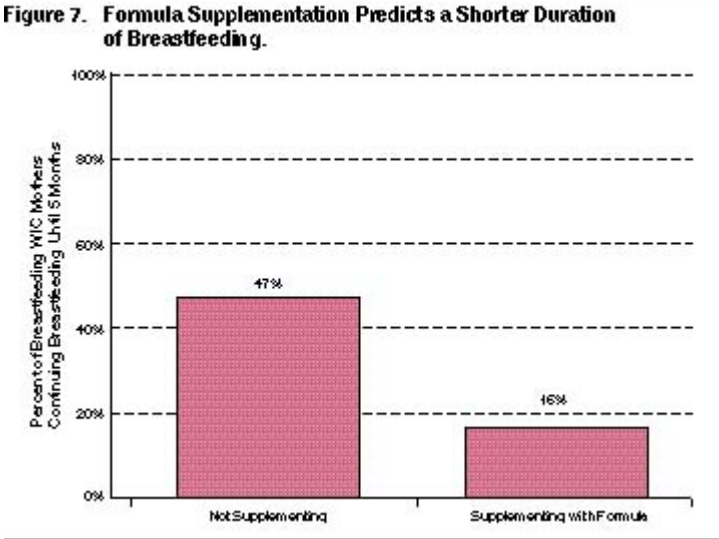
Formula supplementation starts very soon after birth. One-fourth of breastfeeding WIC infants are given formula during the first five days of life and one-half are given formula during the first 16 days of life.

Some subgroups of WIC mothers are more likely than other subgroups to supplement breastmilk with formula. For example, African American mothers and young mothers are more likely to supplement breastmilk with formula. One-half

of African American mothers who breastfeed supplement their breastmilk with formula by the time their infants are 12 days old. Breastfeeding mothers who have others care for their infants are more than twice as likely to give formula to their infants than the breast-feeding mothers who care for their infants themselves.

Breastfeeding WIC mothers who supplement with formula are almost 2.5 times more likely to stop breastfeeding than those who do not supplement with formula (Figure 7).

The difference in breastfeeding duration between the mothers who supplement with formula and those who do not supplement is large. WIC mothers who do not supplement breastmilk with formula are more likely to breastfeed their infants for longer durations than those who do supplement their breastmilk with formula. Almost one-half of the mothers who do not supplement breastmilk with formula are predicted to continue breastfeeding for 5 months, compared with only 16 percent of the mothers who supplement with formula (Figure 7).



Mothers who believe that breastfeeding is beneficial are less likely to supplement breastfeeding with formula and are also less likely to stop breastfeeding than the mothers who do not believe that breastfeeding is beneficial.

Breastfeeding mothers differ from non-breastfeeding mothers in their attitudes and beliefs about breastfeeding. Non-breastfeeding mothers are significantly less likely to express positive attitudes towards most issues concerning breastfeeding, and are generally more likely to say that they are “not sure” about various statements about consequences of breastfeeding. Attitudes and beliefs about breastfeeding also vary considerably by race and ethnicity. African American mothers report the most concern about barriers to breastfeeding, and Hispanic mothers report the most awareness of the benefits of breastfeeding.

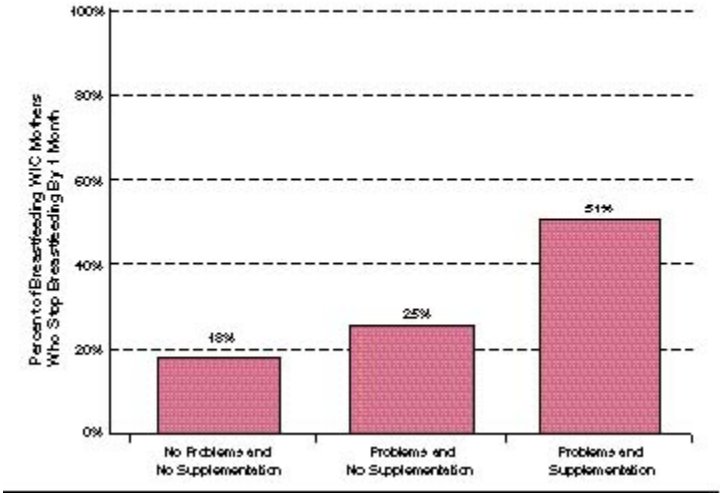
Attitudes and beliefs about breastfeeding are linked to breastfeeding practices and breastfeeding duration. Mothers who report more positive attitudes towards breastfeeding are less likely to supplement breastfeeding with formula and less likely to stop breastfeeding. In fact, the differences in breastfeeding duration of white, African American, and Hispanic mothers are almost entirely due to the reported differences in beliefs and attitudes towards breastfeeding.

