FACTORS INFLUENCING VIRGINIA WIC PROGRAM PARTICIPANTS IN THEIR DECISION NOT TO BREASTFEED

by

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(ABSTRACT)

This study was conducted to investigate why women participating in the WIC Program chose bottlefeeding rather than breastfeeding. Additionally, this investigator sought to determine the extent of prenatal education provided on the topic of breastfeeding within the health department population versus private care patients.

An anonymous survey was administered by WIC nutritionists in the state of Virginia to mothers of newborns who were bottlefeeding. A total of 152 women completed questionnaires which were analyzed. Data were subjected to Chi-square analysis to determine association between demographic variables and specific reasons identified for not choosing to breastfeed. Source and type of prenatal education on the topic of breastfeeding was also examined.

The majority of the respondents were black women under

age 25 with no more than a high school education. Many of the women were not married and most received prenatal medical care at their local health departments.

Results indicated that women attending health department clinics received more prenatal education on the topic of breastfeeding than did those attending private physicians. The main reasons cited for not choosing to breastfeed were related to the perceived inconvenience of breastfeeding. This was especially true for those who had less than a high school education.

Younger women appeared to be more concerned that breast size would affect their ability to successfully breastfeed. These same women were also concerned with being able to return to school. White women were more concerned about returning to work than were blacks. Marital status, or living arrangements seemed to be related to fear of embarassment; married women were less concerned about this than the other groups.

It is the hope of this researcher that the information gathered in this study can assist in developing education and intervention programs which may help to increase the incidence of breastfeeding among the WIC Program population.

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CHAPTER I

INTRODUCTION

While the benefits of breastfeeding are widely known and accepted, the incidence of breastfeeding in this country, as elsewhere, has experienced dramatic fluctuations. Originally at high levels, the rate of breastfeeding began a decline in the 1940's which lasted three decades. Since the mid-1970's breastfeeding has experienced a resurgence, primarily among middle class, educated women. All aspects of breastfeeding have been the target of research and promotional efforts in recent years.

The Special Supplemental Food Program for Women, Infants and Children (WIC) is a federally funded food and nutrition education program. A major goal of the WIC Program is to provide assistance and information which will enable families to provide a nutritious lifestyle for infants and children. Towards this end, all WIC Nutrition Educators are required, by program regulations, to discuss the advantages of breastfeeding with every prenatal participant. Lactating women on the WIC Program also receive supplemental foods, in a greater quantity and for a longer duration than do non-nursing mothers. Still, the

incidence of breastfeeding among WIC participants falls far below that of the general population.

The present study was designed to examine reasons for choosing not to breastfeed among the WIC population in the state of Virginia.

OBJECTIVES

This study had three objectives:

1. To identify barriers to breastfeeding and to ascertain whether there is a correlation between demographic variables and specific reasons given for not breastfeeding.

2. To determine how many prenatal WIC Program participants are receiving information on breastfeeding from health care providers (private care vs. health department).

3. To compile information which can be used in the future promotion of breastfeeding by identifying target areas for educational intervention.

HYPOTHESES

The following hypotheses were explored by this investigator:

1. Most women who decide against breastfeeding as their method of infant feeding do so for unfounded or irrational reasons.

2. Pregnant women who attend health department clinics are more likely to receive educational information regarding breastfeeding than those women who receive care from a private physician.

DEFINITION OF TERMS

Women, Infant and Children (WIC) Program -

The WIC Program is a special supplemental food and nutrition program funded by the United States Department of Agriculture and administered by state health departments. In addition to foods, WIC provides nutrition education to pregnant, post partum and lactating women and the caregivers of infants and children through age four.

Breastfeeding (Breast feeding, Breast-feeding) -

For the purpose of this research a breastfeeding woman is defined as any woman who attempted to initiate breastfeeding with at least one feed. This definition was decided upon because the focus of this research is why women make their initial feeding method choice, not necessarily with the duration of breastfeeding.

Early termination of breastfeeding -

A breastfeeding relationship which ended within three months or twelve weeks after birth.

Undereducated -

Less than a high school education or its equivalent (GED).

DELIMITATIONS OF THE STUDY

1. This study attempts only to look at incidence of breastfeeding initiation. Although duration is discussed in several places it is not the focus of this research.

2. The survey was designed to identify those conscious influences, or those perceived as conscious influences by the respondents. This is because future education must be designed to meet those perceived needs of the public, as well as those perceived by the professionals.

CHAPTER II

REVIEW OF THE LITERATURE

WIC PROGRAM HISTORICAL OVERVIEW

The Special Supplemental Food Program for Women, Infants and Children (WIC) was created by Congress in 1972 under the Public Law 92-433 amendment to the Child Nutrition Act of 1966. The program attempts to provide nourishment to participants by prescribing food "packages" tailored to meet the individual's need. The "packages" consist of combinations of these basic WIC foods: milk, cheese, eggs, juice, cereal, peanut butter, beans and iron fortified infant formula.

The WIC Program is unique in that nutrition education is mandated for all participants and/or caretakers of participants. This nutrition education is performed by trained nutrition educators and may take place in groups or on an individual basis.

The $20,000,000 authorized for the first fiscal year (FY 1973) was greatly under utilized. However, in 1976 the program began to experience a rapid growth in participation and spending. The 1980 budget for the nation's WIC Program was $750,000,000 with spending during the first half of this decade leveling off at over $900,000,000 per fiscal year.

Virginia began statewide WIC operations October 1, 1978 by incorporating already existing local programs and expanding service to new areas. For FY 1986 the Virginia WIC Program had an average caseload of 63,760 participants and was available in over 150 clinic sites across the state (Virginia Dept. of Health, 1986).

The WIC Program is administered by the United States Department of Agriculture's Food and Nutrition Service. In Virginia the program is operated through the Bureau of Nutrition within the Virginia Department of Health. WIC services are available at the local level through the health department; however, participants may seek health care at the medical provider of their choice.

DEVELOPMENT OF THE BREASTS

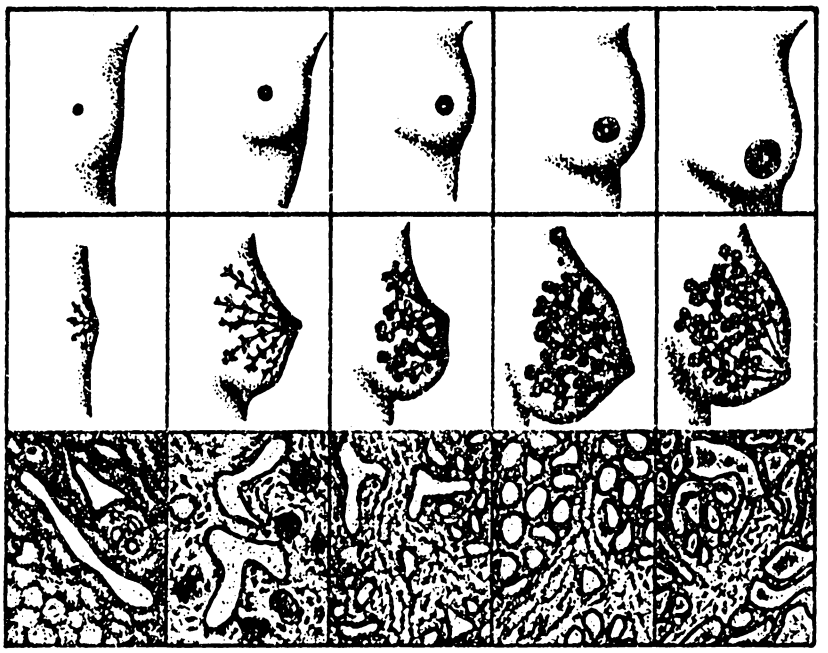
The female body begins preparing for lactation during puberty; this is a natural physiologic part of the human reproductive cycle (Figure 1). There are three major stages of activity in the completion of this process (Public Health Service, 1984):

1) Mammogenesis - mammary growth, which begins embryonically and culminates during pregnancy.

2) Lactogenesis - the initiation of milk secretion, which begins in pregnancy and increases at delivery.

FIGURE 1

DEVELOPMENT OF THE FEMALE BREAST



Source: Public Health Service, 1984.

3) Galactopoesis - maintenance of established lactation, which begins a few days postpartum and continues as long as there is stimulus.

Thus, most women are physically prepared to breastfeed. Unfortunately, many of these same women are not as well prepared psychologically and educationally for this experience to be successful.

BRIEF OVERVIEW OF THE PHYSIOLOGY OF LACTATION

The delivery of the placenta during childbirth results in a sharp drop in the levels of estrogen and progesterone (Worthington-Roberts, Vermeersch, Williams, 1981). Concurrently the production of prolactin in the anterior pituitary rises. These changes in hormone levels signal the alveoli to begin producing and secreting milk. During the first few days after birth, colostrum is secreted during nursing. Colostrum is a thick yellowish fluid containing water, fat and a combination of nutrients designed to meet the needs of the newborn (Lauwers & Woessner, 1983). Mature milk will usually come in from two to five days after birth. The time for establishing lactation may depend upon the parity of the mother, taking longer in primiparas (Worthington-Roberts, et. al., 1981). Maintenance of lactation depends on the stimulation provided by the infant's suckling (Eiger & Olds, 1981) and the resultant

release of prolactin (Figure 2). The prolactin triggers milk production within the alveolar cells. Suckling also causes the pituitary (posterior) to release the hormone oxytocin. This hormone causes the mioepithelial cells of the alveoli and duct walls to contract activating milk ejection. This ejection, generally termed the letdown reflex, makes the milk available to the nursing infant (Figure 3). In order for the nursing relationship to continue and be successful it takes on a cyclical pattern involving the mother and infant.

BENEFITS OF BREASTFEEDING

Though there have been, and continue to be, improvements in the formulation of artificial feedings, the American Academy of Pediatrics (1980) continues to support breastmilk as superior to infant formula. A comparison of the composition of human milk and cow's milk can be seen in Table 1.

It is rarely disputed that human milk is the preferred feeding for infants and that it is well adapted to the particular needs of human offspring (American Academy of Pediatrics, 1978). However, these benefits often elude the mothers or parents making this decision on infant feeding. The benefits of breastfeeding will now be reviewed.

FIGURE 2

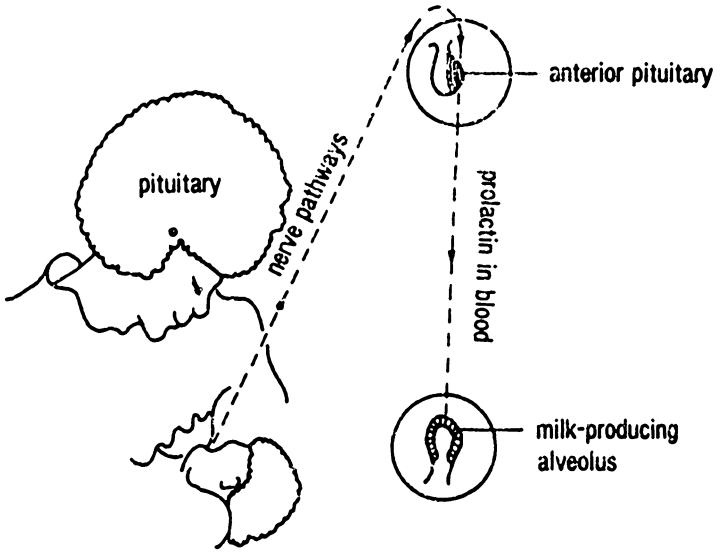
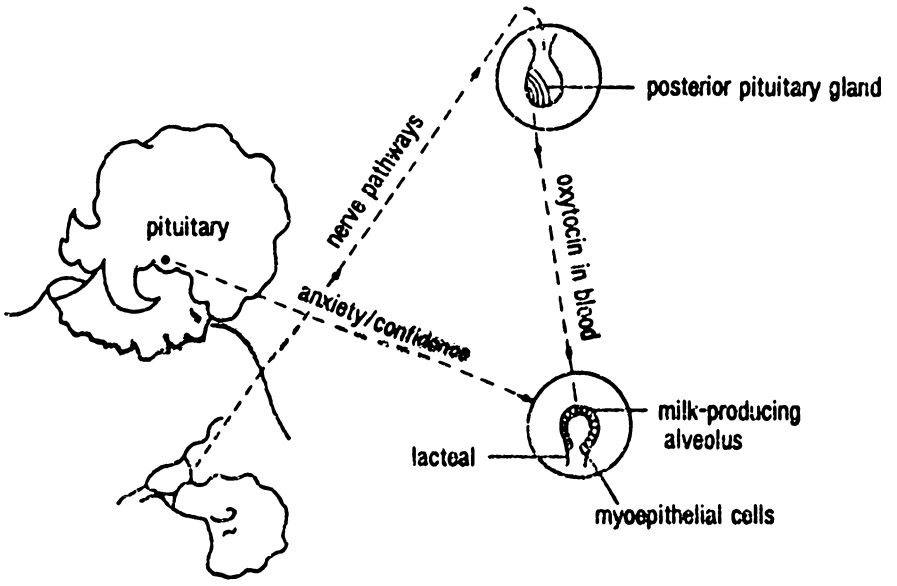


FIGURE 3



Source: Jelliffe and Jelliffe, 1978.

Table 1

Composition of Milk

Component	Human Milk	Cow's Milk
Water (ml/100ml)	87.1	87.2
Energy (Cal/100ml)	60.75	66
Total solids (g/100ml)	12.9	12.8
Protein (%)	0.8-0.9	3.5
Fat (%)	3-5	3.7
Lactose (%)	6.9-7.2	4.9
Ash (minerals)(%)	0.2	0.7
Protein (% of total protein)		
Casein	40	82
Whey	60	18
Ash, major components per liter		
Calcium (mg)	340	1170
Phosphorus (mg)	140	920
Sodium (mEq)	7	22
Vitamins per liter		
Vitamin A (IU)	1898	1025
Thiamin (ug)	160	440
Riboflavin (ug)	360	1750
Niacin (ug)	1470	940
Vitamin C (mg)	43	11

Source: Lauwers, et. al., 1983.

NUTRITIONAL

Fat provides the main source of calories in human milk. The actual amount of fat received by the nursing infant depends on the mother's diet and the length of time spent suckling (Jelliffe and Jelliffe, 1978). The fat content of breastmilk increases during a feeding after a sufficient amount of suckling. Lipids in human milk are better absorbed due to the high oleic acid content and the position of the palmitate residue on the glycol molecule. The high cholesterol content of human milk appears to be necessary for myelinization of nerve tissues and for synthesis of hormones and bile salts (American Academy of Pediatrics, 1978). Early exposure to high levels of cholesterol may help to develop internal controls for better cholesterol metabolism in later life (Reiser and Sidelman, 1972).

The carbohydrate content of human milk is composed mostly of lactose (Jelliffe and Jelliffe, 1978). Lactose performs three functions which are beneficial to the infant; it enhances calcium absorption, preventing rickets; it helps supply energy and it helps to inhibit growth of bacteria in the infant's intestinal tract (USDA, 1984).

The proteins in breast milk are ideally suited to the growth of human infants and are utilized with extreme efficiency (Canadian Academy of Paediatrics and American Academy of Pediatrics, 1978). The low total protein content

of breast milk results in a lower nitrogen load more suitable to the infant's immature liver and kidneys (USDA, 1984). The high lactalbumin/low casein ratio provides an easily digestible, low curd tension. The concentration and types of protein result in fewer allergies (Canadian Academy of Paediatrics, 1978).

The low iron content of human milk does not interfere with the bacteriostatic properties of lactoferrin and transferrin. The absorption of iron from breastmilk is high (about 50%) and may be the result of the low concentrations of protein and phosphorus and the high contents of lactose and vitamin C (Canadian Academy of Paediatrics, 1978).

IMMUNOLOGICAL

Evidence suggests that breastmilk and colostrum may help in preventing many illnesses including: gastroenteritis, meningitis, Gram-negative sepsis, chronic otitis media, necrotizing entercolitis, respiratory infections and allergic reactions such as eczema, rhinitis and asthma (American Academy of Pediatrics, 1978). Immunities may be passed via the breastmilk while maturation of the infant's own immune system is taking place. Evidence suggests that allergic manifestaions may be delayed or averted if breastmilk alone is consumed in the first few months of life (Jelliffe and Jelliffe, 1978). Breastmilk

contains a variety of immunoglobulins including IgA which may protect from allergic reactions by conferring passive mucosal protection of the gut wall against the penetration of microorganisms (Hanson and Winberg, 1972). Lactoferrin binds the iron in the breastmilk making it unavailable for growth of Staphylococci, Escherichia coli and yeast. The bifidus factor, a microorganism that converts lactose to acetic and lactic acids, is present in high concentrations in both colostrum and mature milk. The low pH promotes an intestinal flora of bifidobacteria which protects against the growth of Shigella, Escherichia coli and yeast (Canadian Academy of Paediatrics, 1978). Breastmilk also contains other protective components such as bacterial lysozymes, lymphocytes, motile macrophages, complement fractions C3 and C4 and a thermostable antistaphylococcol factor (Canadian Academy of Paediatrics, 1978).

CONVENIENCE

Breastfeeding can be a convenient method of infant feeding. It requires no buying or preparation of formula. Breastmilk is always available and does not require special storage to prevent contamination. The exception to this is the mother who must express or pump her milk while away from her baby, such as a working mother.

ECONOMICAL

Breastfeeding is more economical than bottle feeding. Generally, the additional calories needed for the mother's diet cost less than infant formula. Unless necessary for expressed milk there is no need to purchase bottles, nipples and sterilization equipment.

