ASSESSMENT OF FACTORS THAT INFLUENCE THE CHOICE OF INFANT FEEDING METHOD AMONG MOTHERS OF INFANTS PARTICIPATING IN A WIC PROGRAM

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CHAPTER I

INTRODUCTION

One of the "Health Promotion/Disease Prevention Objectives for the Nation" is that by the year 1990, the proportion of women who breastfeed their babies should be increased to 75% at hospital discharge and 35% at six months of age (U. S. Department of Health and Human Services (U. S. DHHS), 1980). Within the past few years, there has been a slow and steady increase in breastfeeding, predominantly among middle- and upper-income, educated, white women. The factors that influence a mother's decision to breastfeed or bottlefeed her infant need to be identified, especially in those population groups with low prevalence of breastfeeding -- among women who are minority, low income, and less educated (Public Health Service (PHS), 1984).

Breastfeeding is promoted and greatly encouraged by many professional organizations, including the American Dietetic Association (1986), the Canadian Pediatric Society, the Committee on Nutrition: American Academy of Pediatrics (1985), and the American Public Health Association (Brown, 1986). Lay volunteer organizations such as the La Leche League provide a nationwide referral service for promotion and encouragement for breastfeeding mothers (La Leche League International, 1981).

Purpose and Objectives

The purpose of this study is to determine the factors which influence a mother's decision to breastfeed or bottlefeed her infant, specifically among those mothers whose infants are enrolled in the Special Supplemental Food Program for Women, Infants, and Children (WIC) in Oklahoma City, Oklahoma, and to gain insight as to how to more effectively promote breastfeeding in the WIC program. The specific objectives for this study were as follows:

1. To determine whether demographic and socioeconomic characteristics affect the participant's choice to breastfeed or to bottlefeed her infant.
2. To determine which supportive factors were most effective in influencing the participant's choice to breastfeed or to bottlefeed her infant.
3. To assess the participant's opinions and beliefs about breastfeeding and how they affect the choice to breastfeed or to bottlefeed her infant.

Hypotheses

For this study, the following hypotheses were postulated:

H1: There will be no significant associations between the demographic and socioeconomic characteristics of the participants who chose to breastfeed and of those who chose to bottlefeed their infants.

H2: There will be no significant associations in the

supportive factors of participants who chose to breastfeed and of those who chose to bottlefeed their infants.

H3: There will be no significant associations between the opinions and beliefs about breastfeeding of participants who chose to breastfeed and those who chose to bottlefeed their infants.

Limitations

The following limitations were recognized for this study:

1. The sample included mothers who attended the nutrition education classes of the WIC program at the Oklahoma City/County Health Department on two particular dates.
2. The subjects did not constitute a random sample representing the defined population, therefore limiting the generalizability of the data.
3. Data was obtained from the subjects through self-report which is limited by the subject's ability and willingness to provide the information requested.

Definition of Terms

The following terms were identified for this study:

Bottlefeeding: method of infant feeding in which formula serves as the sole or predominant source of milk (Matheny, Picciano, & Birch, 1987).

Breastfeeding: method of infant feeding in which

breastmilk serves as the sole or predominant source of milk (Matheny et al., 1987).

Infant: the human young from the time of birth to one year of age.

Low birth weight infant: infants who weigh less than 2500 g. (5.5 pounds) at birth (Worthington-Roberts, Vermeersch, and Williams, 1985).

Parity: the total number of live births occurring to a woman (Dorland's Pocket Medical Dictionary, 1982).

CHAPTER II

REVIEW OF LITERATURE

The benefits of human milk and lactation for mothers and infants have been extensively documented in the literature. One of the "Health Promotion/Disease Prevention Objectives for the Nation" is that by 1990, the proportion of women who breastfeed their babies should be increased to 75% at hospital discharge and 35% at six months of age (U. S. DHHS, 1980). In order to successfully achieve this goal, the benefits of breastfeeding and the knowledge of factors that influence the decision to breastfeed must be thoroughly understood by health care professionals.

Trends in Infant Feeding

At the beginning of the twentieth century, breastmilk provided the only source of nutrients for infants from birth through four to six months of age. Breastfeeding remained the most common mode of infant feeding well into the present century (Martinez & Nalezienski, 1979).

Two major trends have occurred in patterns of breastfeeding in the United States in the last 50 years. The first was a dramatic decline in breastfeeding during the 1930's and 1940's which lasted through the 1960's. For example, in 1948, 65% of

women were breastfeeding their infants when discharged from the hospital. In 1956, only 37% were breastfeeding at discharge, and in 1966, the proportion declined again to 27% (Food and Nutrition Service (FNS), 1984b). Eckhardt & Hendershot (1984) reported that the incidence of breastfeeding declined to its lowest level of 22% in 1972. This decline was facilitated by the development of scientific dairy farming, safe water and sewage systems, public education in sanitation, availability of refrigeration, development of suitable substitutes for breastmilk, mass production technology for bottles and nipples, and increasingly routine separation of mother and infant following birth in hospitals (Riordan & Countryman, 1980a)

A second trend toward increased breastfeeding has occurred since 1972, showing an increase to 61.9% in 1982, with a marginal decline to 61.4% in 1983 (PHS, 1984). Figure I shows the percentage of infants breastfed from 1970 to 1983. The duration of breastfeeding has similarly increased to 40% of women breastfeeding for at least three months and 27% breastfeeding for at least five to six months in 1983 (PHS, 1984).

The highest incidence of breastfeeding tends to occur among well-educated, higher-income, and somewhat older women (Martinez & Nalezienski, 1981). The lowest proportion of women that breastfeed is among mothers under 20 years of age, less-educated, lower-income, and black (PHS, 1984). Data in Table I shows the percent of infants breastfed and the percent of all births by demographic characteristics for 1983.

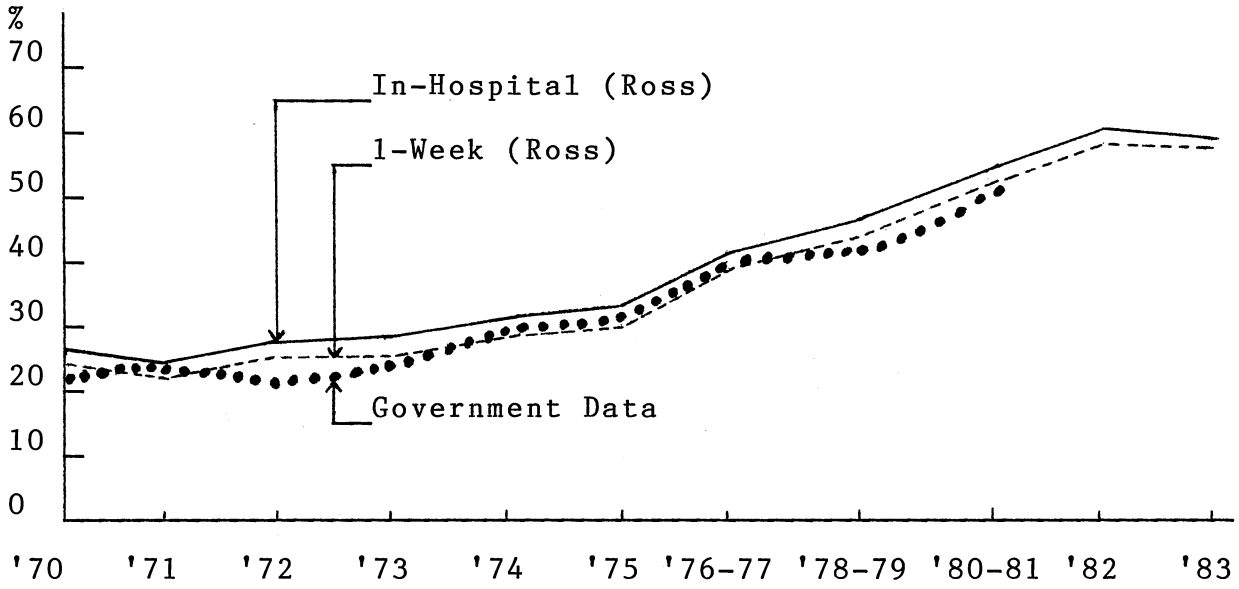

Figure 1. Incidence of Breastfeeding in the U. S.: Percent of Infants Breastfed by Year 1970 - 1983 (Source: Public Health Service (1984), p. 18.)