Mothers who believe that they do not have sufficient milk, or that there is something wrong with their milk are more likely to supplement breastfeeding with formula and are more likely to stop breastfeeding than mothers who do not report such problems with their milk (Figure 8).

The percentages of breastfeeding mothers who report nursing problems decrease over time. In the first month, 34 percent of the mothers think that they do not have enough milk and 10 percent think that something is wrong with the milk. During the first month following the birth, thinking that one does not have enough breastmilk is the second most common nursing problem reported by the WIC mothers, following sore nipples.

Mothers who report that they have problems with their breastmilk constitute a group that is likely to stop breastfeeding. These mothers are over 60 percent more likely to supplement their breastmilk with formula, and about 50 percent more likely to stop breastfeeding than those who report no problems with their breastmilk. If the mothers who perceive problems with their breastmilk do start supplementing breastmilk with formula, the chances that they will stop breastfeeding is quadrupled as compared with the mothers who do not think that they have problems with their milk and who are not supplementing with formula.

Figure 8. Mothers Who Have Problems with Breastmilk and Supplement With Formula Are Very Likely to Stop Breastfeeding by One Month.



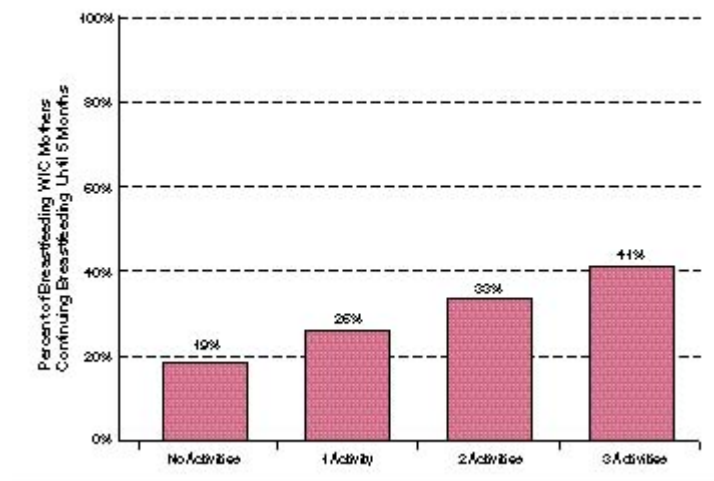
Mothers who report participating in WIC Program activities that support breastfeeding have longer durations of breastfeeding.

Thirty-eight percent of breastfeeding mothers knew about the special WIC breastfeeding food package for mothers who do not accept formula for their infants from WIC. Breastfeeding mothers who reported that they knew about the special WIC breastfeeding food package were 27 percent less likely to stop breastfeeding than comparable mothers who did not know about this food package.

The mothers were also asked whether they received information about breastfeeding from WIC and whether they received advice from WIC staff to breastfeed. Almost three-quarters of breastfeeding mothers said that they received information from WIC about breastfeeding and almost two-thirds said that they were told by WIC staff to breastfeed.

Among the three WIC Program activities that support breastfeeding (special food package, breastfeeding information, and breastfeeding advice), mothers who receive each additional program activity are further likely to breastfeed for a longer time (Figure 9). The mothers who receive all three WIC Program activities are the least likely to stop breastfeeding.