LESS OVERFEEDING BY THE INFANT

The fat and protein content of human milk increases towards the end of a feeding. These biochemical changes in the breastmilk may serve as a satiety signal for the infant to stop suckling (Hall, 1975). Breastfeeding mothers tend to delay the introduction of solid foods longer than bottlefeeding mothers (Grand, Sutphen, Dietz, 1987), resulting in less overfeeding.

MATERNAL HEALTH

Uterine involution is more rapid in the lactating woman due to the suckling resulting in the release of oxytocin which stimulates uterine contractions. The use of stored fat as an energy source during lactation may lead to a more rapid maternal weight loss and return to pre-pregnancy weight (Worthington-Roberts, et. al., 1981).

TRENDS IN BREASTFEEDING INCIDENCE

HISTORICAL DECLINE IN BREASTFEEDING

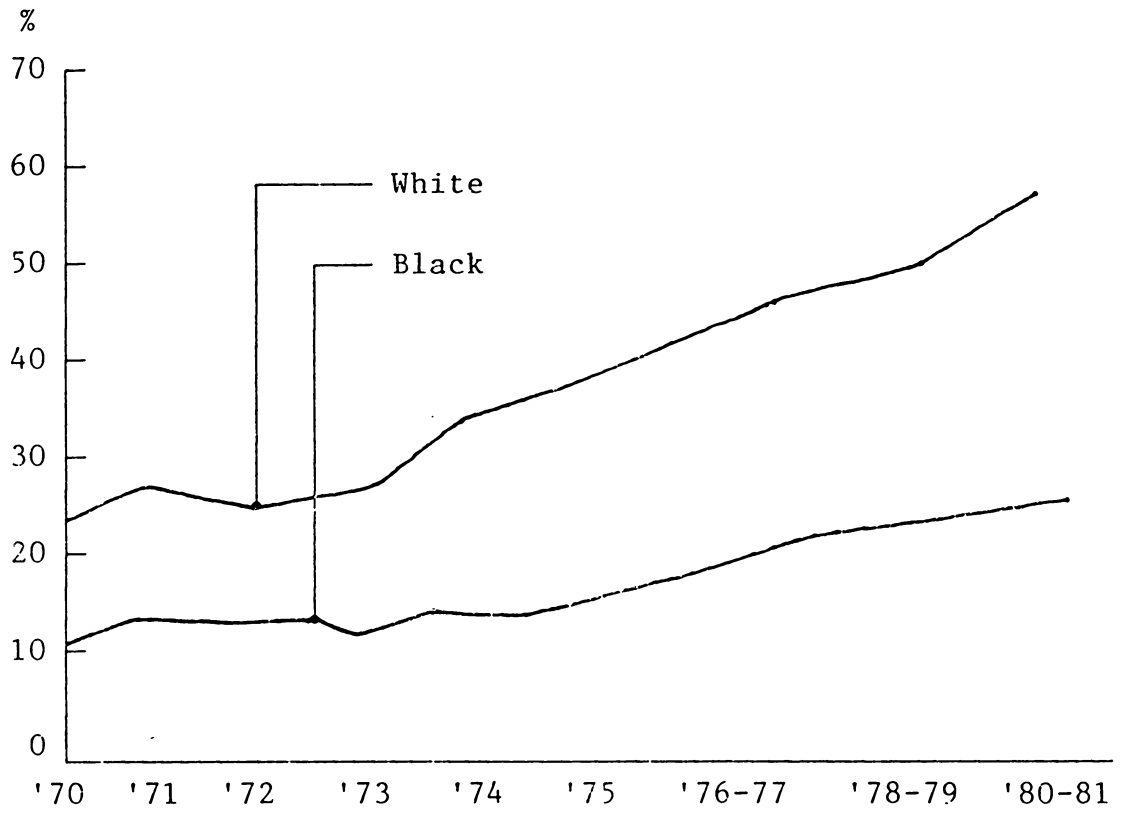
Historically, it was a given that any child born would receive nourishment in early life in the form of breastmilk (American Academy of Pediatrics, 1976). Concern about a decline of breastfeeding in the United States began over 60 years ago (Sedgwick, 1920). Until this time the closest one came to "artificial" feeding was a wet nurse. When bottle feeding was first introduced it was intended to replace the wet nurse when the mother was unable to breastfeed (Canadian Academy of Paediatrics, 1978). As the Western world underwent a social transformation, bottlefeeding gradually replaced the breast as the preferred feeding method. Breastfeeding became incompatible with modern lifestyles including the increase in women in the work force. Sources of education and support related to breastfeeding declined. Women had fewer relatives and friends with breastfeeding experience and even the medical professionals gave little or no encouragement to breastfeeding (American Academy of Pediatrics, 1978). Formula feeding became accepted as the safe, convenient and modern feeding method. This trend toward bottle feeding started with the upper socioeconomic classes and trickled down through society so that by 1973 only 29% of married women were even initiating a

breastfeeding relationship and only 7% of these continued to breastfeed for three months or more (National Center for Health Statistics, 1979). Though data reflecting the breastfeeding statistics over the last several decades are conflicting, due to various methodologies and shortcomings, they are consistent in one important fact - breastfeeding declined sharply from 1940 until the 1970's (Bain, 1978; Meyer, 1958; Meyer, 1968; Dewey, 1973; Hendershot, 1984; Martinez, et. al., 1981; Martinez, et. al., 1979; Fetterly and Graubard, 1985). The trend since then has been an increase in breastfeeding incidence (Fetterly and Graubard, 1985; Martinez, et. al., 1984; Hendershot, 1984). This non linear trend is shown in Figure 4 and the data given will be supported by the ensuing research from the current literature.

In 1948 the first comprehensive survey on the incidence of breastfeeding in this country was carried out (Bain, 1948). As part of the American Academy of Pediatrics Study of Child Health Services 2,513 hospitals across the U.S. reported feeding information on 39,171 infants at discharge from the hospital. The incidence of breastfeeding was highest in the southeast and southwest and lowest in the northeast. Overall results showed that upon leaving the hospital nursery, 38% of infants were being breastfed. Though Bain (1948) did not address the issue of

FIGURE 4

BREASTFEEDING TRENDS



Sources: Public Health Service, 1984.

breastfeeding trends, the data recorded on incidence has served as a basis for later research.

Meyer (1958, 1968) used the data from the previous study (Bain, 1948) as a baseline in establishing the trend in breastfeeding for two decades. The earlier study (1958) consisted of a questionnaire sent to 2,981 hospitals across the country requesting information on feeding method at the time of discharge from the hospital. The responses furnished information on feeding methods for over two and a quarter million infants. When compared to Bain's (1948) statistics, it was concluded that the incidence of breastfeeding at hospital discharge decreased in all geographic regions of the country. The percent of increase in artificial feeding was as high as 60% (Mississippi). The average incidence of breastfeeding at discharge had dropped to 22%.

A decade later Meyer (1966) conducted a follow up survey and compared the results to the earlier studies (Bain, 1948; Meyer, 1958). A total of 2,951 hospitals returned completed questionnaires with information on the feeding method of 2,715,222 infants. By this time only 18% of infants left the hospital nursing. Several states did show an increase over the 1958 data; but, all states reported less incidence of breastfeeding than that reported by Bain (1948) two decades earlier.

Data from the National Survey of Family Growth were analyzed by Hirschman and Hendershot (1979). Information for this survey was gathered via personal interviews with "ever" married women age 15 to 44 years. Results show that, for 1950 and earlier, 59.9% of women breastfed their first child. This was followed by a steady decline so that for the period of 1966-70 it was down to 27.9%. The last reference period of this survey (1971-1973) showed a small increase to 28.7%. Though this rise is not statistically significant, the authors suggest that this may represent a possible reversal of the decline in breastfeeding during the previous quarter century (Hirschman and Hendershot, 1979).

CHANGING TRENDS TOWARDS INCREASED BREASTFEEDING

The largest body of research undertaken on the trends in breastfeeding has been conducted by Gilbert Martinez (1979, 1981, 1981, 1983, 1985) and sponsored by Ross Laboratories, Columbus, Ohio (a manufacturer of infant formula). This retrospective research covers 1955 to the 1980's and follows the decline as well as the resurgence in the incidence of breastfeeding.

According to Martinez and Nalezienski (1979) the incidence of breastfeeding reached its lowest point in 1971 after years of progressive decline. Martinez (1979) utilized mailed questionnaires to annually gather

information on infant feeding methods. For the years 1971 to 1978 a total of 107,432 usable responses were analyzed. Results of the eight year period showed an increase in breastfeeding in the hospital from 24.7% to 46.6%. The average annual rate of gain for those years was 9.5%. This study also revealed an increase in the duration of breastfeeding up to age 6 months, the age at which the study ceased.

Subsequent research done by Martinez and co-workers (1981, 1981, 1985) also utilized mailed questionnaires to obtain infant feeding information. The results of the latest questionnaire (Martinez, 1984) confirmed the increasing incidence in breastfeeding. The 1984 figures show 61% breastfeeding in the hospital, a 14.4% rise over the 1978 figures. However, a review of the data suggest the trend is slowing down. There was a small drop (.6%) from 1982 to 1983 before increasing slightly in 1984.

According to the National Natality Survey of post partum women (Fetterly and Graubard, 1985) there was a significant increase in breastfeeding from 1969 to 1980. Breastfeeding among married women increased from 19% to 51% for whites and from 9% to 25% for blacks.

An examination of data from Cycle II of the National Survey of Family Growth by Hendershot (1980) confirmed that the downward trend in breastfeeding had begun a reversal.

For the years 1973-1975 there were increases in the initiation of breastfeeding for both whites (27.1% to 37.8%) and blacks (12.3% to 16.8%). Increases were also found in breastfeeding incidence at all educational levels, though mothers with a post high school eucation were more than twice as likely to breastfeed their infants (Figure 5).

The data from the National Survey of Family and the National Fertility Survey were further analyzed by Hirschman and Butler (1981). Once again these researchers conclude the incidence of breastfeeding appears to have reversed and is on the incline.

The incidence of breastfeeding in a health maintenance organization population was examined by Samuels, Margen and Schoen (1985). Data were collected from the records of 632 women delivering in Oakland, California in 1980. The results showed a breastfeeding rate of 66% at hospital discharge. These figures are comparable to the findings of Martinez, et. al. (1984) for the same region and time frame.

The Ross Laboratories' National Mothers' Survey headed by Martinez (1984) and Martinez and Stahle (1982) attempted to explore the incidence of breastfeeding among the WIC population. Beginning with 1977, 33.6% of WIC infants were breastfed (including supplement) in the hospital. By 1982 that number had risen to 45.3% with a dip to 43.9% the following year. Similar increases were found at age 2

months but at lower percentages (22.5% to 29.4%).

Martinez (1984) also found that the incidence of breastfeeding among WIC Program participants, as compared to non-WIC women, was less in every age group, race and in all regions of the country. WIC participants were found to be less likely to breastfeed regardless of source of medical care or employment status. An example of this great disparity was evidenced in the East South Central region of the country where 28.0% of WIC participants and 57.1% of non-WIC women breastfed in the hospital.

Martinez and Stahle (1982) concluded that more WIC mothers are choosing to breastfeed their infants. They also suggest that the lower incidence of breastfeeding among women on the WIC Program may be related to the demographic factors consistent with this population.

The Breastfeeding Task Force for the state of Virginia (1987) attempted to determine the incidence of breastfeeding within the state during recent times. A review of metabolic screening laboratory slips for the month of January, 1987 provided the information which served as baseline data. These laboratory slips usually indcate feeding method. Of the 9,253 slips with feeding method indicated 72.2% were white, 21.3% were black and the remainder was "other" or race was not indicated. A total of 50.6% of the infants were exclusively breastfed. Just over 58% of the white

infants and 16% of the black infants were breastfed during January 1987 in Virginia hospitals.

A look at Virginia WIC Program statistics for 1985-1987 show virtually static numbers; from 18.83% in 1985 to 18.53% in 1987. These numbers are based only on the number of women who are certified for the program as post partum participants. Not all women who participate during pregnancy continue after the baby's birth.

REASONS FOR RENEWED INTEREST IN BREASTFEEDING

Although research on the topic of breastfeeding is not new, a review of the literature will demonstrate the increasing prevalence of research and interest on this topic in the last decade.

The decline in breastfeeding appears to be of universal concern. Research on this phenomenon has taken place in such diverse populations as Mexico (Dewey, 1983), South Africa (Furman, 1979), Canada (Ellis and Hewatt, 1984), Ireland (O'Herlihy, 1978), Israel (Pascoe and Berger, 1985) and Finland (Stahlberg, 1985), as well as the United States. Interest in this country has been spurred by several events.

In May 1974 the World Health Organization (Academy of Pediatrics, 1978) adopted a resolution which urged all member countries to take "vigorus action" to promote breastfeeding.

A year later, in 1975, an International Pediatric Association seminar on nutrition placed special emphasis on the promotion of breastfeeding (International Pediatric Association, 1976). The areas of need addressed included: education of the medical profession, the general public and school students; curtailing pomotion of artificial feeding; reorganizing health services to maintain breastfeeding; providing facilities for working mothers who breastfeed; an agreed policy on weaning; contraception and breastfeeding and continued research on fundamental aspects of breastfeeding (International Pediatric Association, 1976).

In June 1984, Surgeon General C. Everett Koop held a workshop on breastfeeding during which he challenged health professionals to "identify and reduce barriers which keep women from beginning or continuing to breastfeed their infants" (Public Health Service, 1984). Further, he challenged Americans with a Health Promotion/Disease Prevention Objective that by the year 1990, the proportion of women who breastfeed their babies should be increased to 75% at hospital discharge and 35% at 6 months of age (Public Health Service, 1984).

CHARACTERISTICS OF INDIVIDUALS MOST LIKELY TO BREASTFEED

The American woman most likely to breastfeed is white, middle to upper middle class and married. She is probably

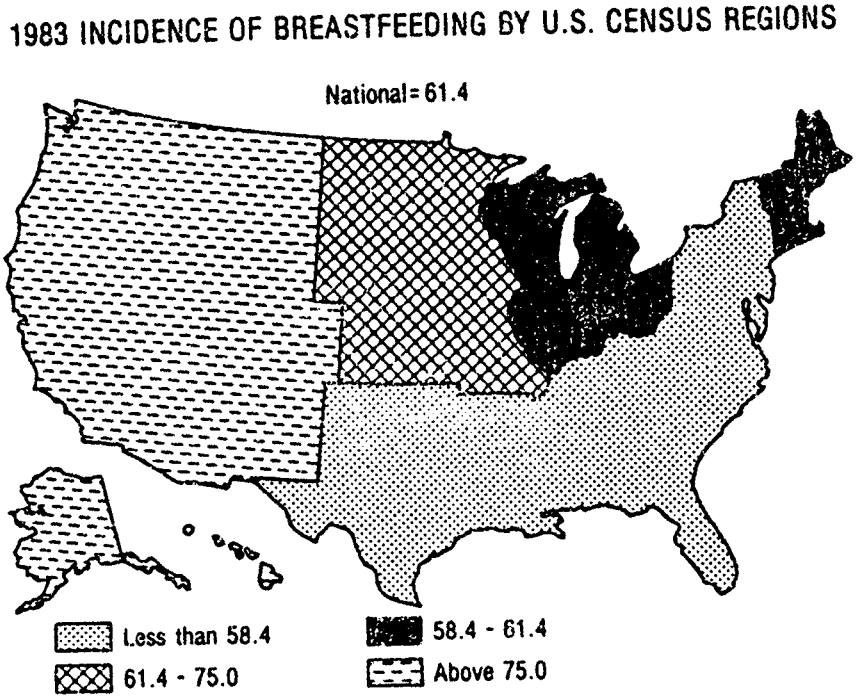
in her mid-20's to mid-30's with at least some post high school education (Samuels, et. al., 1985; Rassin, Richardson, Baranowski, Nader, Guenther, Bee, Brown (1984); Axelson, Kuriny, Sahlrvot, Forman, 1985; Ekwo, Dusdieker, Booth, 1984; LeFevre, Hruse, Zweig, 1987; Martinez, et. al., 1979, 1981, 1981, 1983, 1985). Women who breastfeed in the United States are primarily from the Western half of the country (Samuels, et. al., 1985; Martinez, et. al., 1984) as shown in Figure 5.

Martinez, et. al. (1981a) mailed questionnaires to a sample of mothers whose infants were representative of the national distribution of infants up to age 6 months. Data were collected regarding infant feeding methods and demographics. Of the 26,589 responses the results showed the highest incidence of nursing ocurred among those with some college education and higher family incomes. In the Pacific and Mountain regions of the country 65.7% and 71.1% of the women chose breastfeeding, whereas only 41.2% of the women in the East South Central region and 44.9% in the Middle Atlantic States nursed their infants.

Subsequent followup by Martinez, et. al. (1981b) produced similar results for all demographics and the 1984 data showed an increasing prevelance in nursing up to age 34 (Martinez, et. al., 1985).

Ekwo, et. al. (1984) used a Likert-type questionnaire

FIGURE 5



Source: Ross Laboratories National Mothers Survey, 1984.

to determine the profile of the typical breastfeeder using 81 primigravidas as subjects. The findings, using multiple regression analysis, again, show that women of middle income with a mean age of 27 years and a mean of 15 years of formal education are more likely to breastfeed.