TABLE I

BREASTFEEDING BY DEMOGRAPHIC CHARACTERISTICS
1983

Characteristic	Percent Breastfed	Percent of All Births by Characteristic
College education	78	33
Income > $25,000	71	32
30 to 34 years of age	67	16
25 to 29 years of age	65	31
Primiparous	65	43
Income $15,000 to $24,999	64	26
White	64	80
Unemployed	62	65
Income $10,000 to $14,999	61	15
NATIONAL	61	
Employed	60	35
Over 35 years of age	60	5
Multiparous	58	57
20 to 24 years of age	57	33
Hispanic	54	15
High school education	54	63

TABLE I (Continued)

Low birth weight (<5.5 lbs.)	46	7
Income < $10,000	44	26
Less than 20 years of age	43	15
Grade school education	41	4
Black	32	16

Source: Public Health Service (1984), p. 20-21.

While findings show an increase in breastfeeding for the United States population as a whole, data on breastfeeding among low-income women present a slightly different view. A study by Martinez and Stahle (1982) on breastfeeding among WIC participants found that in 1980, the proportion of infants who were breastfed was 40% at birth, 28.5% at two months, 20% at three to four months, and 14% at five to six months. While this represents an increase in breastfeeding among low-income mothers, the percentages are still relatively low compared to those of the general population both in initiation and duration of breastfeeding. Figure II shows the percentage of breastfeeding women participating in the WIC program from 1977 to 1980.

Trends in breastfeeding among racial and ethnic groups are also of concern. Hendershot (1984) reported that in 1972, the percentage of black infants breastfed at all was only 13%, increasing to 17% by 1975. By 1983, the proportion of black women who breastfed their infants for three months or more was 20%, less than half of the 42% of white women who breastfed for

three months or more. Among black women, as among all women, the lowest incidence of breastfeeding occurs among young, less-educated, low-income women, and the highest incidence occurs among those with the most education and income (PHS, 1984).

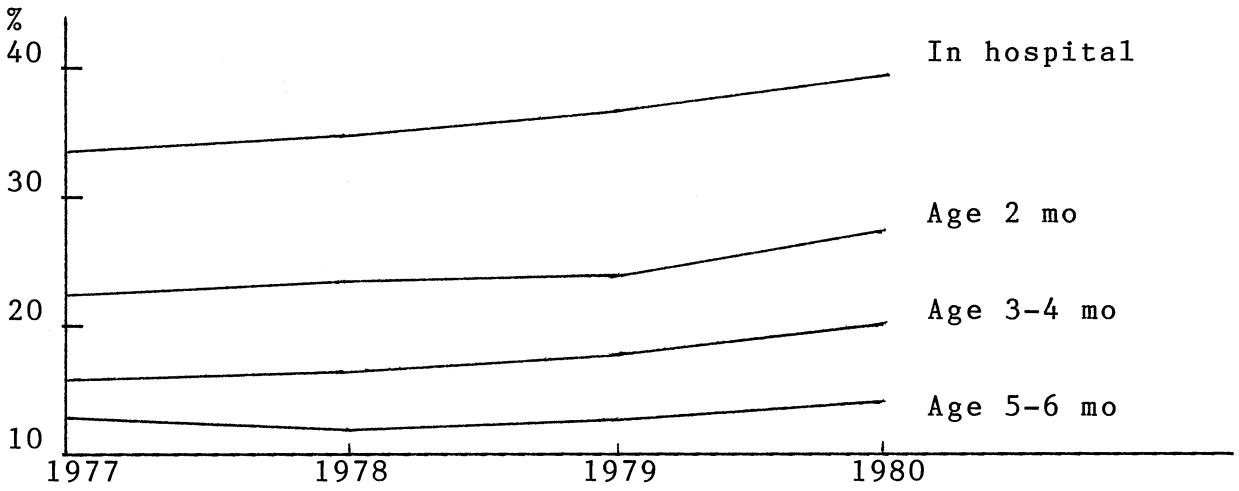

Figure 2. Percentage of Breast-feeding Women Participating in the WIC Program: 1977 - 1980 (Source: Worthington-Roberts, Vermeersch, & Williams (1985), p. 315.)

The trends in breastfeeding for Hispanic women show a significantly lower incidence. Before 1950, 73% of Hispanic women breastfed their infants. By 1973, the number had declined to 19% (Smith, Mhango, Warren, Rochat, & Huffman, 1982). The 1983 figure is 54% which shows a significant increase, but it is still well below the national rate (FNS, 1984b).

Very little data exist for trends in breastfeeding among American Indian mothers, although there appears to be a significant decrease in the incidence of breastfeeding. National data reveal a drop from 59% to 29% between 1946 and 1975 (Forman, Hoffman, Harley, Cross, & Bennet, 1982).

Benefits of Breastfeeding

Nutritional Benefits of Breastfeeding

Breastmilk has been named the perfect food for an infant because it contains all the necessary nutrients in correct proportions and is uniquely suited for the infant. Infant formulas currently available are patterned after the composition of breastmilk (Greecher, Brannon, Knauff, Montadon, & Rickard, 1986).

Colostrum is the first secretion of the breast after birth of the infant. The composition of colostrum varies from mature milk in that it contains more protein, less carbohydrate, and much less fat. In addition, the ash content is relatively high (Worthington-Roberts et al., 1985). The function of colostrum is primarily anti-infective, accounting for the abundance of antibodies, especially secretory IgA. It may also help clear out meconium, the dark green mucilaginous material in the intestine of the newborn (Jelliffe & Jelliffe, 1978).

Data in Table II shows the approximate composition of mature human milk compared to that of cow's milk. The major components of mature human milk may vary with many factors

including the stage of lactation, maternal nutrition, and individual variation (Jelliffe & Jelliffe, 1978).

Average levels of fat in human milk range from 2.0% to 5.3% (Worthington-Roberts et al., 1985). It is easily digested and is broken down into free fatty acids and glycerol by the enzyme lipase which is found both in the infant's intestine and in breastmilk itself. The cholesterol in breastmilk is relatively high since it is needed for myelinization of nervous tissue and synthesis of steroid hormones and bile acids (FNS, 1984b)

Lactose represents most of the carbohydrate in breastmilk. It enhances calcium absorption, provides constant supplies of energy to the rapidly growing brain of the infant, and promotes growth of lactobacilli which promote acidity in the intestine and inhibit growth of harmful organisms (Riordan & Countryman, 1980b).

Proteins in breastmilk are predominantly whey proteins (60% whey proteins, 40% casein) (Fomon, 1974), which produce soft curds that are easily digested by the infant. Total protein content is relatively low (0.8 to 0.9 g/dl), permitting the infant's kidneys to remove the nitrogen easily (FNS, 1984b).