Figure 9. Mothers Who Receive Multiple Breastfeeding Support Activities From WIC Are More Likely to Continue Breastfeeding.



WIC mothers breastfeed less often than is recommended to ensure sufficient milk production.

Breastfeeding WIC infants are breastfed almost 7 times a day in Month 1. Mothers who breastfeed exclusively are advised to nurse about eight to twelve times a day in the first two weeks of life, in order to stimulate breastmilk production. Although the reported frequency of breastfeeds is not as high as advised, it is high enough to suggest that breastmilk is a major component of the diet for those WIC infants who continue to breastfeed.

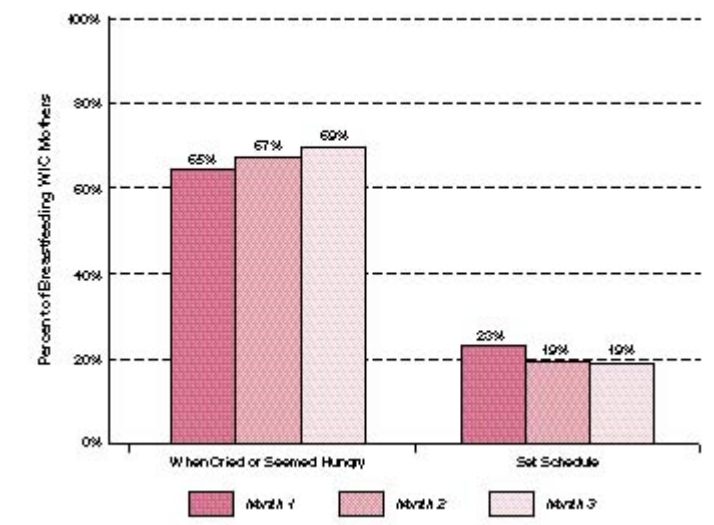
Formula supplementation is the strongest and most direct predictor of the frequency of breastfeeds. WIC mothers who supplement with formula breastfeed 1.3 less times per day. The role of formula supplementation in predicting the frequency of breastfeeds indicates that WIC mothers may be substituting breastfeeds with formula feeds (supplemental formula use) rather than providing formula in addition to the breastmilk at each feeding (complementary formula use).

Women who receive advice from their physicians to breastfeed, breastfeed more often.

Breastfeeding WIC mothers who received advice from their physicians to breastfeed do so 1.7 more time per day, on average, than otherwise comparable mothers who did not receive such advice. Physicians' advice, therefore, is not only associated with initiating breastfeeding but also associated with more frequent breastfeeds.

Most WIC infants are breastfed when they appear hungry, rather than on a fixed schedule (Figure 10).

Figure 10. Most Breastfeeding WIC Mothers Feed Their Infants When They Cry or Seem Hungry.

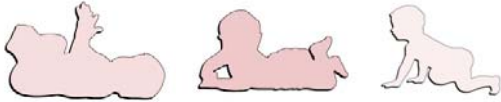


At one month of age, almost two-thirds of the WIC infants are breastfed when they cry or appear hungry, as advised by the FNS. Less than one-quarter of the infants are breastfed on a set schedule and the remaining infants are fed sometimes on a set schedule and sometimes when they cry or appear hungry.

One-third of breastfeeding mothers express milk during the first two months.

Many of the breastfeeding WIC mothers report that they express milk from their breasts (one-third in the first and second month and one-fourth in the third month). Most mothers who express breastmilk do so using a manual breast pump. Less than one-quarter (21%) of the mothers who were using manual or electric breast pumps in Month 3 reported receiving their breast pumps from WIC.

Formula Feeding Practices



More than 90 percent of formula-fed WIC infants receive iron-fortified formula.