LeFevre, et. al. (1987) used a mail questionnaire to obtain information on the feeding method of 252 infants in the state of Missouri. All of the respondents were married and 94% were white. The results suggested that the incidence of breastfeeding in relationship to income is nonlinear. Women of middle income were found to be more likely to breastfeed than were women of either low or upper income groups. This data further established that the incidence of breastfeeding is significantly greater among persons with higher educational levels than is bottlefeeding (13.3 years versus 12.2 years of education respectively).

A retrospective survey of 76 primiparous women in the District of Columbia was undertaken by Axelson, et. al. (1985) in an effort to identify sociodemographic characteristics (age, education, ethnicity, marital status, paternal education) of breastfeeding women. The authors' conclusions support previous findings. The majority of the breastfeeders were age 25-34 years 83.6% had a post high school education, 67.1% were white and 82.1% were married. Over 50% of the fathers had $\geq$ 17 years of formal education

and 83.5% a post high school education suggesting a positive correlation between the incidence of breastfeeding and paternal education.

Samuels, et. al. (1985) examined the prevalence of breastfeeding in a health maintenance organization population in Oakland, California. Within this group of 632 women 52% of blacks and 82% of whites chose breastfeeding. Eighty two percent of the breastfeeders were legally married. Regarding age, 64% of women age 21 to 30 years and 80% of those 31+ years decided to breastfeed.

In a study investigating low socioeconomic women exclusively, Rassin, et. al. (1984) sought to establish demographic factors associated with the decision to breastfeed. As suspected, the incidence of breastfeeding initiation was low, only 27%. This population, in general, was young, unmarried and unemployed. However, of the 98 women who were breastfeeding at hospital discharge it was found that they were most likely to be age 26-40 years, married, white and have at least some college education.

Rassin, et. al. (1984) also found that, though all subjects were low income, the breastfeeders were at the upper end of the range. One suprising discovery in this study was that more women (29%) with little education (grade 8 or less) breastfed than did those with some high school (18%). However, it was not as high as those with some post

high school education (40%).

In addition to the previously outlined characteristics Switzky, Vietze and Switzky (1979) examined women's perception of marital conflict in relation to breastfeeding incidence. Results suggest that, of the 83 respondents, the breastfeeders were more likely to perceive their marriages as having less conflict.

While the preceeding studies establish the characteristics of the women most likely to breastfeed, it is also important to examine the increasing incidence by women not fitting this stereotype.

Data from the Ross Laboratories 1980 study (Martinez, et. al., 1981) led to the conclusion that, although the incidence of breastfeeding was highest among those fitting the breastfeeding stereotype, increases were reported in all census regions and there were substantial increases in breastfeeding among lower income, less educated mothers and those attending public clinics. The follow up data (Martinez, et. al., 1985) confirm these results and suggest that the greatest increases in incidence were among blacks and those mothers in the East South Central part of the country.

In a study by Samuels, et. al. (1985), examination of a health maintenance organization population indicated a 52% rate of breastfeeding for blacks. However, no data

regarding income or educational level were recorded on these subjects.

TIMING OF THE INFANT FEEDING DECISION

When are women making the decision regarding infant feeding? Several researchers looking at the beliefs and attitudes of secondary school females found that many appeared to have already made a decision about the infant feeding method they would choose when becoming a mother.

Pascoe and Berger (1985), while comparing American female high school students and Israeli female high school students, found that of 571 Americans age 14 to 18, 42.2% planned to try breastfeeding.

A study focusing on Canadian students in grades 8-12 also found that the decision about infant feeding is often made early. Ellis (1983) collected data from 302 females and 107 males. The majority (72%) planned to feed their future children using both breast and bottle. Seventeen percent had decided on breast only and 9% had decided on the bottle only. There was no significant difference in responses according to sex.

A study on primiparous women carried out by Hally, Bond, Crawley, Gregson, Philips and Russell (1984) attempted to identify when the decision on feeding method was made. Of 507 women, initially interviewed at 36 weeks gestation,

380 (75%) reported that their decision on infant feeding had already been made. Thirty-five percent claimed to have made this decision before becoming pregnant. The vast majority adhered to their original choice.

Sarett, Bain and O'Leary (1983) found similar results when surveying 976 mothers from 1976 to 1980 in a three part study. From 49% to 61% of the women decided upon method of feeding before pregnancy and in the third trimester only 5% to 7% remained undecided. Once again, Sarett, et. al. (1983) found that 96% to 97% fed their infants as planned.

Lyon, Chilver, White and Woollett (1981) concluded, from the results of a prenatal questionnaire, that most women have made a feeding decision by early pregnancy. No figures for this were given, however. Of the 74 women completing the questionnaire 80% carried through with their initial decision.

Of the 288 predominantly middle class women in the prospective study by Goodine and Fried (1984), it appears that 80% made an infant feeding decision prior to pregnancy. Over 85% of these women followed through with their earlier decision.

In a Brazilian study (Serva, Karim and Ebrahim, 1986), which focused on the urban poor, an attempt was made to determine the timing of the infant feeding decision. As in the previously cited works, the majority (77%) decided upon

a preferred method prior to pregnancy. Most of the remaining women decided in early pregnancy.

INFLUENCES RELATED TO THE BREASTFEEDING DECISION

ATTITUDES/BELIEFS REGARDING BREASTFEEDING

ADOLESCENTS

Since it was noted earlier that the decision regarding infant feeding is often made long before pregnancy it should be of interest to examine the beliefs and attitudes which impact on this choice.

Teenage girls in Ohio were surveyed regarding attitudes towards breastfeeding as compared to girls in Israel (Pascoe and Berger, 1985). It was found that the American girls tended to exhibit less knowledge regarding the facts of breastfeeding and also exhibited a more negative attitude towards breastfeeding.

Adolescent males also lack the appropriate knowledge (Ellis, 1983; Ellis, 1986) of breastfeeding which impacts upon their attitudes about the feeding of their own future children, as well as the acceptance of breastfeeding in our society.

Ellie's (1983) survey of 409 Canadian school students revealed that the vast majority felt breastfeeding should be done in private. Another attitude held by the majority of

the adolescents is that breastfeeding is an instinct for the mother. Twice as many males as females believed breast size is related to breastfeeding capability. Eighteen percent did not believe breastfeeding to be the most healthful way to nourish an infant. The author suggests this is due to a lack of information regarding breastfeeding (Ellis, 1983).

As recently as 1985, it was reported that up to 29.8% of secondary school girls had never seen anyone breastfeed an infant (Pascoe, et. al., 1985). This finding confirms an earlier (1983) report where 28% of all adolescents had never observed a breastfeeding situation (Ellis, 1983).

An example of why negative attitudes about breastfeeding persist is reported by Elis (1983) in the study which surveyed secondary school males and females. The researcher met with several obstacles in attempting this study. Many principles and superintendents refused the survey because it indicated an openness to a topic (breastfeeding) that was felt to be "irrelevant or too sensitive" (Ellis, 1983). Some of the schools which did participate required parental consent which conveyed a negative message that the topic was "improper or unsuitable" (Ellis, 1983).

Although teens show many apprehensions concerning breastfeeding for themselves and others, it has shown that most would like more information on the topic included in

school lessons (Berger and Winter, 1980). It is the consensus of the researchers (Ellis, 1983; Pascoe, et. al., 1985; Berger, et. al., 1980) that early intervention designed to impart knowledge about breastfeeding is essential to increasing the prevalence of breastfeeding at a later stage in life.

PREGNANT WOMEN AND NEW MOTHERS

The major role of a woman's breast is often thought to be a sexual one (Gunther, 1976) to the point where the role of the breast in nourishing infants has become diminished (Jelliffe and Jelliffe, 1978; Eiger and Olds, 1981). It has become a social taboo to be seen in a nursing situation (Simopoulos and Grave, 1984). As Jelliffe and Jelliffe (1978) noted, women in this country have been arrested and otherwise chastised for nursing in a public place.

Baranowski, et. al. (1986) examined the attitudes about breastfeeding of a group of 358 lower socioeconomic status mothers. The majority of the women agreed with statements regarding benefits to the baby being breastfed. However, these young, undereducated respondents perceived many social, personal and physical inconvenences of breastfeeding including:

Breastfeeding -- causes people to have less sex

-- makes it difficult to see friends

-- may hurt

-- can be very annoying

-- would come between me and my husband

-- is inconvenient

-- ties me down

-- makes it difficult to go to meetings

-- makes the breasts too big

The authors of this research conclude that these perceptions of breastfeeding were "conditioned by social and demographic factors."

Rassin, et. al. (1984) also examined beliefs in a group of low socioeconomic mothers. Of the 358 women questioned 61.5% correctly answered that the Academy of Pediatrics recommends breastfeeding for healthy newborn infants. However, only 36% said that they themselves believe that breastfeeding is most apropriate and only 27% intended to initiate breastfeeding.

Lyon, et. al. (1981) in a British study on maternal attitudes found that women who intended to breastfeed had a more positive attitude towards breastfeeding than did their bottlefeeding counterparts. Fifty percent of those planning to bottlefeed claimed that breastfeeding is best for the baby. However, these women also felt so strongly about the perceived undesirable aspects of breastfeeding that they were deterred from even attempting to breastfeed. Seventy-

one percent of the women intending to bottlefeed agreed with the statement 'Breastfeeding ruins your bust'. To the statement 'Breastfeeding makes your clothes smell', 71% of women intending to bottlefeed either agreed or did not know. These researchers conclude that "women's attitudes to infant feeding reflect those of the Society of which they are part".

ATTITUDES OF MEDICAL PROFESSIONALS

A 1985 study at UCLA Medical Center (Reiffand Essock-Vitale, 1985) was composed of two parts; a questionnaire survey of 55 nurses and interviews with 77 nursing mothers. Routine discussion of infant feeding was reported by 92% of the nurses. Eighty-five percent report that they counsel mothers that breastfeeding is best for the baby. Most of the nursing staff (94%) agree that supplementation is necessary in some breastfeeding situations and 81% felt certain mothers should be discouraged from breastfeeding. Although over half (58%) of the nurses felt gift packs of formula to be "helpful to all nursing mothers", reasons for this belief were not explained. However, another question revealed nurses beliefs that supplementation is necessary in cases of jaundice (48%), infant weight loss (36%), infants small or large for gestational age (30%), inadequate milk supply (22%) and breast or mipple problems (8%) (Reiff,

Essock-Vitale, 1985).

Only 24% of the mothers in this study (Reiff and Essock-Vitale, 1985) reported discussing infant feeding with a physician at any time prenatally. Of the 54% who reported discussing infant feeding with the hospital nursing staff, 68% interpreted these discussions as advocating breastfeeding. Physicians' counseling was not interpreted to be supportive of either feeding method. The group which appeared to receive the most counseling in the hospital was the group who began infant feeding with the breast, but switched to the bottle by discharge from the hospital.

Lawrence (1982) attempted to determine attitudes and practices of medical professionals towards breastfeeding via a mail survey to 2400 practitioners. Respondees included 381 pediatricians, 306 obstetricians, 300 family practitioners and 399 nurses. Results suggest that pediatricians most often (92%) advocate breastfeeding followed by 88% of family practitioners and 72% of obstetricians. Sixty-eight percent of the hospital based nurses stated they endorse breastfeeding, if a mother is undecided about infant feeding. About a quarter of the pediatricians and obstetricians replied that they still advocate breastfeeding even if a mother states a preference for the bottle. Of all the medical professionals, 34% admit to never discussing the topic of breastfeeding. In response

to being asked reasons for the recent increase in breastfeeding, 40% suggested that it was a fad and only a temporary trend. The next most cited reason was the increase in education related to breastfeeding (Lawrence, 1982).

Reams (1985) carried out a more localized survey of medical professionals in Louisiana. Surveys were completed by a total of 200 physicians selected at random. The sample included family practitioners, general practitioners, obstetricians and pediatricians. Overall, 63% of the physicians considered breastfeeding very important for the well being of infants, with a range of 44% of obstetricians to 74% of pediatricians holding this belief. Almost 25% of general practitioners and over 8% of obstetricians felt breastfeeding is unimportant for the infant's well being. Although many of these physicians favored breastfeeding, they reported discouraging breastfeeding in such cases as Cesarean delivery, prematurity, maternal diabetes or working mothers. Other detrimental advice reportedly given by physicians includes the offering of supplements, use of oral contraceptives and delaying the initiation of breastfeeding. The majority of the physicians answered that their education on breastfeeding in medical school was insufficient. An interesting aspect of this study was the correlation between the method by which the physicians' own children were fed

and their reported feeling on the importance of breastfeeding. Physicians, whose children were breastfed, felt breastfeeding is very important as compared to parents of bottle fed infants who felt that breastfeeding is only somewhat important. Regarding the benefits of breastfeeding, those who had children who had been breastfed were more likely to agree strongly than those whose children had not been breastfed (Reams, 1985).

Winikoff, Myers, Laukaran and Stone (1987) found some very inconsistent and detrimental practices of hospital professionals regarding breastfeeding. Orders for a lactation suppressant to be administered at the nurse's discretion was routine, as were supplemental formula bottles for nursing babies. Half of the pediatric residents surveyed recommended breastfeeding on a schedule and 38% recommended supplements of formula or water if a mother complained of an insufficient milk supply. This hospital undertook an educational and promotional program which is discussed in detail in the section on promotional activities.

An attempt to assess the breastfeeding attitudes and practices of a group of Canadian nurses, before and after educational intervention, was undertaken by Ellis and Hewat (1983). Participation in the study was voluntary and anonymous. Results are presented as group data for

registered nurses and for practical nurses. Results of the initial assessment revealed that 74% of nurses said the time spent with breastfeeding mothers was adequate or more than adequate. While 56% of the respondents felt that nurses should be responsible for ensuring that women are given specific information about breastfeeding, another 19% felt that this is not a role of nursing staff. The authors found a considerable lack of knowledge among both groups about the anatomy and physiology related to breastfeeding (Ellis and Hewat, 1983). It was also found that many inconsistencies exist in the information and advice given to nursing mothers.

While only 45% of the registered nurses attended any of the education classes, 79% of practical nurses took part in at least one session. The results of the second "test", after education, reveal no change in knowledge or attitude. The authors (Ellis and Hewat, 1983) concluded that the poor results were due to a lack of time and motivation on the part of the nurses. They also suggest that considerable inconsistencies between knowledge and practice exist in the counseling of nursing mothers.

The Breastfeeding Task Force in Virginia (1987) surveyed 300 health department professionals regarding breastfeeding practices. Final analysis of this voluntary survey have not been completed; however, several findings of

interest are evident. Although 74% of the respondents stated that they feel their knowledge of breastfeeding was adequate, responses to questions demonstrating knowledge showed otherwise. When questioned about increasing milk supply 62.3% did correctly check short, frequent feeding, but 73.6% checked increase fluid intake and 11.0% said drink occasional beer or wine.

AN EXAMPLE OF BREASTFEEDING AS SOCIALLY ACCEPTABLE

It is interesting to examine the trend in breastfeeding in an area where nursing is part of the culture (Oyarebu, 1987), in Benin City, Nigeria. Of 300 randomly selected women, age 15-45 years, 96.7% were breastfeeding or had breastfed their baby. It was concluded that this high rate of breastfeeding is due to the area's culture and tradition. In other words, women breastfeed their infants because it is socially acceptable (Oyarebu, 1987).

ATTITUDE CHANGE AFTER BREASTFEEDING INITIATION

Ironically, embarassment is not a leading cause for the early termination of nursing. When embarassment is cited in the literature as a reason it is not prevalent (Manstead, et. al., 1984). This is due, at least in part, to a change in maternal attitude once the breastfeeding relationship has been established (Lyon, et. al., 1981). Mackey and Fried

(1981) found that although many pregnant women expected that they would be embarassed in various situations, in actuality, most mothers found that after a short period of nursing they became significantly more comfortable in social settings. Likewise, Jones (1986) cites that 64% of mothers found breastfeeding very satisfying and the degree of embarassment less than anticipated. Manstead, et. al. (1984) found that only one mother, of 26 who weaned early, did so due to embarassment.

INFLUENCIAL PERSONS/INFORMATION SOURCES

A woman's decision on infant feeding may be influenced by other people in her life. The person exerting the influence may be as close as her husband (Jones, 1987; Mackey and Fried, 1981; LeFevre, et. al., 1987) or as distanced as a health care professional (Ray and Estok, 1984).

As part of an on-going study in Ottawa, Mackey, et. al. (1981) surveyed 50 predominately white middle class women concerning infant feeding practices. Forty-six percent of these women felt they had been "self" influenced in making this decision. Of those, who were influenced by an outside source, 20% were influenced by their own mother, 17% by friends and 11% by husbands. Only one person reported a medical person as an influence. Twenty-six percent of the

mothers reported reading material of any form was important to their decision.

Ekwo, et. al. (1983) examined the sources of influence on 33 primigravida and 39 multigravida women in a midwestern university town. All women were lactating. No blacks were included in this study and all belonged to the middle to upper middle income groups. A friend who had nursed was the influence named most frequently (44%), followed by their own mother (17%), health professionals (16.5%), Le Leche League (16.5%), perinatal of Lamaze classes (14%), other relatives (11.5%) and mothers or sisters-in-law (11%). Only 3 women (1.5%) named a husband as a source of influence. Many women in this group (64%) felt that articles in magazines or books had helped them in deciding upon an infant feeding method.

Le Fevre, et. al. (1987) also sought to identify influential sources in a group of 177 married, mostly white (94%) women in the midwest. Seventy percent of the sample was breastfeeding at hospital discharge and 91% of these women had been influenced by the husband. This finding is dramatically different from that of Ekwo (1983) even with a similar population. Other sources of influence were more similar to those of the preceeding study, however. The sources were reported to be mothers, friends, other relatives, health professionals and childbirth classes. The actual percent differed with parity (Le Fevre, 1987). For

those who breastfed other influences included: their own experience in feeding other children, watching others nurse; and newspapers, books and magazines.