Iron is present in small quantities (0.5 to 1.0 mg/l), but is absorbed very efficiently because of high lactose and vitamin C levels. The healthy breastfeeding infant of a mother on a reasonably adequate diet needs no iron supplementation prior to approximately six months of age (Riordan & Countryman, 1980b).

TABLE II

APPROXIMATE COMPOSITION OF MATURE HUMAN MILK AND COW'S MILK

Composition	Human Milk	Cow's Milk
Water (ml/100 ml)	87.1	87.2
Energy (kcal/100 ml)	75	66
Total Solids (g/100 ml)	12.9	12.8
Protein (g/100 ml)	1.1	3.5
Fat (g/100 ml)	4.5	3.7
Lactose (g/100 ml)	6.8	4.9
Ash (g/100 ml)	0.2	0.7
Proteins (% of total protein)		
Casein	40	82
Whey proteins	60	18
Major minerals per liter		
Calcium (mg)	340	1170
Phosphorus (mg)	140	920
Sodium (mEq)	7	22
Potassium (mEq)	13	35
Chloride (mEq)	11	29
Magnesium (mg)	40	120
Sulphur (mg)	140	300
Trace minerals per liter		
Chromium (µg)	--	8-13
Manganese (µg)	7-15	20-40
Copper (µg)	400	300
Zinc (mg)	3-5	3-5
Iodine (µg)	30	47
Selenium (µg)	13-50	5-50
Iron (mg)	0.5	0.5
Vitamins per liter		
Vitamin A (I. U.)	1898	1025
Thiamine (µg)	160	440
Riboflavin (µg)	360	1750
Niacin (µg)	1470	940
Pyridoxine (µg)	100	640
Pantothenate (mg)	1.84	3.46
Folacin (µg)	52	55
B 12 (µg)	0.3	4
Vitamin C (mg)	43	11
Vitamin D (I. U.)	22	14
Vitamin E (mg)	1.8	0.4
Vitamin K (µg)	15	60

Source: Fomon (1974) p. 362-363.

Levels of vitamins, especially water soluble vitamins, in human milk vary with the diet of the mother. Generally, if the mother eats a well-balanced diet, her milk will meet the infant's requirements for both vitamins and trace minerals (Riordan & Countryman, 1980b).

Immunological Benefits of Breastmilk

Breastmilk not only contains all the nutrients needed by the infant, but it also contains a variety of components that may protect the infant from certain diseases. These include immunoglobulins, lactoferrin, bifidus factor, bacterial lysozymes, lymphocytes, and macrophages (FNS, 1984b).

Immunoglobulins IgA, IgG, IgD, IgM, and IgE are present in human milk. IgA may protect the infant from allergic reactions by preventing harmful substances from passing through the wall of the gastrointestinal tract into the infant's system. Lactoferrin binds the iron in breastmilk, making it unavailable for growth of microorganisms such as staphylococci and E. coli (Fomon, 1974).

Bifidus factor promotes an intestinal flora of bifidobacteria and discourages growth of Shigella, E. coli, and yeast. Lysozymes are anti-infective enzymes that protect against E. coli, Salmonella typhosa, and possibly several viruses (FNS, 1984b). The lymphocytes and macrophages destroy harmful bacteria by their phagocytic activity and also secrete lysozyme and lactoferrin (Riordan, 1983).

Psychological Benefits of Breastfeeding

Breastfeeding provides psychological benefits for both the mother and infant. It is a natural and pleasurable experience. The infant's remarkable sensory abilities at birth (hearing, seeing, smelling, and tasting) indicates a state of readiness for human interaction. Breastfeeding provides the infant with intimate bodily contact and maximum sensory stimulation from the warmth, touch, smell, and sounds of the mother's body (Jelliffe & Jelliffe, 1978). It also offers the opportunity for a stable affectionate relationship to be developed between mother and child (Riordan & Countryman, 1980b).

According to Blumen (1980), maternal-infant bonding refers to the specific, affectionate way in which a mother becomes attached to her baby. This process is reciprocal, involving sensory and motor systems of both mother and infant. Breastfeeding is one way of facilitating and encouraging this process.

Other Benefits of Breastfeeding

Breastfeeding may be considered to be more convenient than formula-feeding since it requires no buying, mixing, or preparation. Breastmilk is immediately available and always at the right temperature. It is clean and not easily contaminated, which may be safer than bottlefeeding when environmental conditions are poor (Thompson, 1971).

Breastfed babies tend to consume fewer calories than bottlefed babies because a mother may encourage her infant to take all the formula in the bottle. The breastfeeding mother does not see the quantity of milk her infant is consuming but rather relies on the increase in fat and protein content of the milk as the feeding progresses to serve as appetite cues for the infant (FNS, 1984b).

Uterine involution is more rapid in breastfeeding mothers due to repeated release of the hormone oxytocin during sucking. More rapid postpartum weight loss is possible, since stored fat from pregnancy is used as energy during lactation (FNS, 1984b). Also, considerable economic benefits may be realized, depending on the mother's diet, since expensive formula does not have to be purchased (McKigney, 1971).

Breastfeeding tends to delay ovulation due to hormonal influences mainly from prolactin. Frequency, intensity, and duration of sucking by the infant are the most important determinants of length of time before ovulation returns. The contraceptive effect is greatly reduced if exclusive breastfeeding is not practiced (Latham, 1982).

Formula Feeding of Infants

Despite the increasing trend toward breastfeeding in the United States, commercial infant formulas continue to play substantial role in meeting the nutrient needs of infants. The development of a substitute for maternal milk was a great achievement for pediatric medicine (Committee on Nutrition:

American Academy of Pediatrics, 1985). While infant formulas are unable to duplicate the immunologic qualities of human milk, they are safe and adequate substitutes for healthy full-term infants (Ogra & Green, 1982).

Three general uses for infant formulas include: (1) substitution for infants whose mothers chose not to breastfeed; (2) supplementation for infants whose mothers choose to omit a breastfeeding; and (3) complementation for infants whose mother's milk production is inadequate (Committee on Nutrition, American Academy of Pediatrics, 1985). Certain infectious diseases such as hepatitis, chicken pox, and tuberculosis, and metabolic disorders such as toxemia in which maternal medications are used may contraindicate breastfeeding (Committee on Nutrition: American Academy of Pediatrics, 1985).

In addition to formulas used for feeding normal term infants, there are now several special-purpose formulas for infants with gastrointestinal or metabolic disturbances (Committee on Nutrition: American Academy of Pediatrics, 1976). According to Martinez & Dodd (1983), cow's milk-based formulas comprise four-fifths of the formulas used by term infants. These formulas contain reconstituted skim milk or a mixture of skimmed milk and electrolyte-depleted whey protein. Lactose is the carbohydrate used in these formulas. A mixture of soy, coconut, corn, oleo, and safflower oils comprises the fat content. The nutrient composition of all commercial infant formulas closely follows recommendations made by the Committee

on Nutrition: American Academy of Pediatrics in 1983 (Committee on Nutrition: American Academy of Pediatrics, 1985).

Advertising through the media is the most visible aspect of formula companies' promotional activities. Advertisements in popular magazines, newspapers, television, and poster displays are always directed towards the general public. Also the connection of infant formula to the affluent lifestyle and to medical endorsements serves as an effective means of influencing the target population (Latham, 1982).

Support Systems for Breastfeeding

Familial Support

Attitudes of the husband and his emotional support may be the pivotal factor to successful breastfeeding. The husband may have misconceptions about the physical effects of breastfeeding, concerns about the sexual role of the breasts, jealousy of the nursing infant, or fears of being left out in the care of the baby. (Neville & Neifert, 1983).