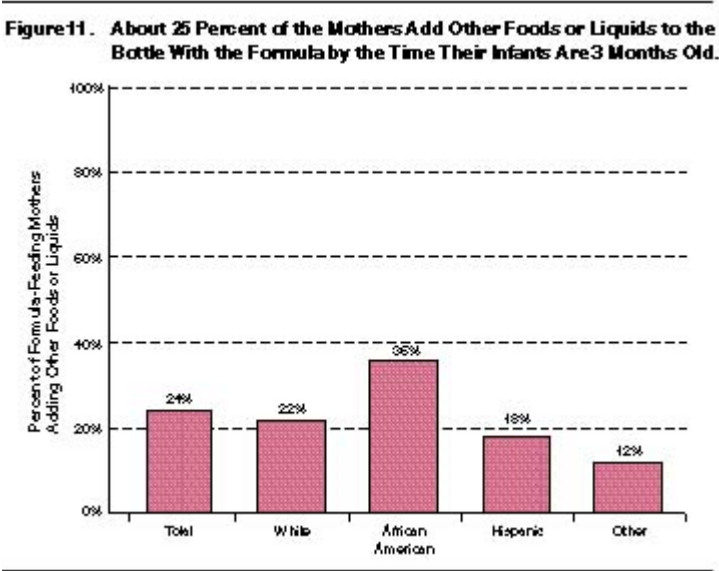
Most WIC infants who receive formula are given iron-fortified formula. Among the formula-fed infants, the percentage who receive iron-fortified formula increases from 91 percent at about one month of age to about 95 percent at six months of age. Furthermore, at Month 1 all formula-fed WIC infants, whose mothers received advice on how to feed formula from a doctor, nurse or other health care practitioner other than WIC staff, were given iron-fortified formula as opposed to 90 percent of infants whose mothers obtained information about how to feed formula from lay sources or from formula labels.

Less than ten percent of WIC mothers report that they mix formula with extra water to make it last longer.

A small percentage (8%) of WIC mothers report overdiluting the formula. However, mothers whose infants have a higher birthweight are more likely to report that they overdilute formula.

About 25 percent of WIC mothers add other foods or liquids into the bottle with the formula by the time their infants are three months old (Figure 11).

The percentage of WIC mothers who add other foods or liquids into the bottle with the formula increases from 11 percent in Month 1 to 24 percent in Month 3. Some groups of mothers are especially likely to add other foods or liquids into the bottle. African American mothers are more likely than mothers from other racial or ethnic groups to add other foods or liquids into the bottle. Similarly, mothers younger than 20 years old are more likely than older mothers to add other foods or liquids into the bottle. More than one in three African American WIC mothers (36%) and about one in five white (22%) or Hispanic (18%) mothers add other foods or liquids into the bottle with the formula at Month 3. Receiving advice from WIC staff or from health care providers other than WIC staff about how to feed or prepare formula is not associated with a lower likelihood of adding other foods or liquids into the bottle.



Supplemental Food Initiation and Feeding Practices

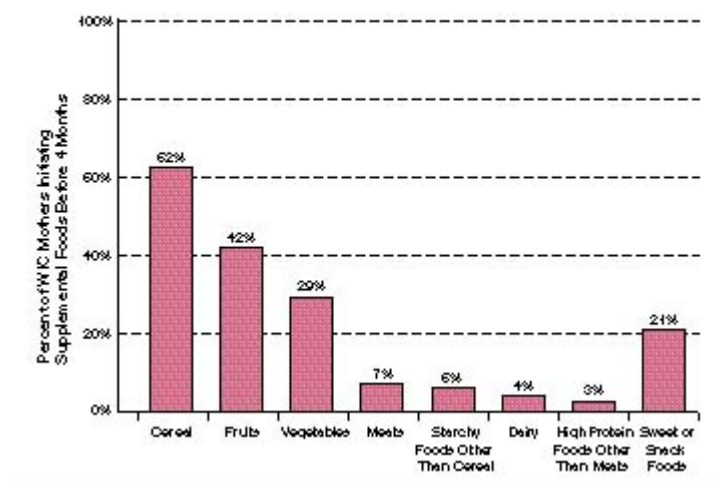


Large proportions of WIC infants are given cereal, fruits, and vegetables before they become four months old (Figure 12).