In a group of pregnant adolescents (Ray, Estok, 1984) the identified source of influence was somewhat different. The subjects were mostly low income with 60% white and 40% black, ranging in age from 15 to 19 years. Every girl (100%) felt she had been influenced by observing an infant being fed. People who were named as influential included mothers (44%), friends (36%), friends in maternity home (20%) and boyfriend's sister (12%). Others mentioned were neighbor, sister, husband, cousin, sister-in-law and stranger. Thirty-two percent of these adolescents were influenced in some way by their school. Magazines were named by 76% of the girls and 20% named prenatal classes about feeding as a source of influence.

Baranowski, Bee, Rassin, Richardson, Brown, Guenther and Nader (1983) attempted to identify sources of influence by race and marital status. In general, the sample population was young and over 50% had less than a high school education. Information on income was incomplete and so not reported. Within the married group of nursing mothers, the husband was reported as the most influential by both whites and blacks. However, within the married, bottlefeeding group husbands were much less influential and

whites identified their doctor and blacks identified a previous breastfeeder as the source of influence.

For non-married women in this study (Baranowski, et. al., 1983) the mother was named by both races as most influential by breastfeeders. For the non-married bottlefeeders the sources were the same as for married women; the whites named their doctor and blacks named a previous breastfeeder.

In a study dealing exclusively with WIC Program participants (Bevan, Mosley, Lobach, Solimano, 1984), 103 women were interviewed. The most frequently cited sources of information regarding breastfeeding for these women were: the WIC nutritionist (32.7%), physician (25.5%), nurse (25.5%) and midwife in clinic (25.5%). The WIC nutritionist was cited most often (27.9%) as the most influential individual in the infant feeding decision.

Several British researchers sought to establish a relationship between incidence of breastfeeding and the mother's own feeding method as an infant. Krishna (1979) found that, of 102 mothers in London, 76.6% of mothers, who had themselves been breastfed, breastfed their own infant. Of those who had not been nursed as infants only 5% chose to breastfeed.

Another study, (Gilmore, O'Driscoll, Murphy, 1979) found less conclusive results. Of a total sample of 111

mothers, 36% of the primigravidas and 37% of the multigravidas knew their mothers had breastfed. The researchers suggested these subjects were more inclined to breastfeed, but report no data to support this supposition.

A recent survey of 1,525 mothers in Wales (Jones, 1987) found women were more likely to breastfeed if their own mother had breastfed. Forty-five percent of the sample breastfed. Of these women, 69% had mothers who had either exclusively breastfed or used a breast/bottle combination.

The diversity of influential sources upon a woman's decision whether or not to breastfeed reveals that there are many areas that need to be addressed if accurate information is to be conveyed to and positive attitudes developed in women in their childbearing years.

WHY WOMEN CHOOSE BREASTFEEDING

An examination of the literature indicates that the overwhelming reasons for wanting to breastfeed were those concerning the health and well being of the child. This was found in primiparous women (Manstead, et. al., 1984; Goodine, et. al., 1984; Hally, et. al., 1984; Ellis and Hewat, 1984), multiparas (Hally, et. al., 1984), middle class (Mackey and Fried, 1981), those of low socioeconomic status (Serva, et. al., 1986; Bevan, 1984; Rassin, et. al., 1984) and in a study representing a cross-section of

women (Sarett, et. al., 1983). Reasons given which could be grouped under health and well being of the baby include: best for the baby, promotes immunity, minimizes allergy and enhances bonding and closeness.

To elaborate further, Goodine and Fried (1984) found that 94% of their respondents indicated they decided to breastfeed because it is "best for baby".

Sarett, et. al. (1983) found that those who chose to breastfeed stated that they thought "breastfeeding was healthier or better" than formula feeding.

Forty-nine percent of the 681 breastfeeders in Jones (1987) study chose to nurse because it was "best for the baby". Another 25% chose breastfeeding because it is the natural way of feeding a baby.

Mackey and Fried (1981) found that breastfeeding women, both prenatally and post partum find "best for baby" as breastfeeding's greatest advantage.

The previous findings are further supported by the results of the Hally, et. al. (1984) survey. This study showed that 98% of the breastfeeders chose their method because it was "best for the baby".

Another study by Jones (1986) canvassed breastfeeders who expressed wanting to breastfeed again in the future. Of 526 women, 239 would breastfeed again because it is better for the baby. Another 94 would breastfeed again because of

the enjoyment or satisfaction of the mother. Other reasons frequently cited were breastfeeding's convenience, naturalness, and the closer relationship with the breastfed baby.

When Joffe and Radius (1987) looked at the infant feeding practices of adolescent mothers they found somewhat different results. The primary perceived benefit of breastfeeding (breast and bottle feeder) was that breastfeeding would make them feel important. In addition, they believed breastmilk is better than formula, it is natural and the modern way to feed infants. Of these adolescents, who were actually intending to breastfeed, there was the belief that breastfeeding is easier to initiate, more convenient and results in less mess than formula feeding.

Women on the WIC Program who choose to breastfeed do so for the same reasons as other women (Bevan, et. al., 1984). The main reason for wanting to nurse was the baby's health and for the closeness between the mother and her infant.

REASONS FOR EARLY TERMINATION OF BREASTFEEDING

The reasons for the early termination of breastfeeding may also be enlightening for several reasons. First, a bad experience nursing one child may influence the choice of feeding method for future children (Le Fevre, et. al., 1987;

Baranowski, 1983). Secondly, the woman who has had an unhappy or unfulfilling breastfeeding experience may be influential in the decision on infant feeding made by others (Ekwo, et. al., 1983). Finally, education and assistance must be geared towards those issues which present the greatest barriers against successful breastfeeding.

Several studies, reporting on the reasons for discontinuing the breast at an early age, agree that the perception of insufficient milk supply is one of the most common reasons (Manstead, Plevin, Smart, 1984; O'Herlihy, 1978; West, 1979).

Manstead, et. al. (1984) found that of the 26 women, who had quit nursing during the first week post partum, 27% did so due to a perceived milk insufficiency. However, a greater number (34.6%) discontinued due to "painful breasts". Other, less cited, reasons included maternal illness, dislike of breastfeeding, amount of time required and a fretful baby. One woman stopped due to embarassment.

West (1979) also reported on the reasons for early weaning, broken into age groups. Of the 49 women who weaned before six weeks of age 57% did so because of an inadequate milk supply. Closely related reasons, unsettled baby and frequent feeds accounted for many of the other early terminations of breastfeeding. The data for weaning at 6-11 weeks of age were similar with 46% giving inadequate milk

supply as the cause for early weaning. Eight of 88 women weaning early listed lack of confidence as a contributing factor. Less than 6% named dislike of breastfeeding as a reason for discontinuing the breast.

Another study (O'Herlihy, 1978) surveyed women who had discontinued nursing. Of 146, who stopped breastfeeding within the first three months, milk insufficiency was cited more than twice as often as any other reason (24.6%). Milk failure and failure to thrive were both listed by 11.6% of the women as the factor influencing the discontinuing of breastfeeding. Other frequently cited (> 5%) reasons were cracked or sore nipples, elective decision of mother, maternal tiredness and returning to work.

A prospective study of breastfeeding mothers in Chicago (Feinstein, Berkelhamer, Gruszka, Wong, Carey, 1986) lists the reasons for 47 women terminating breastfeeding by 10 weeks of age. Over half (53%) stopped breastfeeding due to insufficient milk. Other reasons listed were maternal illness or medications, inconvenience/embarassment, work, and infant illness. Two women stopped breastfeeding within one month due to nipple problems.

A recent look at why women terminated breastfeeding was undertaken by Rogers, Morris and Taper (1987). Of a sample of 80 women in Virginia, 20 stopped nursing within three months. Physical problems was the category most often named

for those weaning at this age. Most reasons in this category related to mother's problems (not enough milk, illness related, pregnancy, fatigue) along with the baby not gaining weight. Mother's choice was the reason given most often (54.5%) at age 2-3 months (tired of it, convenience, work/school). Three of the 20 early weaners did so due to the baby's choice. None of the women weaned early due to social pressure or doctor's advice.

A study in Ottawa (Goodine and Fried, 1984) investigating the factors influencing the duration of breastfeeding yielded the following reasons for early termination: insufficient milk, inconvenience, maternal medical problems and child's medical problems.

A Brazilian study (Procianoy, Fernandes-Filho, Lazaro, Sartori, 1984) sought to establish the influence of caesarean section on the factors affecting breastfeeding. For those, who terminated nursing before two months, there was no significant difference related to method of delivery (vaginal vs. caesarean). Almost 60% of both groups stated that they discontinued breastfeeding because their milk dried up. This group also cited as reasons maternal discomfort, need to work and weak milk as factors in the termination of their breastfeeding.

Bevan, et. al. (1984) surveyed 103 WIC participants in New York City regarding breastfeeding practices. The main

reason given for terminating the breast was that the "milk dried up" (25.5%). Other frequently cited reasons were breasts or nipples were sore (21.6%) and maternal illness (9.8%).

WHY WOMEN CHOOSE BOTTLE OVER BREAST

Why many women choose to bottle feed rather than initiate breastfeeding has been the focus of several works in the literature.

Of the 421 women planning to bottle feed in Sarett's study (Sarett, et. al., 1983) only two major reasons were cited for this choice. The main reason given was that bottlefeeding is more convenient. Secondly, many of the women chose bottlefeeding because of plans to return to work or school.

The Canadian study (Goodine and Fried, 1984) which questioned 260 predominantly middle class women found that this group's major reason for rejecting breastfeeding was that the husband/father can't help. No other study found this to be a predominant reason.

Jones' study in Wales (1987) found that, of 844 bottle feeders, 26% chose this method for its perceived convenience. Eighteen percent didn't like the idea of breastfeeding and 13% chose bottle feeding because they perceived breastfeeding as embarassing. Other reasons for

the bottlefeeding choice included previous experience (12%), other's experience (5%) and 4% chose the bottle because they thought breastfeeding was physically repulsive.

Leeper, Milo, and Collins (1983) questioned 50 low income women in a public health department to assess the reasons for the low breastfeeding incidence in this population. Results showed that many (43.5%) bottlefed because they "did not want to nurse". The next most cited reason was the inconvenience of breastfeeding (21.6%) and returning to work or school was also frequently named (13%) by this group.

Another study of low income women was conducted by Joffe and Radius (1987). The adolescent mothers in this study perceived the biggest barrier to breastfeeding is that "it makes you feel run down". Additionally, these adolescents felt that breastfeeding inhibits weight loss and makes the breasts "ugly".

The survey by Bevan, et. al. (1984) of WIC Program participants also examined reasons for infant feeding choices and found that the main reason for wanting to bottle feed was that it is easier than breastfeeding. Of the 45 women who chose bottlefeeding, 11.3% chose this method because "it is as good for the baby's health and nutrition as breastfeeding".

The rationale for bottlefeeding may best be summed up

by the conclusions of Manstead, et. al. (1984) that "mothers choose to bottlefeed not because bottlefeeding has any special merits, but rather because they believe that it avoids perceived disadvantages of breastfeeding...".

BREASTFEEDING PROMOTIONS AND INTERVENTIONS

The current literature contains a plethora of information on breastfeeding promotions throughout the world. In an effort to make the reading herein more relevant only those works with populations or settings appropriate to the ensuing research will be reviewed.

NATIONAL EFFORTS

A national breastfeeding campaign has been the result of joint efforts of both the Department of Health and Human Services (DHHS) and the U.S. Department of Agriculture (USDA) (Arango, 1984).

The Public Health Service (PHS) a DHHS agency, has provided the funding for breastfeeding promotions such as publications for mothers, research grants, bibliographies and materials for health professionals. The PHS co-sponsored a 1979 symposium on human lactation and funded the 1984 Surgeon General's Workshop on Breastfeeding and Human Lactation. This workshop was the spring-board for many state and local promotions (Public Health Service, 1984).

Other widespread breastfeeding efforts have been promoted through USDA via the supplemental food programs. These programs include the Commodity Supplemental Food Program (CSFP), the Extension Service's Expanded Food and Nutrition Education Program (EFNEP) as well as the WIC Program (Arango, 1984; FNS, 1984).

Both WIC and CSFP are required to include the benefits of breastfeeding in their nutrition education component. Women who breastfeed in both programs are considered to be at higher "nutritional risk" and receive more food than do women who do not breastfeed. In addition, breastfeeding women on WIC may receive benefits for up to six months longer than non-breastfeeders. USDA has also provided educational publications for use with WIC and CSFP participants as well as reference guides for program professionals (FNS-236, 1984). The most comprehensive of these is "Promoting Breastfeeding: A Guide for Health Professionals Working in the WIC and CSF Programs" (FNS-247, 1984).

STATE AND LOCAL EFFORTS

In response to the data from the Ross Laboratories' survey (Martinez, et. al., 1981), which indicated that Rhode Island had the lowest incidence of breastfeeding in the U.S., a state-wide program was launched (Heimendinger,

1984). A planning committee was formed with the following representatives: physicians, nurses, nutritionists, hospital administrators, media and public relations experts, nursing mothers and the Le Leche League. The three sub-committees formed addressed the areas of patient education, professional education and education of the community at large. Some of the activities and promotions of the campaign included: a press conference, brochures, a nutrition hot line, radio and television announcements and talk shows, newspaper articles and an audio-visuals library at the major maternity hospital in the state. The WIC nutritionist within Rhode Island made a concerted effort to provide information to program participants. Although only preliminary data is now available, the indication is that approximately 50% of women in Rhode Island may have at least initiated breastfeeding after the institution of the state-wide breastfeeding campaign. This compares with the Ross Laboratories finding of 36% (martinez, et. al., 1981). There also appear to be similar increases in WIC participants initiating breastfeeding (Heimendinger, 1984).

A campaign to increase breastfeeding among WIC participants in St. Albans, Vermont (Thompson, 1981) had two components: education of health care professionals and direct contact with prospective and actual breastfeeders. This promotion was undertaken because the breastfeeding

rates for WIC mothers across the state ranged from 64% to 29% in St. Albans. Some of the activities included in this effort were a seminar for health care providers, establishment of a referral system, development of a prenatal questionnaire, and home visits to breastfeeding mothers. Approximately 18 months after the campaign's institution the percent of women breastfeeding in the hospital significantly increased to 37.5%. Other positive outcomes included a change in some hospital policies, better communications between WIC and other health care providers, and fewer negative comments from WIC mothers regarding the support on breastfeeding offered by hospital nurses.

Another community based promotion effort took place in rural Jackson County, Florida (Alden, 1984). The program, begun in 1979, was coordinated by a nurse-midwife and public health nutritionist and supported by clinic and hospital nursing staffs. It was conducted through the health department and was aimed at improving the patient teaching practices to pregnant women. During the 18 month project the incidence and duration rose continuously. Efforts were made to unhurriedly discuss breastfeeding with each woman and include the father of the baby when possible. In the hospital early, frequent feeding, rooming-in and the avoidance of supplements were encouraged. After hospital discharge women were given a follow-up appointment within a

few days for early problem intervention. Follow-up of this project was undertaken two years later. It appeared that breastfeeding rates had reverted to the pre-project levels.

The city of New York, in 1982, established a Steering Committee to Promote Breastfeeding in New York City (Randolph, 1984). This was in response to the findings of the city's Department of Health survey which found that 3% of babies in municipal hospitals and 6% in private hospitals were being breastfed. The city's comprehensive program consisted of a multidisciplinary team from the 5 boroughs of the city. Included in the 40 active members were pediatricians, obstetricians, nutritionists, nurses, nurse-midwives, public health administrators, social workers, a lawyer, legislative aides, a journalist, health educators, a foundation representative, and public health students. These diverse members developed six task groups, each focusing on a separate area related to breastfeeding as follows: trends and patterns of infant feeding practices by socioeconomic and ethnic groups; factors influencing the pattern and incidence of breastfeeding - especially cultural and social influences; the impact of the media and business interest in breastfeeding practice; examination of the impact of government, legislation, reimbursement patterns, maternity leave, child care facilities, government and business support networks available for the lactating

mother; the economic value of breastfeeding as it relates to cost of formula versus the cost of the mother's diet; and the influence of alcohol, smoking and drugs on the mother's milk. This Steering Committee found that a small amount of funding goes a long way when there is a true working together of the government and the public and private sectors through a group of dedicated individuals such as those in this New York City promotion.

HOSPITAL RELATED PROMOTIONS

The formation of the San Diego Lactation Program in 1977 (Naylor, 1984) was designed as a teaching-hospital-based program which functions primarily as a "teaching resource for health care students and postgraduate trainees from the perinatally oriented disciplines". The program also serves as an important resource for breastfeeding families. The program is affiliated with the University of California, San Diego Medical Center and consists of the following six components:

1. Prenatal Guidance - parent education on anatomy, physiology and advantages of breastfeeding.

2. Immediate Post Partum Assistance - assistance in the hospital and changes in hospital routines which enhance breastfeeding success (rooming-in, early initiation of feedings).

3. Telephone Consultation Service - 24-hour hotline and information service staffed by educated staff members.

4. Lactation Clinic - breastfeeding mothers and infants are given appointments within seven days of hospital discharge and whenever problems occur.

5. Intensive Care Nursery Consultation - instructions on effective methods of expressing or pumping milk and maternal care and nutrition.