Similarly, a mother's or grandmother's encouragement or subtle criticism can greatly influence the new mother's confidence in her ability to breastfeed her infant (Arango, 1984). In a study by Matheny, et al.(1987), the three most frequently cited individuals that influenced the mothers were the husband, the mother, and other family members. Traditionally, knowledge about breastfeeding was passed from

mother to daughter and from sister to sister, but with the fragmentation and urbanization of families, the new mother is often left without anyone to help her both learn the skills and attitudes necessary for successful breastfeeding and to support her through difficult times (Arango, 1984).

Familial support has been shown to differ between ethnic groups (Baranowski et al., 1983). Among white mothers, the male partner was the most important source of support in promoting breastfeeding. Among blacks, the best friend was the only variable related to breastfeeding, and among Hispanic mothers, the mother was the primary source of support for breastfeeding.

Societal Support

Social influences, such as media, public opinion, and "fashion" tend to have an effect on all segments of the society. Society places barriers on breastfeeding that derive mainly from attitudes towards women's roles of sexuality, mothering, and the importance of children (Arango, 1984). Society puts greater value on a woman's independence as a wife or career women than on the traditional role of mother and homemaker. This attitude suggests that women are expected to return to a pre-pregnant state as soon as possible and resume household and career duties. This attitude may inhibit women who otherwise might prolong breastfeeding.

Another societal barrier to breastfeeding is the negative attitude toward public exposure of breasts for the purpose of

breastfeeding. However, it allows such exposure for expressions of sexuality. This attitude may contribute to the concern of mothers that breastfeeding will limit their activities to the home and "tie them down" too much (Arango, 1984).

Support from Health Care Professionals

The first opportunity to breastfeed typically occurs in the hospital. Education and support from the nursing staff, as well as hospital routines designed to encourage breastfeeding can have a positive effect on the mother's breastfeeding experiences (Neville & Neifert, 1983, and Lawrence, 1982).

The medical profession must assume part of the responsibility for the decline in breastfeeding before the 1970's. Medical school curriculums have offered little or no time to the physiology and advantages of breastfeeding. The result is a generation of health professionals who are neither convinced of the superiority of breastfeeding nor knowledgeable enough on the subject to be supportive of mothers who would like to breastfeed (Cole, 1977).

Hospital routines and practices have often served to inhibit successful breastfeeding ("Hospital Influences," 1986). Among these practices are the separation of mother and infant during the first 24 hours, heavy use of anesthesia during labor and delivery, scheduled infant feedings, routine use of supplemental formula, and mother's lack of access to her infant. Routinely given infant formula to breastfeeding

mothers at discharge and lack of follow-up after leaving the hospital may also contribute to breastfeeding failure (Arango, 1984).

A study by Clark & Beal (1982) of four Canadian hospitals, two which encouraged rooming-in of mothers and infants and two which did not, indicated significant differences between hospital practices and breastfeeding success. The proportions of mothers who breastfed were higher at the two hospitals that encouraged rooming-in. This study suggests that hospital routine can greatly influence breastfeeding.

Other Supportive Factors

The La Leche League International is a mother-to-mother breastfeeding support group that fosters breastfeeding through information, reassurance, and personal warmth. In addition to their book, The Womanly Art of Breastfeeding, they publish numerous information sheets and booklets for the lay public (La Leche League International, 1981).

Demographic Factors Influencing the Choice of Infant Feeding Method

Age has been shown to be a factor that influences a mother's choice of infant feeding method. According to a study by Tamminen, Verronen, Saarikoski, Goransson, & Tuomiranta (1983), maternal age had a clear effect on both the incidence and duration of breastfeeding. Young mothers less than 20

years of age and mothers over 38 years of age demonstrated a lower incidence of breastfeeding.

Race has also been shown to be a factor that influences a mother's choice of infant feeding method. Black women are less likely than white women to breastfeed, regardless of their educational level, employment status, or income (Hendershot, 1984). In a 1984 study by Rassin et al., the ethnic background of the population had the strongest influence upon the incidence of breastfeeding.

Strong associations have been shown between educational level attained and the incidence and duration of breastfeeding (Simopoulos & Grave, 1984). Eckhardt & Hendershot (1984) found that changes in behavior tend to be made earlier by well-educated persons, presumably because people are more receptive to new ideas and more willing to adapt them. Among the factors examined in their study, the education level of the mother had the greatest single effect on the breastfeeding decision.

Employment of the mother is cited as a major reason for the decision to bottlefeed or to terminate breastfeeding early because job situations may not provide time or surroundings needed by nursing mothers (Simopoulos & Grave, 1984). In their 1981 survey, Martinez & Dodd (1983) reported that there was a greater incidence of breastfeeding in the hospital among mothers who were not employed outside the home than among mothers who were employed. Continued breastfeeding of infants at six and at twelve months of age was also higher among

mothers not employed. Their survey also indicated that duration of breastfeeding was more negatively affected by maternal employment than was the incidence of breastfeeding. A study by Fieldhouse (1984) revealed similar findings.

Parity has been shown to be an important factor in the decision of infant feeding method. The feeding decision made by mothers of more than one child is largely determined by their experience of feeding a previous child (Simopoulos & Grave, 1984).

When Infant Feeding Method Decision is Made

There is evidence that many women have decided on the method of infant feeding before they become pregnant, and nearly all have made their decision by the last trimester of pregnancy (FNS, 1984b). A Canadian study by Fieldhouse (1984) revealed that all but one of the 136 mothers interviewed had decided on their infant feeding method before entering the hospital. Guthrie & Guthrie (1966) found that 93% of the middle-class women they surveyed decided to breastfeed prior to the last trimester of pregnancy, while 36% had already decided to breastfeed before becoming pregnant. This indicates the importance of breastfeeding information given before and during the prenatal period rather than during the early postpartum period (Sarett, Bain, & O'Leary, 1983).

Affect of Mother's Beliefs and Opinions on the Choice to Breastfeed

The attitudes of mothers towards breastfeeding, whether positive, doubtful, or negative are powerful factors in achieving successful lactation. Anxiety about breastfeeding is usually related to lack of knowledge and social support, to the realization that alternatives are available, and to competing professional and social pursuits of the mother (Jelliffe & Jelliffe, 1978).

Mothers who choose to bottlefeed may usually give reasons that are more likely to be adult centered, fitting their child's upbringing around their own desires and lifestyles. Those who choose to breastfeed may be more child-centered, putting the well-being of the child as their highest priority (Fieldhouse, 1984).

According to a recent study (Matheny, et al., 1987), the ten most frequenly cited advantages of breastfeeding or formula feeding were: 1) it is inexpensive; 2) it encourages closeness with the infant; 3) it is convenient; 4) it provides the best nutrition; 5) it does not restrict other activities; 6) it requires less preparation time; 7) it does not restrict other's participation; 8) it causes no physical discomfort; 9) it allows the use of medication; and 10) it instills confidence in the infant's intake. Personal attitude toward breastfeeding and formula feeding was also found to be the predominant predictor of infant feeding intention. Similar findings were shown by Ekwo, Dusdieker & Booth (1983).

Breastfeeding Education and Promotion

Breastfeeding is not pure instinct for either mother or infant. Many of the problems women encounter in the course of breastfeeding can be anticipated or avoided by prior knowledge about the art of breastfeeding (Neville & Neifert, 1983). Wiles (1984) reported that prenatal breastfeeding education resulted in a significantly higher frequency of breastfeeding success at one month postpartum.