WIC infants receive supplemental foods much earlier than the recommended age of 4-6 months. More than 60 percent of WIC infants are given cereal before they reach four months of age, 42 percent of WIC infants are given fruits, and 29 percent of WIC infants are given vegetables before that age. Few infants, however, are given meats, starchy foods other than cereal, dairy foods, or high protein foods other than meats before they are 4 months old. The early introduction of sweet or snack foods may be a more significant problem with 21 percent of WIC infants receiving sweet or snack foods (most likely honey or jam) before they are 4 months old.

There are substantial race and ethnicity differences in the age of initiation of supplemental foods. Hispanic WIC mothers postpone giving cereal to their infants but start giving high protein foods other than meats (e.g. beans and legumes) somewhat earlier than other mothers. White mothers start giving cereals to their infants earlier than any other race or ethnic group, followed by African American mothers.

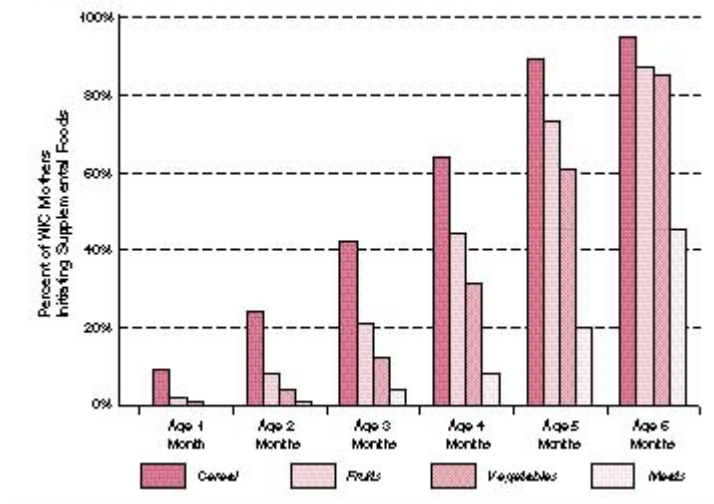
Figure 12. Many WIC Infants Are Given Supplemental Foods Before They Are 4 Months Old.



Cereal is often the first supplemental food introduced to the diets of WIC infants (Figure 13).

For over four-fifths of WIC infants (83%), cereal is the first supplemental food. Fruits and vegetables are introduced second, followed by meats. Fruits and vegetables are often introduced at about the same time. Meat is often introduced as the third or fourth group of supplemental food. Only 3 percent of the mothers introduce meat into the infant's diet as the first supplemental food. Mother's race and ethnicity is significantly associated with the order in which different supplemental food groups are introduced into WIC infants' diets. For example, cereal is the first supplemental food to be initiated for 90 percent of white and 94 percent of African American infants, although it is the first supplemental food for only 65 percent of Hispanic infants. Fifty percent of Hispanic mothers introduce fruits into their infant's diet either as the first supplemental food or about at the same time as they introduce cereal. In contrast, very few African American mothers (16%) introduce fruits as the first supplemental food. The introduction of meat follows fruits and vegetables among the mothers of all racial and ethnic groups.

Figure 13. WIC Mothers Initiate Feeding Cereal First.



WIC infants who are cared for by someone other than their mothers are more likely than infants who are cared for by their mothers to receive cereals and fruits inappropriately early (Figure 14).

WIC infants who have someone other than their mothers care for them are about 50 percent more likely to receive cereal and 30 percent more likely to receive fruits before they reach 4 months of age. As indicated above, infants receiving care from someone other than their mother are also more likely to have fewer breastfeeds every day, and more likely to have breastfeeds supplemented with formula at very young ages. These findings, taken together, indicate a pattern of nutrition during infancy that is outside of the recommended guidelines.

Figure 14. WIC Infants Who Receive Child Care Are More Likely to be Given Cereal and Fruits.