6. Community Education - aimed at health care providers.

Within each and every component extensive education is provided to the staff. Students of the medically related fields acquire hands-on training in both breastfeeding promotion and management (Naylor, 1984).

Another hospital based breastfeeding promotion was on the East coast, in New York (Winikoff, et. al., 1987). The two-year intervention program took place in a large municipal hospital with a very low breastfeeding incidence (0% exclusive breast, 15% breast/bottle). Another, similar hospital in the nearby area served as a control. Staff training was conducted annually, an interdisciplinary team (obstetrician, pediatrician, prenatal nurse, breastfeeding nurse counselor) received intensive training at the San Diego Lactation Program (described previously), educational print and audio-visual materials were developed and

purchased, breastfeeding counselor positions were created and a telephone hotline was established. Because of this massive intervention program, women prenatally had more opportunities to learn about breastfeeding and more support once a decision to breastfeed had been made.

This program resulted in an increase in the incidence of breastfeeding in the hospital from 15% to 56% for breast/bottlefeeding and from 0% to 15% for exclusive breastfeeding (Winikoff, et. al., 1987). As a comparison, the incidence of breast/bottlefeeding at the control hospital rose from 28% to 41% with exclusive breastfeeding going from 5% to 7%. This study resulted in several disappointments. First, the telephone hotline proved not to be effective. Few nursing mothers actually called for assistance. Follow-up after discharge showed that, within one week of leaving the hospital, only 65% were still breastfeeding and 83% of those nursing were using supplemental formula.

A study in England (Gilmore, et. al., 1979) attempted to determine the effect of handing out leaflets to pregnant women on the incidence of breastfeeding. The leaflet was not reviewed with the patients. Results showed no increase in breastfeeding for the group who received the leaflets. The authors suggest this lack of success may have been due to one of the following reasons: the leaflet may not have

been read, it may not have been persuasive enough, or it may have been given too late to influence the decision.

A media campaign in Edinburgh (Kirk, 1979) had a more successful outcome. After a 1974 report, which showed a low prevalence of breastfeeding in the United Kingdom, the advantages of breastfeeding were publicized in the media. Over the 30 month study period, the initiation of breastfeeding rose 24.9% (43.6% to 68.5%). In addition, there was a significant increase in those women continuing to breastfeed for all ages investigated (up to 4 months).

A WORKPLACE PROMOTION

A non-profit hospital sought to promote breastfeeding among its employees (Katchner, Lanese, 1985). This promotion began by allowing 3 months maternity leaves with extensions available. When nursing mothers returned to work, arrangements were made for time off to pump their breasts in a suitable location. An electric breast pump was made available. Information on pumping technique and storage of breastmilk was provided and supportive professional advice was available if needed. The hospital administration benefited from these efforts since more women returned to work, some of them earlier than planned, and as a group earlier than controls. The mothers found that the program made it easier to return to work and continued to

nurse for an average of 11.7 months. The control group had nursed for an average of 6.0 months (Katchner, Lanese, 1985).

VIRGINIA BREASTFEEDING TASK FORCE

The Breastfeeding Task Force for the state of Virginia was formed in early 1985. Members include public health and WIC Program nutritionists; hospital and health department nurses, a University nursing instructor; a certified lactation consultant (and Le Leche League member); and a nursing mother. The director of the Maternal Child Health Program serves as a consultant. Efforts have been made to determine the prevalence of breastfeeding in the state as well as to assess the attitudes and practices of such groups as health department professionals, private care physicians and employers around the state. A handbook entitled "A Community Breastfeeding Support System" was the result of a program project undertaken by task force members. At this time the State Task Force is encouraging the formation of local and regional task forces to carry out those activities which may enable Virginia to meet the Surgeon General's 1990 objective (Public Health Service, 1984).

CHAPTER III

METHODOLOGY

The present study was designed to determine how demographic variables and various attitudes and beliefs impact on a woman's decision not to breastfeed.

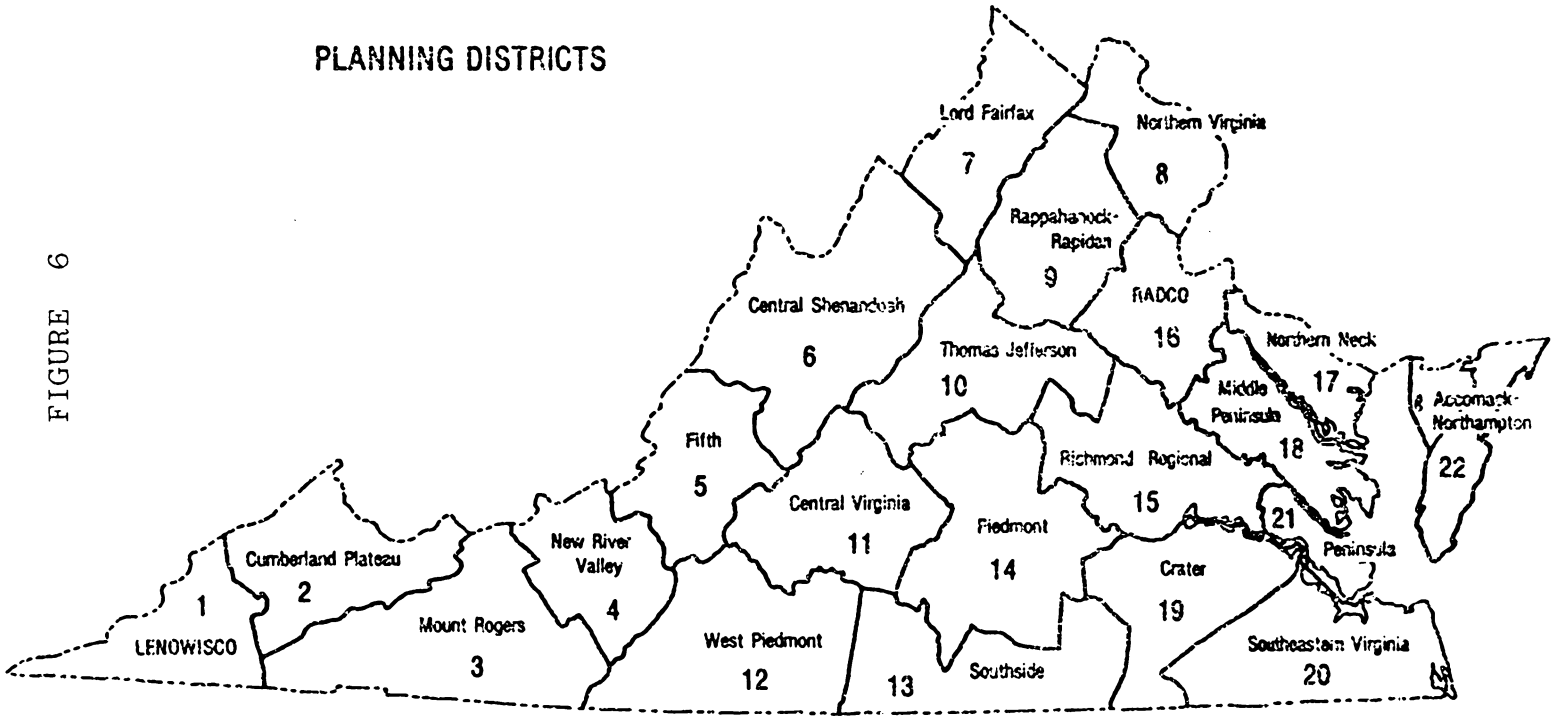
DEMOGRAPHIC INFORMATION ON VIRGINIA

During the year in which the present study was carried out the population in the Commonwealth of Virginia was 5,706,000 (U.S. Census Bureau, 1987). The per capita income at this time, 1985, was $14,542 and the unemployment rate was 5.6% (U.S. Census Bureau, 1987). During the same year there were 85,984 live births in the state (Virginia Statistical Abstracts, 1987). Census figures (Virginia Statistical Abstracts, 1987) for 1980 show 79% of Virginia's population as white, 19% as black and just under 2% for all other ethnic/racial groups.

The Virginia Department of Health is composed of 36 local health districts within 5 regions across the state (Figure 5). A health district may consist of one or more health departments. Most health departments offer a variety of services to the community. In the area of maternal and child services most offer prenatal health care and pediatric

FIGURE 6

MAP OF VIRGINIA HEALTH DISTRICTS



THE WIC PROGRAM IS AVAILABLE IN ALL CITIES AND COUNTIES

Source: Virginia Department of Health, 1986.

clinic services. All health departments offer WIC Program Services for those eligible. Pregnant women on the WIC Program may receive prenatal medical care at the provider of their choice.

WIC PROGRAM

Eligibility determination for the WIC Program takes place at the local health department. Applicants must meet all three of the following basic eligibility criteria: 1) reside within the designated area served by the health district, 2) fall within preset income guidelines based on family size (Appendix A), and 3) have a medical/nutritional risk factor (Appendix B).

Racial/ethnic participation for the Virginia WIC Program was not available for the exact period of the study. However, data for September 1985, about six months after data collection, was available. This ethnic breakdown is presented in Table 2. The numbers given for women include pregnant and post partum women as well as breastfeeding women. The incidence of breastfeeding for the WIC Program population was 18.83% for the entire year of 1985. The percent of breastfeeding among participants is derived using the following equation:

$$\frac{\#\text{ breastfeeding}}{\#\text{ post partum (not breastfeeding)} + \#\text{ breastfeeding}} \times 100 = \%\text{ breastfeeding}$$

Table 2

Ethnic Group Participation
Virginia WIC Program 1985

	Woman Participants		Ethnic Breakdown
	Number	Percent	% Of All VA WIC Program Participants
Black	7021	49.0	55.2
White	6616	46.2	40.6
Hispanic	406	2.8	2.1
Asian or Pacific Islander	230	1.6	1.9
American Indian or Native Alaskan	55	.4	.2

SELECTION OF SUBJECT POPULATION

Virginia WIC Program participants served as a source for potential subjects for this study. Women who had been on WIC prenatally and were subsequently adding their newborn to the program were the target group.

Plans for the study were presented at an Eastern Regional WIC Nutrition Educators Inservice in November, 1984. Volunteers to administer the survey were solicited. Due to a lack of response, the Eastern Regional WIC Nutrition Coordinator asked for additional volunteers at a staff meeting in Richmond. Of the five regions within the state three regions participated in administering the survey; 80% of those participating were in the Eastern Region, with the remainder almost equally divided between the Central and Southwestern Regions (Table 3).

The areas covered by the survey included the metropolitan areas of Virginia Beach and Hampton, both having populations over 100,000; the smaller cities and towns of Salem, Vinton, Covington and Fincastle as well as the rural health districts of Middle Peninsula and Northern Neck. The county of Henrico, which partially surrounds the State's capital city of Richmond, has almost 200,000 residents.

If a woman participates in the WIC Program during her pregnancy, her newborn infant is automatically eligible for

Table 3

Participating Health Departments By Region
and
Number of Participants Completing Questionnaire

Region	Health District	# Completed Questionnaire
Eastern	Virginia Beach	51
	Hampton	24
	Northern Neck	15
	Middle Peninsula	38
Central	Henrico	13
Southwestern	Salem	3
	Vinton	3
	Fincastle	4
	Covington	1
	Total	152

Regions not participating included the Northern and Northwestern regions.

the program if still financially within the guidelines. In most areas, these infants are added to the program during group sessions or infant certification classes. Several areas add infants to the program individually. Survey participants were limited to bottlefeeders and were recruited during these certification proceedings on an anonymous and voluntary basis. During the waiting time at the certification appointment the WIC nutritionist orally explained the study and asked the partcipant to volunteer to complete the questionnaire. All women were assured that the information would be anonymous and participation would be confidential. Because some of the respondents may be unfamiliar with the meaning of anonymous they were told, in addition, that nobody would be able to identify which person had returned which questionnaire.

DEVELOPMENT OF THE SURVEY INSTRUMENT

A questionnaire was developed to determine reasons for not breastfeeding among women on the WIC Program. The questionnaire consisted of 10 multiple choice questions (Appendix C). The first five related to demographic information which was collected to provide descriptive data for statistical analysis. The demographic data collected included age, race, education, marital status and mother's own infant feeding history (breast or bottle). The last

four questions served to reveal any source, or sources, of information or influence especially related to the providers of medical care. These questions related to reading about or attending a class on breastfeeding, discussing breastfeeding with the health professional and where medical care was obtained. Question 6 dealt with a variety of attitude and knowledge statements about breastfeeding and was designed to identify what may have been the influencing factor, or factors, in the woman's decision to bottlefeed instead of breastfeed. There were 18 possible responses to this question and as many items as applied could have been circled. Possible responses to this question on influencing factors were gathered initially by asking women, individually, why they chose not to breastfeed. This question was then pilot tested, by this investigator only, in the Hampton, Virginia WIC Program during infant certification sessions. Approximately 25 women pilot tested the question in November and December, 1984. In addition to listing possible responses the pilot questionnaire provided a space to write in other responses not listed. The final version of the questionnaire listed all responses either on the original survey or those added during pilot testing. Some responses were re-worded or phrased differently in the final version of the questionnaire.

DATA COLLECTION

Questionnaires were administered sometime between January and April, 1985. The surveys were given out and collected by WIC nutritionists who were adding new infants to the WIC Program. In the majority of cases this was carried out in a group setting. As stated previously, surveys were completed only by women who had chosen to bottlefeed. Each nutritionist who participated in administering the questionnaire was responsible for returning them to the investigator. They were identified only by health district.

A total of 180 surveys were administered and returned. Of that number 28 were eliminated for being incomplete. None of these respondents circled a response to Question 6. Some of them added responses not included or wrote comments instead of circling one of the responses provided. There were 152 surveys used for data analysis.

DATA ANALYSIS

Data were analyzed to look at three aspects: the demographic variables, factors influencing the decision not to breastfeed, and finally, potential sources of breastfeeding information related to provider of care.

First, the demographic data from the survey was used to determine characteristics of the sample population. The

variables included age, race, education, marital status, respondent's own infant feeding history and source of prenatal care. For these data, frequencies and percentages were tabulated. Although the health district of each respondent was recorded on the questionnaire this demographic information was not used in the statistical analysis for this research project.

The relationship between the demographic indicies of age, race, education and marital status and the 18 knowledge and attitude statements in Question 6 was examined. The purpose of this analysis was to identify those barriers to breastfeeding which may be affecting particular population groups within the WIC Program population. Data analysis was carried out using the SAS package (SAS, 1982) and items were tested using Chi-square comparisons. For some variables the numbers were too small for valid testing and subsequently groups were re-combined in order to produce more reliable results. The revised groupings are explained where appropriate in the results section.

In order to adequately and accurately provide education on breastfeeding, it must be determined whether sources of prenatal care are providing any education on breastfeeding. Because WIC Program participants may attend private care facilities as well as health department clinics it is of interest to determine who is receiving prenatal

breastfeeding information. Percentages and frequencies were calculated for the data in this section. The indicies studied were obtained from the questions regarding reading about breastfeeding, attending a class including breastfeeding or discussing the subject with the health care provider. The respondent's source of prenatal medical care was also examined.

CHAPTER IV

RESULTS AND DISCUSSION

DESCRIPTION OF THE STUDY GROUP

Of 180 questionnaires returned, 152 were used for data analysis. Twenty-eight questionnaires were eliminated due to incomplete responses. All women were enrolled in the WIC Program prenatally and were applying for WIC Program services for their newborn infants at the time that the survey was administered.

DEMOGRAPHIC DATA

Age. Data on age distribution are shown in Table 4. Originally age groupings were defined as follows: $\leq$ 14 years, 15-19 years, 20-24 years, 25-29 years and $\geq$ 30 years. There were no respondents in the youngest age group and only 11 in the oldest group. Therefore, in an effort to have numbers large enough for valid data analysis within any one group the youngest group was deleted and the oldest two groups combined to form the following age categories: 15-19 years, 20-24 years and $\geq$ 25 years. Thirty-seven percent of the women were 15-19 years, 41% were from 20-24 years and 22% were in the oldest group of 25 years and above.

TABLE 4

AGE OF RESPONDENTS

Revised Age Groupings
(used for data analysis)

Age Group	Number of Respondents	% of Total
15-19 years	56	37
20-24 years	62	41
$\geq$ 25 years	34	22

ORIGINAL AGE GROUPINGS

Age Group	Number of Respondents	% of Total
$\leq$ 14 years	0	0
15-19 years	56	37
20-24 years	62	41
25-29 years	23	15
$\geq$ 30 years	11	7

Race. Data for race are shown in Table 5. The survey question regarding race had the following as possible responses: black, white, oriental and other. During pilot testing only black, white and other were listed and since two women designated themselves as oriental, this classification was added to the final version. The survey was pilot tested in Hampton, Virginia and at that time there were no hispanics on the WIC Program in Hampton. Therefore, this investigator failed to add this classification even though hispanics constituted 2.8% of women on the Virginia WIC Program in 1985. It is assumed, therefore, that any hispanics completing the survey selected white as their race. Only one respondent selected the category labeled other and she specified herself as Indian. One woman was oriental, therefore, for the purpose of this research only the predominant races of black and white were considered in the statistical analysis. Of the 150 women who listed themselves as black or white, 61.3% were black and 38.7% were white. These proportions differ from the State's population as a whole (79% white, 18.9% black, Virginia Statistical Abstracts, 1987); they also differ somewhat from the 1985 WIC statistics for women participants which show 49% black and 46% white (Virginia Department of Health, 1986). The numbers are, however, closer to the WIC figures. These differences may be explained by the racial breakdown

TABLE 5

RACE OF RESPONDENTS

Revised Racial Breakdown
(used for data analysis)

Race	Number of Respondents	% of Total
White	58	39
Black	92	61

RACIAL BREAKDOWN - ALL RACES

Race/ Ethnic Group	Number of Respondents	% of Total
White	59	38
Black	92	61
Indian	1	.01
Oriental	1	.01

in the geographical areas in which the survey was administered. The difference from the State's population as a whole may indicate that a higher proportion of blacks are eligible for the WIC Program.