Helsing (1976) reported that lactation education should be directed towards three groups: mothers, health workers, and the general public. The mothers need clear information and advice about what to do and when, and moral support and encouragement for breastfeeding. Health workers need lactation education so they can more effectively convey practical knowledge about breastfeeding, create a favorable environment for the establishment and maintenance of lactation, and meet the mother's new psychological needs. Education for the public through various channels such as television, radio, newspapers, books, and magazines will help encourage and promote breastfeeding in all aspects of society.

In 1978, the American Academy of Pediatrics recommended that all physicians encourage mothers to breastfeed their infants. Additional recommendations made by the American Academy of Pediatrics in 1982 (cited in Worthington-Roberts, B. S., Vermeersch, J., & Williams, S. R. (1985) Nutrition in Pregnancy and Lactation, p. 319-320) include:

1. Education about breastfeeding in school for boys as well as girls since later support by the father helps breastfeeding succeed
2. Public education through television, newspapers, magazines, and radio to enhance the acceptability of breastfeeding
3. Improved education about breastfeeding techniques in medical and nursing schools, and residency programs in obstetrics, pediatrics, and family practice
4. Factual educational material designed to present advantages of breastfeeding
5. Encouragement not to use breastfeeding alternatives for relief, vacation, or night feeding until nursing is well established
6. Breastfeeding information provided in prenatal classes and at any prenatal contact
7. Decreased sedation of the mother for labor and birth
8. Extended contact between mother and infant in the first 24 hours
9. Rooming-in encouraged except when specifically contraindicated
10. Avoidance of routine supplemental feeding
11. Lactation suppressants not given unless requested by the mother
12. Discharge packs of formula given only at the discretion of the physician or at the request of the mother, not a routine hospital practice
13. Development of day nurseries adjacent to school or work places to encourage and support working and school-aged mothers to breastfeed
14. Utilization of lay support groups such as La Leche League
15. Encouragement of continued breastfeeding of the hospitalized child
16. Relactation instruction when necessary

Special Supplemental Food Program for Women, Infants, and Children

The Special Supplemental Food Program for Women, Infants, and Children (WIC) was authorized by law in 1972 as an amendment to the Child Nutrition Act of 1966. WIC's purpose is to serve as an adjunct to good health care during critical times of personal growth and development, to prevent health problems, and to improve the health of low-income citizens who

are eligible to participate. Supplemental foods, access to health care, and nutrition counseling are provided to eligible women who are pregnant or lactating, and to infants and children up to age five (U.S. General Accounting Office, 1984).

Eligibility criteria for WIC require that participants have both a low income (less than 185% of poverty level) and be determined by health officials to have nutritional problems such as anemia or abnormal growth patterns (FNS, 1984a). A breastfeeding woman may be determined to be at nutritional risk if her breastfed infant has been determined to be a nutritional risk. A breastfed infant can also be certified at risk based on the mother's nutritional assessment. A breastfeeding mother and her infant are placed in the highest priority level for which either is qualified (Code of Federal Regulations (CFR), 1986).

A nutritional risk priority system is used according to identified risk conditions (CFR, 1986). The priority levels are as follows:

> Priority I - Pregnant women, breastfeeding women, and infants at nutritional risk as demonstrated by a documented medical condition.
>
> Priority II - Infants not qualifying for Priority I whose mother participated in the program during pregnancy or was documented as being at nutritional risk during pregnancy.
>
> Priority III - Children at nutritional risk as demonstrated by documented medical conditions.
>
> Priority IV - Pregnant women, breastfeeding women, and infants at nutritional risk because of an inadequate dietary pattern.

Priority V - Children at nutritional risk because of an inadequate dietary pattern.

Priority VI - Postpartum women at nutritional risk.

Priority VII - Previously certified participants who might regress in nutritional status without continued provision of supplemental foods.

Food products are made available by way of a voucher system (CFR, 1986). Items available to the participant are listed on a signed certificate and are redeemable at participating markets for the food. Problems can arise out of this system from abuse of the vouchers by both merchants and program recipients.

There are six food packages available under the program which may be provided to participants. (CFR, 1986). The nutrients supplied by these foods packages include protein, iron, calcium, and vitamin C (U.S. General Accounting Office, 1984).

Nutrition education is made available at no cost to the participants. It is designed to stress the relationship between proper nutrition and good health, and to assist the individual who is at nutritional risk in achieving a positive change in food habits (CFR, 1986).

Several provisions were made to encourage participating women in the WIC program to breastfeed (FNS, 1984a). These include:

1. A greater variety and quantity of food is offered to breastfeeding participants than non-breastfeeding postpartum participants.

2. Breastfeeding women are always considered to be at a higher priority level than are non-breastfeeding postpartum women.

3. Information on the benefits of breastfeeding must be included in nutrition education classes.

4. Breastfeeding women may receive benefits for up to one year, while non-breastfeeding women are eligible for only six months postpartum.

Breastfeeding provides many advantages to both the mother and the infant. Nutritional, immunological, psychological, and other benefits are achieved through breastfeeding. Socioeconomic and demographic as well as many other variables may influence a mother's decision to breastfeed or to bottlefeed her infant. Although the incidence of breastfeeding has been increasing, it is imperative that health care professionals recognize these variables to help reduce barriers that may interfere with successful breastfeeding. Through increased breastfeeding education and promotion, greater opportunities for breastfeeding mothers may exist.

CHAPTER III

METHODS AND PROCEDURES

The assessment of certain factors that influence a mother's decision to breastfeed or bottlefeed her infant may be important to help reduce barriers that interfere with successful breastfeeding, especially among those women with infants enrolled in the Special Supplemental Food Program for Women, Infants, and Children (WIC). This study was designed to test three hypotheses which were developed to determine if demographic and socioeconomic characteristics, supportive factors, and opinions and beliefs affect the choice of infant feeding method among women with infants enrolled in a WIC program in Oklahoma City, Oklahoma.

Research Design

A descriptive research design was developed to assess factors that influence a mother's choice of infant feeding method. A questionnaire was used to obtain information on demographic and socioeconomic characteristics, type of support received for breastfeeding or bottlefeeding, and opinions and beliefs about breastfeeding. It was hoped that these findings would be useful to gain insight as to how to more effectively promote breastfeeding in the WIC program.

Population and Sample

The population sampled consisted of women whose infants were less than one year of age and also participated in the WIC program at the Oklahoma City/County Health Department in Oklahoma City, Oklahoma. Mothers with infants of this age range were selected to maximize recall of information about the feeding of their infants. The sample included all mothers who attended nutrition education classes of the WIC program at the Oklahoma City/County Health Department on the data collecting days in April, 1987.

Instrumentation

A questionnaire developed by the researcher was used for data collection in this study. The questionnaire was composed of three sections, each corresponding to a specific objective of the study. The first section contained questions about general demographic data, with the second containing questions about support received for breastfeeding or bottlefeeding, and the third containing questions about the mother's opinions and beliefs about breastfeeding.

Validation of the survey instrument was accomplished in part by determining the length of time required for its completion and also the clarity of the questions asked. Ten women participating in the Expanded Food and Nutrition Education Program were asked to complete the questionnaire because they closely matched the income and educational levels

of women associated with the WIC program. The results of this procedure indicated that the questionnaire was clear and readable and that the average time required for its completion was nine minutes.

Collection of the Data

Approval for conducting the study was obtained from both the Oklahoma State Department of Health and the Oklahoma City/County Health Department. The data was collected on April 17, 1987 and April 24, 1987 at the Oklahoma City/County Health Department in Oklahoma City, Oklahoma. Three WIC nutrition education classes were held on each of these dates. At the end of each class, the WIC nutritionist requested that all mothers with an infant less than one year of age remain in the room. All others were dismissed for voucher pickup.