Education. The data on education are given in Table 6. The survey question regarding education has the following four possible responses: less than high school graduate, high school graduate, some college or college graduate. As originally classified only one respondent was a college graduate. In order to give more validity to statistical analysis, this person was grouped with those who had some college education. The results of the revised categories show 45.40% with less than a high school education. It must be pointed out here that 36 women (23.7%) in the sample were age 18 years or less and may not have completed high school due to their age. Another 36.84% were high school graduates and 17.76% had at least some college education. Still, nearly half of the survey population would be classified as under educated by this investigator's definition.

Marital Status. Table 7 gives the data for marital status. Originally, respondents were given four choices and the results were as follows: married, 37%; single, living with the baby's father, 9%; single, living alone, 14%; and single, living with parents or family, 40%. In order to obtain sufficient numbers within each category the

TABLE 6

EDUCATIONAL LEVEL OF RESPONDENTS - REVISED GROUPS

(used for data analysis)

Education Level	Number of Respondents	% of Total
< High School Graduate	69	45
High School Graduate	56	37
College Attendance or Higher	27	18

ORIGINAL EDUCATION GROUPINGS

Education Level	Number of Respondents	% of Total
< High School Graduate	69	45
High School Graduate	56	37
Some College	26	17
College Graduate	1	.01

TABLE 7

MARITAL STATUS OF RESPONDENTS

Original Grouping

Marital Status	Number of Respondents	% of Total
Married	57	37
Single, living with baby's father	13	9
Single, living alone	21	14
Single, living with parents or family	61	40

Revised Grouping A*

Marital Status	Number of Respondents	% of Total
Married or Single, living with baby's father	70	46
Single, living along or with parents or family	82	54

TABLE 7

(continued)

MARITAL STATUS OF RESPONDENTS

Revised Grouping B*

Marital Status	Number of Respondents	% of Total
Married	57	37
Single, living alone	21	14
Single, living with baby's father or parents and family	74	49

Revised Grouping C*

Marital Status	Number of Respondents	% of Total
Married	57	37.5
All Single	95	62.5

*Groupings A, B and C were all used in data analysis.

Mother's Feeding History as an Infant. Data on feeding history is shown in Table 8. Respondents were asked to identify whether they, themselves, had been breastfed as an infant. The majority of the sample (76%) had not been breastfed. Of the remainder, 10% had been nursed and 14% were not sure by which method they had been fed as an infant. Although the present study dealt only with those who had chosen to bottlefeed their own infant, it is possible to conclude from the numbers that more bottlefeeders were bottlefed as infants themselves. This supports the findings of Krishna (1979); Gilmore, et. al. (1979) and Jones (1987) in which women were found more likely to feed their infants using the same method by which they had been fed themselves as infants.

SOURCE OF MEDICAL CARE

Of the survey respondents 125 (82%) received prenatal health care from their local health department. Another 27 (15%) attended private physicians and 4 (3%) attended both sources of care during their pregnancy. All survey respondents were enrolled in the WIC Program offered through the health department. As part of the WIC Program certification procedures breastfeeding should be reviewed with every prenatal aplicant. However, due to time constraints those women who stated they have no interest in

TABLE 8

MOTHER'S FEEDING HISTORY AS AN INFANT

Feeding Method	Number of Respondents	% of Total
Breastfed	15	10
Bottlefed	115	76
Not Sure	22	14

or no intention of breastfeeding may not have received further information on the subject. This may have enabled the health professional to utilize the time for offering information and encouragement to those women who showed an interest in considering breastfeeding as their choice of infant feeding method.

PRENATAL EDUCATION ABOUT BREASTFEEDING

Reading. As shown in Table 9, 83% of the entire sample population did some reading on the subject of breastfeeding. Of those attending health department maternity clinics, 83.2% were found to have read about breastfeeding prenatally. Similarly, 82.6% of those attending private physicians read about breastfeeding. The same data are depicted graphically in Figure 7. This survey did not determine type of reading material; i.e. whether leaflets, complete books, etc. The results do indicate, however, that printed information provided on breastfeeding is likely to, at least, be read by the patient.

Class Attendance. Data for class attendance can be found in Table 9. In response to the question regarding attendance at a class which included the subject of breastfeeding, only 39% responded "yes". Of the 61% who did not attend a class on breastfeeding, 10% (16 women) indicated that they would have attended such a class had one

TABLE 9

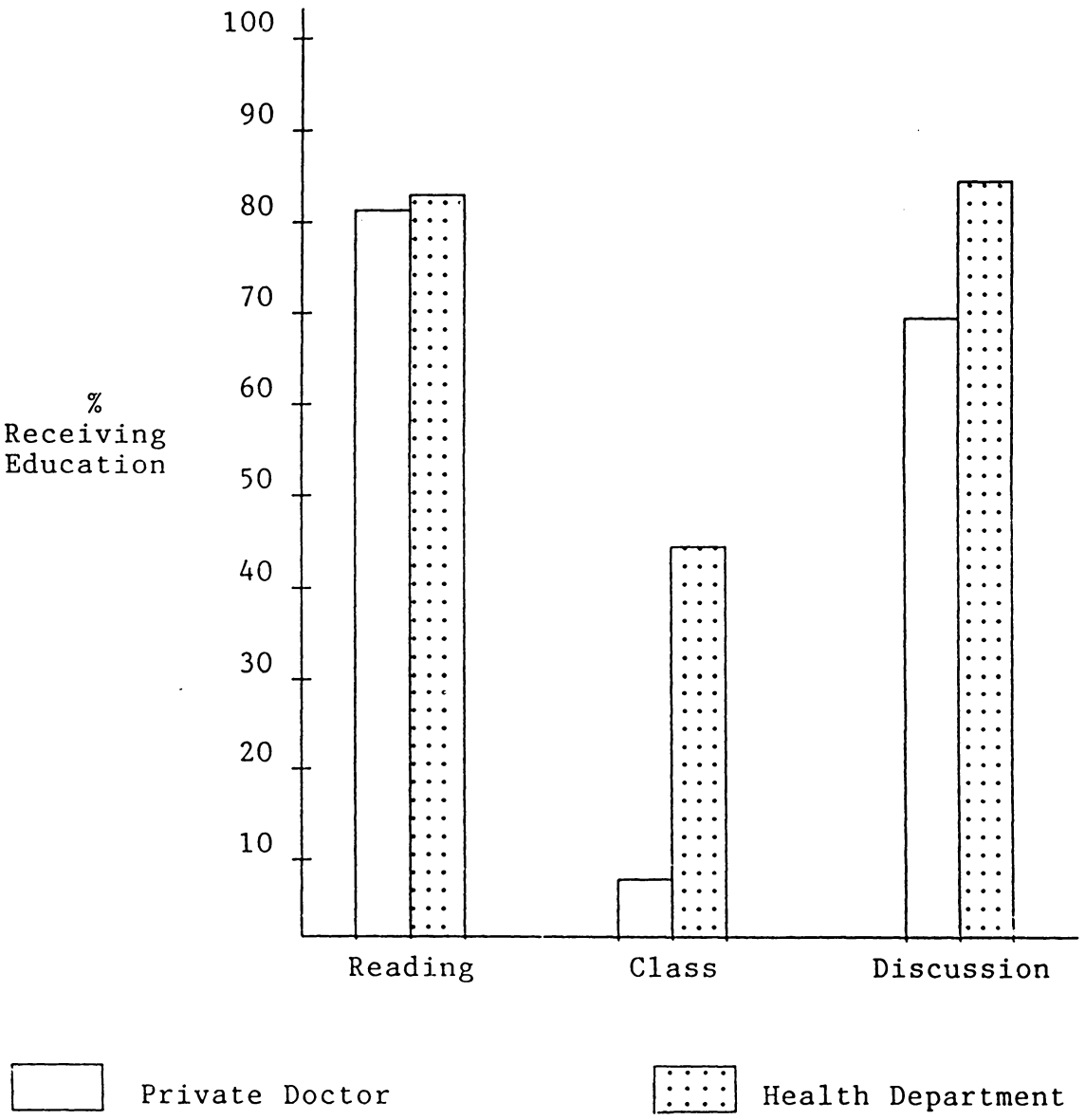
PRENATAL EDUCATION ON BREASTFEEDING

Source of Medical Care	Reading		Class		Discussion	
	N	%	N	%	N	%
Health Department N=125	104	83.2	57	45.6	108	86.4
Private Doctor	19	82.6	2	8.7	16	69.5
Both Sources of Care	3	75	1	25	4	100

FIGURE 7

PRENATAL EDUCATION ON BREASTFEEDING

By Provider of Care



been offered. Although these 16 women were equally divided between sources of health care (8 health department, 8 private care), 35% of the private care respondents did not attend such a class because none was offered as compared to only 6.4% of the health department patients. Of the 59 women, who attended a class on breastfeeding, 95% were health department clinic patients. In addtion, it was found that 45.6% of clinic patients attended a breastfeeding class, while only 8.7% of private care patients attended such a class. Figure 7 shows graphically the same data. These results suggest that health department maternity clinic patients are more likely to be exposed to more comprehensive education on the topic of breastfeeding than are private sector patients.

Prenatal Discussion of Breastfeeding. Survey results, as shown in Table 10, and shown graphically in Figure 7, suggest that most women (84%) discussed breastfeeding with a health care provider. Further analysis reveals that 86.4% of the health department patients took part in a discussion on breastfeeding, whereas 69.5% of those attending private care facilities discussed breastfeeding; again, indicating that patients attending health department clinics are offered more prenatal exposure to the subject of breastfeeding.

A possible explanation for the disparity between the

amount of information given to the two groups of women (health department vs. private care) may be related to the greater diversity of health professionals within the health department system. All health departments have access to a nutritionist through the WIC Program and many have a Maternal and Child Health (MCH) nutritionist as well. Several health districts also have health educators. The education mandated by these programs is probably the major reason that the health department is better able to educate pregnant women on the subject of breastfeeding.

THE MOST INFLUENTIAL BELIEFS

Table 10 shows the number of individuals and percent responding to the various influential knowledge and attitude statements.

Results show that the most often cited reason for not breastfeeding was "I couldn't leave my baby with anyone else.", which was identified by 30.8% of the respondents. Additionally, over 28% cited that "It's more trouble than bottlefeeding" and another 12% felt they would be too tied down if they breastfed. All of the above mentioned reasons for not initiating breastfeeding are related to the perceived inconvenience of nursing as compared to using formula. These findings are similar to those in the literature. Both Baranowski, et. al. (1986) and Leeper, et.

TABLE 10

REASONS FOR NOT CHOOSING BREASTFEEDING

	Number	% Of Total Sample
A. I didn't know anything about breastfeeding	15	9.9
B. I would have been too embarassed to breastfeed in front of anyone	44	28.9
C. It's more trouble than bottle feeding	43	28.3
D. It hurts and causes sore nipples	36	23.7
E. Someone I know tried it and didn't like it	15	9.9
F. My husband/boyfriend didn't want me to breastfeed	20	13.2
G. My breasts are too small	17	11.2
H. It causes saggy breasts	13	8.6
I. I couldn't leave my baby with anyone else	47	30.8
J. I had to go back to work	34	22.4
K. I had to go back to school	25	16.4
L. I probably wouldn't have had enough milk	15	9.9
M. If you start breastfeeding you can't switch to the bottle	9	5.9
N. I had a cesarean delivery	4	2.6
O. I would have been too tied down	18	11.8
P. Nobody in the hospital offered any help on breastfeeding	2	1.3
Q. I wouldn't have gotten any WIC formula if I had breastfed	6	3.9
R. I wanted to use the formula samples I got at the hospital	14	9.2

al. (1983) found, in similar populations, of low socioeconomic status, that reasons relating to inconvenience were the most common factors in choosing not to breastfeed. In a WIC population Bevan, et. al. (1984) found, again, that bottlefeeding was perceived as being easier than breastfeeding. In studies containing more diverse populations (Sarett, et. al., 1983; Jones, 1987) reasons related to ease or convenience were major factors in the decision not to breastfeed.

Also related to convenience is a mother's wish to return to work or school. In the present study, 22.4% and 16.4% of the respondents, respectively, cited work and school as their reason for not initiating breastfeeding. These results support the findings of Sarett, et. al. (1983) and Leeper, et. al. (1983) which also cite returning to the work force or going back to school as a barrier to breastfeeding.

Table 10 also shows that almost 29% of the WIC participants in the present study felt that they would have been too embarassed to breastfeed. Results also suggest that fear of embarassment is not a common cause for the early termination of breastfeeding (Manstead, 1984), it has been found to be a factor in the decision to choose against breastfeeding as a method of infant feeding (Mackey and Fried, 1981; Jones 1987).

While 23.7% of the respondents (Table 10) in this survey named "It hurts and causes sore nipples" as a reason not to breastfeed, the current literature does not cite this as a major deterrant to breastfeeding initiation. However, pain is associated with the early termination of breastfeeding as found by Bevan, et. al. (1984); Manstead, et. al. (1984); O'Herlihy (1978). As discussed earlier one person's experience may influence the decision of others and a previous bad experience may stop a woman from future attempts to breastfeed.

Although Joffe and Radius (1987), in a survey of low income pregnant adolescents, found that the greatest barriers to the initiation of breastfeeding among adolescent mothers were related to physical appearance, the results of this survey show that in response to the statement that breastfeeding causes saggy breasts only 8.6% (Table 10) identified this as a barrier. Furthermore, 7% of those age 15-19 years checked this item as compared to 10% and 9% for ages 20-24 years and 25 years and older, respectively. While the myth that nursing causes the breasts to sag persists for some, it does not appear to be a significant deterrant for this population.

Whereas the fear of insufficient milk supply is a major factor in the early termination of breastfeeding (Manstead, et. al., 1984; O'Herlihy, 1978; West, 1979; Rogers, et. al.,

1987), the results of this investigation indicate that it is not a major factor (9.9%) in the decision not to breastfeed. Fear of an inadequate milk supply was not cited in the literature as a barrier to the initiation of breastfeeding.

A lack of assistance in the hospital was named by only two respondents. The most probable reason for this is that most women decide upon an infant feeding method long before entering the hospital and were not likely to have been offered any assistance if their decision to bottlefeed was known to the hospital staff.

CHI-SQUARE ANALYSIS

In an attempt to determine whether any demographic variables could be correlated with specific attitude or belief factors, Chi-square tests were used to determine if age, race, education or marital status could be associated with any of the specific reasons given for choosing not to breastfeed. For the purpose of this study a probability level of $p \leq .05$ was considered to be statistically significant.

Regarding the age variable two factors appeared to be significantly correlated. First, for those age 15-19 years there was a significantly greater incidence in the belief ($p = .009$) that their breasts were too small to nurse their infants. Over 21% of this age group showed this concern, as

compared to 5% and 6% for the older two groups. These findings are consistent with those of Ellis (1983) who found that 17% of female and 32% of male adolescents believe that breast size is related to breastfeeding capability.

The other factor of significance related to age, was that of returning to school ($p = .0001$). This correlation can most likely be explained by the fact that more women in the age category of 15-19 years had not yet finished their education. The findings of this study support the results of Leeper, et. al. (1983). Although that study examined all age groups a large portion (38%) were teens. Leeper, et. al. (1983) found returning to work or school to be the third most common reason for not breastfeeding. Sarett, et. al. (1983) also cited work or school as a major cause for women choosing to bottlefeed.

Although the literature shows that many women are influenced in their decision on feeding method by others, no age group in this study was significantly influenced by someone who "tried it and didn't like it". While the teens were slightly more likely to be influenced by someone who had tried breastfeeding, less than 10% of all women cited this as a reason for not breastfeeding. The present study's results may differ from the literature because this study did not attempt to determine whether the respondents had been influenced by others in general; but rather to

determine if they had been influenced by someone who had been unsuccessful in an attempt to breastfeed. With a low incidence of breastfeeding in the area of the study (Virginia) many women may not have even been exposed to a woman with breastfeeding experience, be it successful or unsuccessful. Baranowski, et. al. (1983) did find that black women of low socioeconomic status were more influenced by a previous breastfeeder than were white women. Ray, et. al. (1984) found that in a group of low income teens (15-19 years) all (100%) had been influenced by observing someone breastfeed; however, the study did not report whether they were influenced to breast- or bottle-feed by the experience.

Another area in which the findings of this study differ from the literature is convenience. Sarett, et. al. (1983), Jones (1987), Leeper (1983) and Bevan (1984) all identified the perceived inconvenience of breastfeeding as the main reason for not choosing the breast as a method of infant feeding. The present study found that those beliefs related to convenience were not significantly correlated with age in the decision on infant feeding. In fact, less than 9% of the teens felt they would be "too tied down" as compared to almost 15% of the 20-24 year olds and 12% of the 25+ group. Although more women (31%) were concerned about being able to "leave the baby with anyone else" or that breastfeeding is "more trouble" there was no significant variation related to

the age groups.