The author then gave a detailed explanation about the study and obtained a signed letter of consent (see Appendix A) from each participant. The participants were informed that completion of the questionnaire was voluntary, and that failure to complete it would not affect their WIC program participation in any way. Participants were also informed that all information they provided on the questionnaire would remain completely anonymous. The author then administered the questionnaires, gave verbal instructions for their completion, and answered any questions the participants had.

Forty-three questionnaires were obtained during the collection period. However, one questionnaire revealed a

subject with twins. The subject's responses for each infant were analyzed as separate from the other. Therefore, a total of 44 subjects were included in the analyses of data.

Analyses of the Data

Analysis of each of the three hypotheses listed in Chapter I were performed using the Statistical Analysis System (SAS). A frequency distribution was performed to identify patterns in questionnaire responses. Chi-square tests were then employed to determine if responses given by women who chose to breastfeed their infants significantly differed from those given by women who chose to bottlefeed their infants.

CHAPTER IV

RESULTS AND DISCUSSION

The purpose of this study was to assess factors which influence a mother's decision to breastfeed or to bottlefeed her infant, specifically among those mothers whose infants are enrolled in a WIC program in Oklahoma City, Oklahoma. A descriptive analyses of the data collected, along with significant associations, follows.

Demographic and Socioeconomic Information

Age

Data in Table III shows the frequency and percentage of subjects according to age. Thirty subjects (68.2%) were 25 years of age or less, with the remaining 14 subjects (31.8%) being between the ages of 26 and 45.

Eighteen of the 44 subjects (40.9%) chose breastfeeding as their infant feeding method, while 26 (59.1%) chose bottlefeeding. Of those subjects that were 25 years of age or less, 13 (43.3%) chose to breastfeed their infants and 17 (56.7%) chose to bottlefeed their infants. Among the mothers between the ages of 26 and 45, 5 (35.7%) chose to breastfeed their infants and 9 (64.3%) chose to bottlefeed their infants.

There was no significant association found between age and choice of infant feeding method.

TABLE III

FREQUENCY AND PERCENTAGE OF SUBJECTS ACCORDING TO AGE

Age	N	%
12-17	1	2.3
18-25	29	65.9
26-35	11	25.0
36-45	3	6.8
Total	44	100.0

Race

Data in Table IV shows the frequency and percentage of subjects according to race. Twenty-three subjects (53.5%) were white and the remaining 20 subjects (46.5%) were non-white (Black, Hispanic, American Indian, or Asian). One subject did not report her race.

Breastfeeding was chosen as the method of infant feeding by 12 (52.2%) of the white subjects, while the remaining 11 (47.8%) chose bottlefeeding. Among non-whites, 6 (30.0%) chose breastfeeding and 14 (70.0%) chose bottlefeeding. This

illustrates a tendency for the non-white minorities to choose bottlefeeding as their infant feeding method. These findings are similar to those of Hendershot (1984).

TABLE IV

FREQUENCY AND PERCENTAGE OF SUBJECTS ACCORDING TO RACE

Race	N	%
White (Caucasian)	23	52.3
Black	17	38.6
Hispanic	1	2.3
American Indian	1	2.3
Asian	1	2.3
Not Reported	1	2.3
Total	44	100.0

Education Level

Data in Table V shows the frequency and percentage of subjects according to education level. Twenty-five subjects (56.9%) had a high school education or less. The remaining 19 (43.1%) had attained some kind of higher education such as college or a technical school. Two subjects were college graduates.

TABLE V

FREQUENCY AND PERCENTAGE OF SUBJECTS ACCORDING TO EDUCATION LEVEL

Education level	N	%
Grade 8 or less	1	2.3
Some high school	9	20.5
Graduate of high school	15	34.1
Some college or technical school	17	38.6
College graduate	2	4.5
Total	44	100.0

Data in Table VI shows the chi square association between education level and choice of infant feeding method. Among the subjects with a high school education or less, 7 (28.0%) chose breastfeeding as their infant feeding method, while 18 (72.0%) chose to bottlefeed their infants. Subjects with education levels above that of high school demonstrated a higher incidence of breastfeeding with 11 (57.9%) choosing to breastfeed and 8 (42.1%) choosing to bottlefeed. These findings indicate a significant association (chi square value = 3.991, $p<.05$) between education level and maternal choice to breastfeed her infant. Eckhardt & Hendershot (1984) reported similar findings in their study.

TABLE VI

CHI SQUARE ASSOCIATION BETWEEN EDUCATION LEVEL AND CHOICE OF INFANT FEEDING METHOD

Frequency Column %	High School or less	Above High School	Total
Did not Breastfeed	18 72.00	8 42.11	26
Did Breastfeed	7 28.00	11 57.89	18
Total	25 100.00	19 100.00	44

Chi Square Value = 3.991
Probability = 0.046

Employment Status of Head of Household

Twenty-three subjects (52.3%) reported that their husband/male partner was head of household, while 19 subjects (43.2%) reported themselves as being head of household and 2 (4.5%) reported that a relative was head of household. There was no significant association found between head of household and choice of infant feeding method.

Twenty-five subjects (61.0%) reported that the head of household was employed, and 16 subjects (39.0%) reported that the head of household was unemployed. Three subjects did not report this information.

Of the 25 subjects reporting the head of household to be employed, 13 (52.0%) chose to breastfeed and 12 (48.0%) chose to bottlefeed their infants. Of the 16 subjects that reported the head of household to be unemployed, 5 (31.3%) chose to breastfeed and 11 (68.7%) chose to bottlefeed their infants.

Employment status of the head of household seems to have an association to the choice of infant feeding method. Surprisingly, those who are unemployed and may have difficulty purchasing formula were shown to be more likely to choose to bottlefeed their infants. This corresponds to earlier research (PHS, 1984) that lower income women have a lower incidence of breastfeeding.

Characteristics of the Subject's Infants

Ages of the subjects' infants ranged from 2 weeks to 12 months with 15 infants (34.1%) 4 months of age or less, 15 infants (34.1%) between the ages of 4 months and 8 months, and 14 infants (31.8%) 8 to 12 months of age.

Birth weight of the infants ranged from 3 pounds 12 ounces to 9 pounds 12 ounces. Four infants (9.8%) were low birth weight (less than 5.5 pounds). Of the remaining infants, 22 (53.6%) weighed between 5 and 7 pounds, and 15 (36.6%) ranged from 7 pounds to 9 pounds 12 ounces. Three subjects did not report this information. Only 1 of the low birth weight infants were reported as being breastfed.

Birth lengths of the infants ranged from 16 to 26 inches. However, 13 subjects did not report this information.

Duration of Breastfeeding

Eighteen (40.9%) of the 44 total subjects reported that they breastfed their present infant and 26 (59.1%) reported that they bottlefed. Of those that breastfed their infant, 14 (77.9%) reported discontinuing breastfeeding by the fifth month. Three of these subjects discontinued breastfeeding by the second week. One subject breastfed her infant for only one day. Nine of these 14 subjects discontinued breastfeeding from 1 to 3 months, with 2 subjects discontinuing at the fifth month. Four subjects (22.1%) reported that they were still breastfeeding their infants, whose ages ranged from 4 to 11.5 months.

Several reasons were given by subjects to explain why they discontinued breastfeeding. Table VII lists these reasons and the frequency of subjects reported.

TABLE VII

FREQUENCY OF SUBJECTS ACCORDING TO REASONS FOR DISCONTINUING BREASTFEEDIING

REASON	N
"Breastfeeding was too painful"	2
"My breastmilk didn't satisfy my baby"	2
"I didn't produce enough milk"	2
"I didn't like to breastfeed"	1
"My breastmilk was too rich"	1
"My baby was losing weight"	1
"My baby was not sucking well"	1
"My baby preferred the bottle"	1
"My baby weaned himself"	1
Reason not given	2
Total	14

Three subjects reported using formula in addition to breastmilk. These subjects indicated that this was necessary during working hours and at other times when breastfeeding was not possible.

Introduction of Solid Foods

The age at which solid foods or beverages were first given to their infants was reported by 27 subjects. Twelve subjects (44.4%) reported giving their infants additional foods or beverages before the infant was 4 months old. Two of these subjects started additional foods or beverages when the infant was only 1 month old. Early introduction of these foods and beverages may be reflective of the lower educational level of these subjects.

Thirteen subjects (48.2%) reported giving their infants additional foods or beverages during the recommended range of 4 to 6 months of age. The remaining 2 subjects (7.4) waited until their infants were between 6.5 and 7 months old before introducing these foods.

When Infant Feeding Method Decision Was Made

Seventeen subjects (42.5%) reported that they had decided which type of infant feeding method they would use before they became pregnant. Nineteen subjects (47.5%) made their decision during their pregnancy, and the remaining four subjects (10.0%) decided after the birth of their baby. Four subjects did not

report this information. The fact that 90% of the subjects made their decision of infant feeding method either before or during pregnancy indicates the need to reach mothers as early as possible to promote breastfeeding and to prepare the mother for this experience, as suggested by Sarett, et al., (1983).

Health Status of the Infants

Thirty subjects (68.2%) reported that their infants have had no health problems. The remaining 14 subjects (31.8%) reported various illnesses as shown in Table VIII. Several of these illnesses, such as gastroschisis, failure to thrive, pyloric stenosis, and tracheoesophageal cleft, may contraindicate breastfeeding. None of the subjects with infants having these health problems reported that they had breastfed.

TABLE VIII

FREQUENCY OF SUBJECTS ACCORDING TO TYPES OF INFANT HEALTH PROBLEMS

Infant Health Problem	N
Ear infection	3
Apnea	2
Gastroschisis	1
Failure to thrive	1
Cough	1
Pyloric stenosis	1
Bronchitis	1
Yellow jaundice	1
Tracheoesophageal cleft	1
Allergies	1
Problem not given	1
Total	14

There was no significant association made between the health of the infants and the subjects' choice of infant feeding method. However, among the 14 subjects whose infants were reported as having a health problem, only 5 (35.7%) chose to breastfeed their infants and 9 (64.3%) chose to bottlefeed their infants.

Previous Children

Fourteen subjects (34.1%) reported that they have had no previous children, while 18 subjects (43.9%) reported having 1 to 2 previous children, and 9 subjects (22.0%) reported that they have had 3 or more previous children. One of these subjects reported that she has had 5 previous children. Three subjects did not report this information.

An association was shown between number of children and the choice of infant feeding method. For those 14 subjects who had no previous children, 7 (50.0%) chose to breastfeed their infants and 7 (50.0%) chose to bottlefeed their infants. Of the subjects having 1 to 2 previous children, 8 (44.4%) chose to breastfeed their infants and 10 (55.6%) chose to bottlefeed their infants, while among those subjects having 3 or more children, only 1 (11.1%) chose to breastfeed and 8 (88.9%) chose to bottlefeed. This association may indicate a perceived need for convenience for the mother with other children in the home. This association, although relevant, was not statistically significant.

Previous Breastfeeding Experience

Eighteen subjects (66.7%) reported that they have had no previous breastfeeding experience, while 9 subjects (33.3%) reported having had some previous breastfeeding experience. Of those subjects with no previous breastfeeding experience, only 4 (22.2%) reported that they breastfed their present infants, and 14 (77.8%) reported that they bottlefed their infants. Among those subjects with previous breastfeeding experience, 5 (55.6%) breastfed their present infants and 4 (44.4%) bottlefed their present infants. These findings are similar to those of Simopoulos & Grave (1984) and indicate that previous breastfeeding experience may be a factor in initiating breastfeeding for subsequent infants.

Eight subjects reported duration of previous breastfeeding experiences. Four of these subjects breastfed for 2 months or less and 4 breastfed for over 6 months. Among those that previously breastfed over 6 months, 1 subject reported breastfeeding for 18 months, 1 for 24 months, and 1 for over 38 months.

Supportive Factors

Encouragement for Breastfeeding

Data in Table IX shows the frequency and percentage of subjects according to the source of encouragement received for breastfeeding their present infant. Thirty-three subjects reported that they had received some kind of encouragement for

breastfeeding. Eleven subjects did not report this information.

TABLE IX

FREQUENCY AND PERCENT OF SUBJECTS ACCORDING TO SOURCE OF ENCOURAGEMENT RECEIVED FOR BREASTFEEDING

Source of encouragement	N	%
Husband/male partner	15	45.5
Other female relatives	13	39.4
Doctor	13	39.4
Mother	11	33.3
Close friend	10	30.3
WIC nutritionist	8	24.2
Grandmother	8	24.2
No one	8	24.2
Nurse	3	9.1
Neighbor	2	6.1

A significant association (chi square value = 5.241, $p<.05$) was found between encouragement received from the husband/male partner and the choice of infant feeding method, as shown in Table X. Among the 18 subjects who did not receive breastfeeding encouragement from the husband/male partner, only 6 (33.3%) chose to breastfeed their infants, while 12 (66.7%) chose to bottlefeed their infants. However, among the 15 subjects who did receive breastfeeding encouragement from the husband/male partner, 11 (73.3%) chose to breastfeed their infants, while only 4 (26.7%) chose to bottlefeed their

infants. Earlier studies by Baranowski et al. (1983) and Matheny et al. (1987) have indicated the importance of the husband's influence for breastfeeding. This association indicates the need for the husband/male partner to be included in breastfeeding education and promotion efforts and to be supportive and encouraging of the mother that chooses to breastfeed.

TABLE X

CHI SQUARE ASSOCIATION BETWEEN ENCOURAGEMENT RECEIVED FROM HUSBAND/MALE PARTNER AND CHOICE OF INFANT FEEDING METHOD

Frequency Column %	No Encouragement	Encouragement	Total
Did not Breastfeed	12 66.67	4 26.67	16
Did Breastfeed	6 33.33	11 73.33	17
Total	18 100.00	15 100.00	33

Frequency Missing = 11

Chi Square Value = 5.241
Probability = 0.022

Another significant association (chi square value = 5.544, $p<.05$) was found between encouragement received from female

relatives other than the subject's mother or grandmother and the choice of infant feeding method, as shown in Table XI. Among the 20 subjects who did not receive breastfeeding encouragement from other female relatives, only 7 (35.0%) chose to breastfeed their infants, and 13 (65.0%) chose to bottlefeed their infants. However, among those subjects receiving breastfeeding encouragement from other female relatives, 10 (77.0%) chose to breastfeed their infants, while only 3 (23.0%) chose to bottlefeed. This finding illustrates the importance of support and encouragement received from other family members in the subject's decision to breastfeed her infant.