The fear that breastfeeding "hurts and causes sore nipples" did not seem to be related to age, although the teens (27%) did cite this as a concern slightly more often than the older two groups, 21% and 24%, respectively. While the literature cites painful breasts as a common reason for terminating breastfeeding the fear of painful breasts or nipples is not found in the literature as a barrier to its initiation. The present study, however, found that almost 24% of the respondents believed that breastfeeding "hurts and causes sore nipples".

While there were no strong correlations between race and the belief and attitude statements which influenced the infant feeding decision in this research, there were some borderline correlations worth exploring. First, it appears that white women were more likely not to breastfeed because their husband or boyfriend didn't want them to ($p = .066$). Further examination indicates that, while only 30% of the blacks responding were married or living with the father of the baby, 72% of the whites were married or living with the baby's father, making whites more subject to the influence of their male partner. Baranowski, et. al. (1983), in a survey of 358 women, found that while married women of both races tended to be influenced by their husbands on the infant feeding decision, white women were slightly more

influenced by their husbands than were black women (44% and 43%, respectively).

Statistics also suggest that black women were more likely not to nurse due to returning to school ($p = .099$). Further investigation reveals, however, that this may be due to the greater number of blacks in the younger age group (34 blacks, 22 whites) who may be continuing their education after giving birth.

Conversely, more white women found returning to work to be a barrier to breastfeeding than did black women ($p = .089$). A review of recent unemployment figures for the state of Virginia may offer an explanation for this trend. The unemployment rate for black females was 9.1% as compared to only 3.9% for white females in the state (U.S. Department of Labor, 1988). Therefore, more white women may have been planning to return to the work force and felt this would preclude the opportunity to breastfeed.

While returning to either work or school was not statistically significantly related to race, both are obvious factors in the decision to breastfeed. Although the current literature does not address these factors in relationship to race both are frequently identified as barriers to breastfeeding. Leeper, et. al. (1983) found that 13% of a group of health department patients mentioned returning to work or school as a reason for not

breastfeeding.

Women with less than a high school education were significantly ($p = .04$) less likely to have chosen breastfeeding due to returning to school. Again, those women, with less than a high school education, are the ones continuing their education.

Although returning to school was not the most frequently cited reason for not breastfeeding in this study (16.4%), or in the literature, it is a reason which is found to affect the decision of some women in almost every study or survey carried out on why women choose not to breastfeed.

Results indicate that there may be a connection between undereducated women and the belief that breastfeeding is more trouble. While this correlation was not statistically significant ($p = .06$), it does suggest that this group of women is concerned with the perceived inconvenience of breastfeeding. If these undereducated women were planning to return to school, these findings may suggest that the women felt that going to school and trying to breastfeed would be difficult. Of the 43 women who cited "too much trouble" as an influence against breastfeeding, 36% also cited "returning to school" as a factor. These results are consistent with findings in the literature. Leeper, et. al. (1983), in studying a sample of 50 low income women in Alabama, reported that the perceived inconvenience of

breastfeeding discouraged women of low income from initiating breastfeeding. The average education of the women in that study was reported to be 11.8 years, which is less than a high school education. Sarett, et. al. (1983) also found that the major reasons for not breastfeeding were related to convenience or to returning to work or school. Demographic data were not given for the women who cited these factors in the Sarett, et. al. (1983) study, in which women wanting to return to work or school was the second most cited reason for choosing bottlefeeding over breastfeeding.

Looking at marital status, or living situation, it was found that women who are single and live with parents or family found the fear of embarassment to be a major factor in the decision not to breastfeed more often than did the other groups ($p = .04$). This may be due to a lack of privacy or an overcrowded living situation. Over half (54%) of this group was in the age range of 15-19 years. When comparing the married women to all groups of single women (living alone or with someone), the married women were less likely to regard the fear of embarassment as a factor in their decision not to breastfeed ($p = .04$). The most significant correlation ($p = .009$) was found when comparing married and single living with the baby's father, with single, living alone and single, living with parents or

relatives. These results indicate that single women are more significantly concerned about breastfeeding being embarassing. Embarassment as a factor in deciding against breastfeeding has been reported by several researchers, however, its relationship to marital status has not been addressed. Leeper, et. al. (1983) studied a similar, low income, population and found that married women are more likely to breastfeed than women who are unmarried and living with parents or other relatives. The most common reason given in that study for not breastfeeding was "not wanting to nurse" by 43.5% of the sample. This is a vague reason and while not specifically mentioned in the study, concern over embarassment or similar feelings may certainly be categorized as not wanting to nurse. Although Jones (1986) examined a different population (married, middle class, few teens, all breastfeeding), she found women to be less embarassed nursing around their husbands than in front of anyone else. Thus, in the present study, the finding that single women are more concerned about the embarassment associated with breastfeeding is consistent with the literature.

Single women, living alone, tended to be most concerned that breastfeeding would tie them down ($p = .03$). These single women may have a more active social life and worry that breastfeeding might have a negative impact on their

social activities. Again, this study supports the findings of Leeper, et. al. (1983) which suggest that single women are less likely to initiate breastfeeding. Single women, living alone, may also lack the support systems of married women or women living with someone who can offer encouragement.

Interestingly, single women more often cited wanting to use the hospital formula samples as a reason for not breastfeeding. These findings were most statistically significant ($p = .01$) comparing married to all single women in the study. While only one married woman cited hospital samples as a factor in deciding against breastfeeding, 13 of the single women found it to be an influencing factor.

An examination of the relationship between going back to school and marital status shows a statistically significant correlation ($p = .048$). Statistics suggest that single women, living alone or with family, were more likely to find returning to school a barrier to breastfeeding than did married women or women living with the baby's father. This may be due, at least in part, to the fact that fewer married women or those living with the baby's father were in the 15-19 year age group. It was shown earlier that returning to school is often a barrier to breastfeeding. It is probably more closely associated with age than marital status.

Although the most often cited reason for not breastfeeding was "I couldn't leave my baby with anyone else" it was not a reason that could be linked to any of the demographic barriers. This is also true for the third and fourth most identified influences which read "It's more trouble than bottlefeeding" and "It hurts and causes sore nipples", respectively. This indicates that although these statements are beliefs or attitudes held by many women, and belief in them as barriers to breastfeeding is not related to the variables examined in this study.

CHAPTER V

SUMMARY AND CONCLUSIONS

The purpose of this study was to identify existing barriers to the initiation of breastfeeding among women on the WIC Program. Several areas were investigated: demographic variables, source of prenatal medical care, prenatal education on breastfeeding and the influence of attitudes and beliefs about breastfeeding. It was this researcher's hope that the insight and information gained herein might serve as a tool to plan and implement an educational endeavor which would assist Virginia in reaching one of the objectives set forth by the Surgeon General in 1984. That objective states: "The proportion of women who breastfeed their babies at hospital discharge should be increased to 75%, and the percentage of those still breastfeeding at 6 months of age should be increased to 35%.

The first hypothesis, that most women who decide against breastfeeding as their method of infant feeding do so for unfounded or irrational reasons, proved true. While the demographic variables did not correlate as significantly as originally hypothesized, much useful information has been obtained from this survey. Several of the major factors which influence women on the WIC Program

not to choose breastfeeding as a method of infant feeding were identified. Included in the primary reasons were: 1) "I couldn't leave my baby with anyone else", 2) "I would have been too embarassed to breastfeed in front of anyone, 3) "It's more trouble than bottlefeeding", 4) "It hurts and causes sore nipples" and 5) "I had to go back to school".

The second hypothesis, that women who attend health department clinics are more likely to receive educational information regarding breastfeeding than those women receiving care from private physicians, was accepted. Results indicated that the number of women who read about breastfeeding was nearly equal for both groups (83.2% health department, 82.6% private care). More women attending the health department discussed breastfeeding with a medical care provider and health department patients showed a dramatically higher attendance at classes including the subject of breastfeeding (45.6% vs. 8.7%).

This study, while producing much useful information, had several limitations. While the survey was intended to be completely anonymous several women put their names on the survey form which indicates they did not understand it was an anonymous study. In some areas in which the survey was administered, the WIC Programs are very small with the nutritionist knowing all participants. Some women in these areas may have felt remaining anonymous was not possible

and, therefore, may not have answered the survey as honestly or completely as they might have if given by an administrator unknown to them.

The question regarding factors influencing the infant feeding decision may have provided more meaningful information if the women had been limited to identifying only the most influential factor or possibly ranking no more than three factors.

It is evident, from the number of adolescent respondents, that education about breastfeeding must begin early. As shown in the review of the literature infant feeding choices are often made long before a pregnancy occurs. Because myths and misconceptions, which may impact upon this decision abound, education including basic facts about the biological function of the female breasts and the basic physiology of lactation must be introduced by early adolescence. This investigator's recommendation would be to include breastfeeding in the existing health or sex education courses taught throughout the school years. Simply exposing young children to pictures of a mother and infant or hearing the term "breastfeeding" will help remove the mystique surrounding the subject.

To be successful in meeting the objective set by Surgeon General C. Everett Koop a comprehensive, interdisciplinary, on-going education program must be

implemented. This education should be aimed not only at future mothers and potential breastfeeders but also towards the general public. These people may become influential in the decision-making process and be sources of support for those choosing to breastfeed our next generation.

In addition to promoting the decision in favor of breastfeeding, hospital and physicians' staffs must be educated. The in-hospital and early post partum periods are crucial for the success of the nursing relationship. Use of supplemental water and formula should not be routine and should be discouraged unless deemed necessary by the physician. The use of lactation or breastfeeding consultants for staff and patient education may help achieve a higher incidence of breastfeeding at hospital discharge.

The incidence of breastfeeding within the WIC Program population has been shown to be lower than in the population as a whole (Martinez and Stahle, 1982). Therefore, it is this researcher's recommendation that efforts to improve breastfeeding statistics within the health department be expanded. At this time all WIC participants are educated, at least briefly, about the advantages of breastfeeding. This education may prove more effective if an earlier introduction to breastfeeding had taken place in family planning clinic or in school, as commented previously. Every health department, or WIC program, should have a

person designated to coordinate breastfeeding activities, to include staff and community education. In order to be effective this staff member would need time to plan, promote, carry out and evaluate such activities.

All of the women in this study were considered to be low income due to their WIC eligibility. Therefore, they are likely to fit into the category of those least likely to breastfeed as outlined in the literature. Like all women planning to breastfeed, these women need constant encouragement, throughout pregnancy, in order to make the committment to breastfeed. Since many women on the WIC Program have been shown to be young and unmarried they may lack outside sources of encouragement and support that could lead to a successful and happy breastfeeding experience.

REFERENCES

1. Alden, J.E.: Breastfeeding in an indigent rural county in Florida. Report of the Surgeon General's Workshop on Breastfeeding and Lactation. U.S. Department of Health and Human Services Pub. No. HRS-D-MC 84-2, Washington, DC, 1984.

2. American Academy of Pediatrics. Committee on Nutrition: Commentary on breastfeeding and infant formulas including proposed standards for formulas. Pediatrics. 57:278, 1976.

3. American Academy of Pediatrics. Committee on Nutrition: Encouraging breastfeeding. Pediatrics. 65:657, 1980.

4. Arango, J.O.: Promoting breastfeeding: a national perspective. Public Health Reports. 99:559, 1984.

5. Axelson, M.L., Huriny, M.S., Sahlroot, M.S., Forman, M.R.: Primiparas' beliefs about breastfeeding. J. Am. Diet. Assoc. 85:77, 1985.

6. Bain, K.: The incidence of breastfeeding in hospitals in the United States. Pediatrics. 2:313, 1948.

7. Baranowski, T., Bee, D.E., Rassin, D.K., Richardson, C.J., Brown, J.P., Guenter, N., Nader, P.R.: Social support, social influence, ethnicity and the breastfeeding decision. Soc. Sci. Med. 17:1599, 1983.

8. Baranowski, T., Rassin, D.K., Richardson, C.J., Brown, J.P., Bee, D.E.: Attitudes towards breastfeeding. J. Dev. Behav. Pediatr. 7:367, 1986.

9. Berger, A., Winter, S.T.: Attitudes and knowledge of secondary school girls concerning breastfeeding. Clin. Pediatr. 19:825, 1980.

10. Bevan, M.L., Mosley, D., Lobach, K.S., Solimano, G.R.: Factors influencing breastfeeding in an urban WIC Program. J. Am. Diet. Assoc. 84:563, 1984.

11. Canadian Paediatric Society Nutrition Committee and American Academy of Pediatrics Committee on Nutrition: Breast-feeding. Pediatrics. 62:591, 1978.

12. Dewey, K.G.: Nutrition survey in Tabasco, Mexico: patterns of infant feeding. Am. J. Clin. Nutr. 38:133, 1983.

13. Egan, M.C.: Federal nutrition support programs for children. Pediatr. Clin. North. Am. 24:229, 1977.

14. Eiger, M.S., Oldo, S.W.: The Complete Book of Breastfeeding. New York: Workman Publishing Co., 1981.

15. Ekwo, E.E., Dusdieker, L., Booth, B., Seals, B. Psychosocial factors influencing the duration of breastfeeding by primigravidas. Acta. Paediatr. Scana. 73:241, 1984.

16. Ellis, D.J.: Attitudes of secondary school students in two countries. Hygie. 5:45, 1986.

17. Ellis, D.J.: Secondary school students' attitudes and beliefs about breastfeeding. J. Sch. Health. 53:600, 1983.

18. Ellis, D.J., Hewat, R.J.: Breast-feeding: motivation and outcome. J. Biosoc. Sci. 16:81, 1984.

19. Ellis, D.J., Hewat, R.J.: Do nurses help or hinder mothers who breastfeed? J. Adv. Nurs. 8:241, 1983.

20. Feinstein, J.M., Berkelhamer, J.E., Gruszka, M.E., Wong, C.A., Carey, A.E.: Factors related to early termination of breast-feeding in an urban population. Pediatrics. 78:210, 1986.

21. Fetterly, K., Graubard, B. Racial and educational factors associated with breastfeeding -- United States, 1969 and 1980. MMWR. 33:153, 1984.

22. Furman, S.N.: Attitude of middle class mothers to breastfeeding. S. Afr. Med. J. 56:722, 1979.

23. Gilmore, M., O'Driscoll, D., Murphy, H.: A pilot survey of an attempt to promote breast-feeding. Ir. J. Med. Sci. 148:272, 1979.

24. Goodine, L.A., Fried, P.A.: Infant feeding practices: pre- and postnatal factors affecting choice of method and the duration of breastfeeding. Can. J. Public Health. 75:439, 1984.

25. Grand, R.J., Sutphen, J.L., Dietz, W.H.: Pediatric Nutrition: Theory and Practice. Boston: Butterworths, p. 252-256, 1987.

26. Gunther, M.: Breast-feeding and the mother. Ciba Found. Symp. 45:145, 1976.

27. Hall, B.: Changing composition of human milk and early development of an appetite control. Lancet. 1:779, 1975.

28. Hally, M.R., Bond, J., Crawley, J., Gregson, B., Philips, P., Russell, I.: Factors influencing the feeding of first born infants. Acta. Paediatr. Scand. 13:33, 1984.

29. Heimendinger, J. A state-wide breastfeeding program: Rhode Island. Report of the Surgeon General's Workshop on Breastfeeding and Lactation. U.S. Dept. of Health and Human Services Pub. No. HRS-D-MC 84-2, Washington, DC, 1984.

30. Hanson, L.A., Winberg, J.: Breast milk and defense against infection in the newborn. Arch. Dis. Child. 47:845, 1972.

31. Hendershot, G.E.: Trends in breastfeeding. U.S. Department of Health and Human Services Pub. No. 80-1250. National Center for Health Statistics, Hyattsville, MD, 1980.

32. Hirschman, C., Butler, M.: Trends and differentials in breastfeeding: an update. Demography. 18:39, 1981.

33. Hirschman, C., Hendershot, G.E.: Trends in breastfeeding among American mothers. Vital Health Statistics [23]: Hyattsville, MD, 1979.

34. International Pediatric Association: Recommendations for action programmes to encourage breastfeeding. Acta. Paediatr. Scand. 65:275, 1976.

35. Jelliffe, D.B., Jelliffe, E.F.P.: Human Milk in the Modern World. New York: Oxford University Press, 1978.

36. Joffe, A., Radius, S.M.: Breast versus bottle: correlates of adolescent mother's infant feeding practices. Pediatrics. 79:689, 1987.

37. Jones, D.A.: Attitudes of breastfeeding mothers: a survey of 649 mothers. Soc. Sci. Med. 23:1151, 1986.

38. Jones, D.A.: The choice to breastfeed or bottlefeed and influences upon that choice: a survey of 1525 mothers. Child Care Health Dev. 13:75, 1987.

39. Katchner, A.L., Lanese, M.G.: Breast-feeding by employed mothers: a reasonable accomodation in the work place. Pediatrics. 75:644, 1985.

40. Kirk, T.R.: An evaluation of the impact of breastfeeding promotion in Edinburgh. Proc. Nutr. Soc. 38:77A, 1979.

41. Krishna, L.M.: Attitudes to breastfeeding by mothers in Newham Health District. Public Health. 93:383, 1979.

42. Lauwers, J., Woessner, C. Counseling the Nursing Mother. Wayne, NJ: Avery Publishing Group, 1983.

43. Lawrence, R.A.: Practices and attitudes towards breastfeeding among medical professionals. Pediatrics. 70:912, 1982.

44. Leeper, J.D., Milo, T., Collins, T.R.: Infant feeding and maternal attitudes among mothers of low income. Psychol. Rep. 53:259, 1983.

45. LeFevre, M., Kruse, J., Zweig, S.: Selection of an infant feeding method: a population based study in a rural area. J. Fam. Pract. 24:487, 1987.

46. Lyon, M.L., Chilver, G., White, D.G., Woollett, A.: Current maternal attitudes to infant feeding methods. Child Care health Dev. 7:145, 1981.

47. Mackey, S., Fried, P.A.: Infant breast and bottle feeding practices: some related factors and attitudes. Can. J. Pub. Health. 72:312, 1981.

48. Manstead, A.S.R., Plevin, C.E., Smart, J.L.: Predicting mothers' choice of infant feeding method. Br. J. Soc. Psychol. 23:223, 1984.

49. Martinez, G.A.: Infant Feeding in the United States. Personal Communication, 1984.

50. Martinez, G.A., Dodd, D.A.: 1981 milk feeding patterns in the U.S. during the first 12 months of life. Pediatrics. 71:166, 1983.

51. Martinez, G.A., Dodd, D.A., Samartgedes, J.A.: Milk feeding patterns in the United States during the first 12 months of life. Pediatrics. 68:863, 1981.

52. Martinez, G.A., Krieger, F.W.: 1984 milk feeding patterns in the United States. Pediatrics. 76:1004, 1985.

53. Martinez, G.A., Nalezienski, J.P.: The recent trend in breastfeeding. Pediatrics. 64:686, 1979.

54. Martinez, G.A., Nalezienski, J.P.: 1980 update: the recent trend in breast feeding. Pediatrics. 67:260, 1981.

55. Martinez, G.A., Stahle, D.A.: The recent trend in milk feeding among WIC infants. A.J.P.H. 72:68, 1982.

56. Meyer, H.F.: Breast feeding in the United States: extent and possible trend. Pediatrics. 22:116, 1958.

57. Meyer, H.F.: Breastfeeding in the United States - report of a 1966 national survey with comparable 1946 and 1956 data. Clin. Pediatr. 7:708, 1968.

58. Naylor, A.J.: The San Diego lactation program: a teaching hospital based resource to promote breastfeeding. Report of the Surgeon General's Workshop on Breastfeeding and Lactation. U.S. Dept. of Health and Human Services Pub. No. HRS-D-MC 84-2, Washington, DC, 1984.

59. O'Herlihy, B.P.: Breastfeeding: incidence and influences. Ir. Med. J. 71:404, 1978.

60. Oyarebu, K.A.: Characteristics of maternal age, parity, social class and breastfeeding patterns in Benin City, Nigeria. Soc. Sci. Med. 25:97, 1987.

61. Pascoe, J.M., Berger, A.: Attitudes of high school girls in Israel and the United States towards breast feeding. J. Adolesc. Health Care. 6:28, 1985.

62. Procianoy, R.S., Fernandes-Filho, P.H., Lazaro, L., Satori, N.C.: Factors affecting breastfeeding: the influence of caesarean section. J. Trop. Pediatr. 30:39, 1984.

63. Public Health Service. Report of the surgeon general's workshop on breastfeeding and lactation. Department of Health and Human Services Pub. No. HRS-D-MC 84-2. Washington, DC: U.S. Government Printing Office, 1984.

64. Randolph, L.: City-wide approach: New York. Report of the Surgeon General's Workshop on Breastfeeding and Lactation. U.S. Dept. of Health and Human Services Pub. No. HRS-D-MC 84-2, Washington, D.C., 1984.

65. Rassin, D.K., Richardson, C.J., Baranowski, T., Nader, P.R., Guenther,N., Bee, D.E., Brown, J.P.: Incidence of breast-feeding in a low socioeconomic group of mothers in the United States: ethnic patterns. Pediatrics. 73:132, 1984.

66. Ray, D.V., Estok, P.J.: Infant feeding choice and the adolescent mother. J.O.G.N. Nurs. 13:115, 1984.

67. Reams, E.S.: Opinions of physicians and hospitals of current breastfeeding recommendations. J. Am. Diet. Assoc. 85:79, 1985.

68. Reiff, M.I., Essock-Vitale, S.M. Hospital influences on early-feeding practices. Pediatrics. 76:872, 1985.

69. Reiser, P., Sidelman, Z.: Control of serum cholesterol homeostasis by cholesterol in the milk of the suckling rat. J. Nutr. 102:1009, 1972.

70. Rogero, C.S., Morris, S., Taper, L.J.: Weaning from the breast: influences on maternal decisions. Pediatric Nursing. 13:341, 1987.

71. Samuels, S.E., Margen, S., Schoen, E.J.: Incidence and duration of breastfeeding in a health maintenance organization population. Am. J. Clin. Nutr. 42:504, 1985.

72. Sarett, H.P., Bain, K.R., O'Leary, J.C.: Decisions on breastfeeding or formula feeding and trends in infant feeding practices. Am. J. Dis. Child. 137:719, 1983.

73. SAS Users Guide: Statistics. SAS Institute Inc. Cary, N.C., 1982.

74. Sedgwick, J.P. A preliminary report of the study of breast-feeding in Minneapolis. Am. J. Dis. Child. 21:455, 1921.

75. Serva, V., Karim, H., Ebrahim, G.J.: Breastfeeding and the urban poor in developing countries. J. Trop. Pediatr. 32:127, 1986.

76. Simopoulos, A.P., Grave, G.D.: Factors associated with the choice and duration of infant feeding practice. Pediatrics. 74:603, 1984.

77. Ståhlberg, M.R.: Breastfeeding and social factors. Acta. Paediatr. Scand. 74:36, 1985.

78. Switzky, L.T., Vietze, P., Switzky, H.N. Additudinal and demographic predictors of breast-feeding and bottle-feeding behavior by mothers of six-week-old infants. Psychological Reports. 45:3, 1979.

79. Thompson, E.B., Rieley, P.B.: Towards increased breast-feeding: WIC as the coordinating agency. WIC Currents. 7:9, 1981.

80. U.S. Bureau of the Census. Statistical Abstract of the United States (107th ed.), Washington, DC, 1987.

81. United States Department of Agriculture, Food and Nutrition Service. Efforts to promote breastfeeding in the supplemental food programs. Washington, DC, 1984a.

82. United States Department of Agriculture, Food and Nutrition Service. Promoting breastfeeding: a guide for health professionals working in the WIC and CSF programs. Washington, DC, 1984b.

83. U.S. Department of Labor, Employment and Training Administration. State of Virginia: 1988 Projected Population, Labor Force and Unemployment. Washington, DC, 1988.

84. Virginia Department of Health, Breastfeeding Task Force. Richmond, VA, 1987.

85. Virginia Department of Health, WIC Statistics. Richmond, VA, 1987.

86. Virginia Department of Health. WIC Program State Plan of Program Operations and Administration, Fiscal Year 1987. Richmond, VA, 1986.

87. Virginia Statistical Abstracts. Charlottesville, VA. University of Virginia Printing Services, 1987.

88. West, C.P.: Factors influencing the duration of breast-feeding. J. Biosoc. Sci. 12:325, 1980.

89. Winikoff, B., Myers, D., Laukaran, V.H., Stone, R.: Overcoming obstacles to breastfeeding in a large municipal hospital: applications of lessons learned. Pediatrics. 80:423, 1980.

90. Winikoff, B., Baer, E.C.: The obstetrician's opportunity: translating 'breast is best' from theory to practice. Am. J. Obstet. Gynecol. 138:105, 1980.

91. Worthington-Roberts, B., Vermeersch, J., Williams, S.: Nutrition in Pregnancy and Lactation. St. Louis: C.V. Mosby Co., 1981.

APPENDIX A

VIRGINIA INCOME ELIGIBILITY LEVELS FOR WIC*

Number In Family	Annual Gross Income A (Most Indigent)	Annual Gross Income B (Near Indigent)	Annual Gross Income C	Annual Gross Income D (Least Indigent)
1	$0 - $4,980	$4,981 - $5,478	$5,479 - $6,638	$6,639 - $8,297
2	$0 - $6,720	$6,721 - $7,392	$7,393 - $8,958	$8,959 - $11,196
3	$0 - $8,460	$8,461 - $9,306	$9,307 - $11,277	$11,278 - $14,094
4	$0 - $10,200	$10,201 - $11,220	$11,221 - $13,597	$13,598 - $16,993
5	$0 - $11,940	$11,941 - $13,134	$13,135 - $15,916	$15,917 - $19,892
6	$0 - $13,680	$13,681 - $15,048	$15,049 - $18,235	$18,236 - $22,791
7	$0 - $15,420	$15,421 - $16,962	$16,963 - $20,555	$20,556 - $25,690
8	$0 - $17,160	$17,161 - $18,876	$18,877 - $22,874	$22,875 - $28,589
9	$0 - $18,900	$18,901 - $20,790	$20,791 - $25,194	$25,195 - $31,487
10	$0 - $20,640	$20,641 - $22,704	$22,705 - $27,513	$27,514 - $34,386
Add'l Person	$0 - $1,740	$1,741 - $1,914	$1,915 - $2,319	$2,320 - #2,899

* All persons whose income falls within these levels are income eligible for WIC services.

APPENDIX B

CERTIFICATION CRITERIA AND CODE TO BE USED FOR NUTRITIONAL RISK

I. PREGNANT WOMEN

A. Anemia - Hemoglobin of less than 12 grams/100 ml. or hematocrit less than 37% or below for pregnant women during the first trimester. Hemoglobin of less than 11 grams/100 ml. or hematocrit of less than 34% for pregnant women during the second and third trimester.

High Risk Pregnancy

B. Woman of 18 years of age or less at time of conception.

C. Woman of 35 years of age or older at time of conception.

D. A previous pregnancy resulting in a still birth, a low birth weight infant, a neonatal death, fetal death, an infant with congenital anomaly, multiple births, nutritionally related complications of pregnancy (such as gestational diabetes, toxemia, or hypertension) as per medical history.

E. Frequent conception - less than 24 months between dates of conception of most recent pregnancies, including spontaneous or operative abortions.

F. Current multiple pregnancy.

G. Presence of smoking - five or more cigarettes/day.

H. a) Regular use of alcohol (more than 1 ounce of absolute alcohol per day) or

b) Occasional excessive (> 2 ounces of absolute alcohol) consumption of alcohol.

J. Use of or an addiction to controlled drugs. Use of "across the counter non-prescription drugs" while pregnant that could adversely affect the outcome of pregnancy.

APPENDIX B

Abnormal Pattern of Growth

K. Inadequate weight gain in pregnancy, less than 1 kg. or 2¼ lbs. during the first trimester or per month during the second and third trimester.

L. Low pre-pregnancy weight - 10% or more under standard weight for height.

Q. Obesity - (20% or more above standard weight for height) - before or during pregnancy, and/or excessive weight gain of 3 kgs. (7 lbs.) or more during the first trimester or per month during the second and third trimester.

Dietary Deficiencies That Impair or Endanger Health

R. Presence of inadequate/inappropriate diet or poor eating habits documented by diet history or dietary recall - Three or more servings missing from the total recommended from the four food groups for a participant of that age and category; all recommended servings of one group missing; omission of any major nutrient; an excessive use of fat, sugar or salt; an omission of 2 meals/day or other dietary patterns the CPA documents as inadequate or inappropriate.

S. Presence of pica documented by diet history or dietary recall.

Other

T. Poor dentition or physical anomalies which preclude proper ingestion of food such as cleft palate or cerebral palsy.

U. Other current documented nutritionally related medical conditions which preclude or restrict the use of conventional foods, such as food allergy, diabetes, hypoglycemia, lead poisoning, or clinical signs of nutritional deficiencies.

Codes which cannot be used to certify pregnant women:

M N P V W X

APPENDIX B

II. POSTPARTUM WOMEN

Anemia

A. Anemia - hemoglobin of less than 12 grams/100 ml. or hematocrit of less than 37%.

High Risk Pregnancy

B. Woman of 18 years of age or less at the time of conception.

C. Woman of 35 years of age or older at time of conception.

D. A previous pregnancy resulting in a still birth, a low birth weight infant, a neonatal death, fetal death, an infant with congenital anomaly, multiple births, nutritionally related complications of pregnancy (such as gestational diabetes, toxemia, or hypertension) as per medical history.

E. Frequent conception - less than 24 months between dates of conception of most recent pregnancies, including spontaneous or operative abortions.

G. Presence of smoking five or more cigarettes/day.

H. Regular use of alcohol (more than 1 ounce of absolute alcohol per day).

J. use of or an addiction to controlled drugs.

K. Inadequate weight gain in pregnancy, less than 1 kg. or 2¼ lbs. during the first trimester or per month during the second and third trimester.

Abnormal Pattern of Growth

L. Underweight - 10% or more under standard weight for height.

Q. Obesity - 20% or more above standard weight for height.

APPENDIX B

Dietary Deficiencies That Impair or Endanger Health

R. Presence of inadequate/inappropriate diet or poor eating habits documented by diet history or dietary recall - Three or more servings missing from the total recommended from the four food groups for a participant of that age and category; all recommended servings of one group missing; omission of any major nutrient; an omission of 2 meals/day; an excessive use of fat, sugar, or salt; or other dietary patterns the CPA documents as inadequate or inappropriate.

S. Presence of pica documented by diet history or dietary recall.

Other

T. Poor dentition or physical anomalies which preclude proper ingestion of food such as cleft palate or cerebral palsy.

U. Other current documented nutritionally related medical conditions which preclude or restrict the use of conventional foods, such as food allergy, diabetes, hypoglycemia, lead poisoning, or clinical signs of nutritional deficiencies.

X. Fear of Regression

Codes which cannot be used to certify postpartum women:

F M N P V W

III. BREASTFEEDING WOMEN (If either breastfeeding mother or her infant qualifies, the other is automatically eligible.)

Anemia

A. Anemia - hemoglobin of less than 12 grams/100 ml. or hematocrit of less than 37%.

APPENDIX B

High Risk Pregnancy

B. Woman of 18 years of age or less at time of conception.

C. Woman of 35 years of age or older at time of conception.

D. A previous pregnancy resulting in a still birth, a low birth weight infant, a neonatal death, fetal death, an infant with congenital anomaly, multiple births, nutritionally related complications of pregnancy (such as gestational diabetes, toxemia, or hypertension) as per medical history.

E. Frequent conception - less than 24 months between dates of conception of most recent pregnancies, including spontaneous or operative abortions.

G. Presence of smoking - five or more cigarettes/day.

H. a) Regular use of alcohol (more than 1 ounce of absolute alcohol per day) or

b) Occasional excessive (> 2 ounces of absolute alcohol) consumption of alcohol.

J. use of or an adiction to controlled drugs. Use of "across the counter non-prescription drugs" that could adversely affect the infant.

K. Inadequate weight gain in pregnancy, less than 1 kg. or 2¼ lbs. during the first trimester or per month during the second and third trimester.

Abnormal Pattern of Growth

L. Underweight - 10% or more under standard weight for height.

Q. Obesity - 20% or more above standard weight for height.

APPENDIX B

Dietary Deficiencies That Impair or Endanger Health

R. Presence of inadequate/inappropriate diet or poor eating habits documented by diet history or dietary recall. Three or more servings missing from the total recommended from the four food groups for a participant of that age and category; all recommended servings of one group missing; omission of any major nutrient; an omission of 2 meals/day; an excessive use of fat, sugar, or salt; or other dietary patterns the CPA documents as inadequate or inappropriate.

S. Presence of pica documented by diet history or dietary recall.

Other

T. Poor dentition or physical anomalies which preclude proper ingestion of food such as cleft palate or cerebral palsy.

U. Other current documented nutritionally related medical conditions which preclude or restrict the use of conventional foods, such as food allergy, diabetes, hypoglycemia, lead poisoning, or clinical signs of nutritional deficiencies.

W. Breastfeeding eligible - if either breastfeeding mother or breastfed infant is found eligible for Program, the other is automatically eligible.

APPENDIX C

THANK YOU FOR ANSWERING THIS QUESTIONNAIRE.

ALL INFORMATION WILL BE ANONYMOUS.

1. Your age is _____ years old.

2. Your race is:

   a. black b. white c. oriental d. other

3. Your education:

   a. less than high school graduate
   b. high school graduate
   c. some college
   d. college graduate

4. Are you:

   a. married
   b. single, living with baby's father
   c. single, living alone
   d. single, living with parents or family

5. Were you breastfed as an infant?

   a. yes b. no c. not sure

6. Which of the following influenced your decision not to breastfeed the child you delivered most recently? (CIRCLE ALL THAT APPLY):

   a. I didn't know anything about breastfeeding
   b. I would have been too embarassed to breastfeed in front of anyone
   c. It's more trouble than bottle feeding
   d. It hurts and causes sore nipples
   e. Someone I know tried it and didn't like it
   f. My husband/boyfriend didn't want me to breastfeed
   g. My breasts are too small
   h. It causes saggy breasts
   i. I couldn't leave my baby with anyone else
   j. I had to go back to work
   k. I had to go back to school
   l. I probably wouldn't have had enough milk
   m. If you start breastfeeding you can't switch to the bottle
   n. I had a cesarean delivery
   o. I would have been too tied down
   p. Nobody in the hospital offered any help on breastfeeding
   q. I wouldn't have gotten any WIC formula if I had breastfed
   r. I wanted to use the formula samples I got at the hospital

7. Did you do any reading about breastfeeding?

   a. yes b. no

8. Did you attempt any "class" which included a section on breastfeeding?

   a. yes b. no c. no, but I would have if one had been offered

9. Did anyone at your doctor's office or clinic discuss breastfeeding with you?

   a. yes b. no

10. Where did you go for your maternity care before the baby was born?

    a. health department clinic b. private doctor

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