TABLE XI

CHI SQUARE ASSOCIATION BETWEEN ENCOURAGEMENT RECEIVED FROM FEMALE RELATIVES OTHER THAN THE SUBJECT'S MOTHER OR GRANDMOTHER AND CHOICE OF INFANT FEEDING METHOD

Frequency Column %	No Encouragement	Encouragement	Total
Did not Breastfeed	13 65.00	3 23.08	16
Did Breastfeed	7 35.00	10 76.92	17
Total	20 100.00	13 100.00	33

Frequency Missing = 11

Chi Square Value = 5.544
Probability = 0.019

A significant association (chi square value = 9.409, $p<.01$) was also found between encouragement received from a doctor and choice of infant feeding method, as shown in Table XII. A similar study of WIC participants in Washington D.C. revealed that the doctor was an important source of encouragement for breastfeeding (Bronner, Woods-Francis, Timoll, & Wilson).

TABLE XII

CHI SQUARE ASSOCIATION BETWEEN ENCOURAGEMENT RECEIVED FROM A DOCTOR AND CHOICE OF INFANT FEEDING METHOD

Frequency Column %	No Encouragement	Encouragement	Total
Did not Breastfeed	14 70.00	2 15.38	16
Did Breastfeed	6 30.00	11 84.62	17
Total	20 100.00	13 100.00	33

Frequency Missing = 11

Chi square value = 9.409
Probability = 0.002

Of the 20 subjects not receiving breastfeeding encouragement from their doctor, only 6 (30.0%) chose to

breastfeed their infants, while 14 (70.0%) chose to bottlefeed. Of those subjects receiving breastfeeding encouragement from their doctor, 11 (84.6%) chose to breastfeed while only 2 (15.4%) chose to bottlefeed their infants. This association reveals the tremendous influence that doctors have on the choice of infant feeding method of these subjects. It therefore seems extremely important that doctors, as well as other health care professionals, be educated as to the benefits of breastfeeding for both mother and infant so that they can more effectively promote breastfeeding in their patients.

No other statistically significant associations were found between sources of breastfeeding encouragement and choice of infant feeding method; however, some interesting associations were noted. Encouragement for breastfeeding received from the subject's mother seemed to have a positive effect on the subject's choice of infant feeding method. This same association was also made by Arango (1984). Of the 11 subjects receiving breastfeeding encouragement from their mothers, 7 (63.6%) chose to breastfeed and only 4 (36.4%) chose to bottlefeed their infants. Of the remaining 22 subjects that did not receive breastfeeding encouragement from their mothers, 10 (45.5%) chose to breastfeed and 12 (54.5%) chose to bottlefeed their infants.

Other sources of encouragement for breastfeeding that seemed to have a slightly positive effect on the subject's choice to breastfeed included close friends, the WIC nutritionist, the subject's grandmother, a nurse, and the

subject's neighbor. The fact that the WIC nutritionist did not have a significant influence on breastfeeding illustrates the need for more effective breastfeeding promotion by the WIC nutritionist in the nutrition education classes. Of the 8 subjects that received no encouragement to breastfeed, only 2 (25.0%) chose to breastfeed and 6 (75.0%) chose to bottlefeed their infants. These associations indicate the importance of encouragement to the subject's choice to breastfeed or bottlefeed her infant.

Influences on the Decision of Infant Feeding Method

The subjects were asked to indicate on the questionnaire which one person influenced them the most in making their decision to breastfeed or to bottlefeed their infants. Data in Table XIII shows the frequency and percent of subjects according to the person listed as being most influential to the subject's choice of infant feeding method.

TABLE XIII

FREQUENCY AND PERCENT OF SUBJECTS ACCORDING TO THE PERSON LISTED AS BEING MOST INFLUENTIAL TO THE SUBJECT'S CHOICE OF INFANT FEEDING METHOD

Most influential person	N	%
No one	10	27.8
Husband/male partner	9	25.0
Subject's mother	9	25.0

TABLE XIII (Continued)

Other female relatives	4	11.1
Close friend	2	5.6
Doctor	2	5.6
Total	36	100.0

Eight subjects did not report this information. No significant associations were found between the reported influential persons and choice of infant feeding method.

Other Sources of Influence

Data in Table XIV shows the frequency and percent of subjects according to other sources of information acquired that influenced their choice of infant feeding method. Three of the 44 total subjects did not report this information.

TABLE XIV

FREQUENCY AND PERCENT OF SUBJECTS ACCORDING TO OTHER SOURCES OF INFORMATION ACQUIRED ON INFANT FEEDING METHODS

Other sources of information	N	%
Pamphlets	15	36.6
Childbirth education classes	12	29.3
Magazines	11	26.8
None	11	26.8
Books	8	19.5
Previous breastfeeding experience	4	9.8
La Leche League	2	4.9
Newspaper articles	2	4.9

Pamphlets, childbirth education classes, magazines, and books were the most frequently acquired sources of information for choice of infant feeding method. Of these sources, only books were found to show a significant association (chi square value = 3.903, $p<.05$) to the subject's choice to breastfeed their infants. Data in Table XV shows the chi square association between information acquired from books and choice of infant feeding method.

TABLE XV

CHI SQUARE ASSOCIATION BETWEEN INFORMATION ACQUIRED FROM BOOKS AND CHOICE OF INFANT FEEDING METHOD

Frequency Column %	No Information	Information	Total
Did not Breastfeed	21 63.64	2 25.00	23
Did Breastfeed	12 36.36	6 75.00	18
Total	33 100.00	8 100.00	41

Frequency Missing = 3

Chi Square Value = 3.903
Probability = 0.048

Among the 8 subjects that acquired influencing information from books, 6 (75.0%) breastfed and 2 (25.0%) bottlefed their infants, while among the 33 subjects that did not acquire influencing information from books, only 12 (36.4%) chose to breastfeed and 21 (63.6%) chose to bottlefeed their infants. The use of newspaper articles did not show an association to the choice of infant feeding method.

Previous breastfeeding experience was shown to be significantly associated (chi square value = 5.664, $p<.05$) with the subjects' choice to breastfeed their infants. Data in Table XVI shows the chi square association between previous breastfeeding experience and choice of infant feeding method.

TABLE XVI

CHI SQUARE ASSOCIATION BETWEEN PREVIOUS BREASTFEEDING EXPERIENCE AND CHOICE OF INFANT FEEDING METHOD

Frequency Column %	No Experience	Previous Experience	Total
Did not Breastfeed	23 62.16	0 0.00	23
Did Breastfeed	14 37.84	4 100.00	18
Total	37 100.00	4 100.00	41

Frequency Missing = 3

Chi Square Value = 5.664
Probability = 0.017

Of the 4 subjects who reported being influenced by previous breastfeeding experience, all 4 (100.0%) chose to breastfeed their present infant. Of the 37 remaining subjects that reported not being influenced by previous breastfeeding experience, only 14 (37.8%) chose to breastfeed and 23 (62.2%) chose to bottlefeed their infants. A previous study by Simopoulos & Grave (1984) revealed similar findings in that feeding experience of a previous child has an effect on infant feeding method chosen subsequently.

Two subjects acquired additional information from the La Leche League. Both of these subjects chose to breastfeed their infants. The support and encouragement given by this organization seems to have a positive effect on choice to breastfeed.

A significant association (chi square value = 4.038, $p<.05$) was shown between acquiring no additional influencing information and choice of infant feeding method, as shown in Table XVII. Of the 11 subjects that acquired no additional information, only 2 (18.2%) chose to breastfeed and 9 (81.8%) chose to bottlefeed their infants.

Other Factors Influencing the Choice to Breastfeed

Data in Table XVIII shows the frequency and percent of subjects according to other factors influencing the choice to breastfeed. Twenty-two subjects did not report this information.

TABLE XVII

CHI SQUARE ASSOCIATION BETWEEN ACQUIRING NO INFLUENCING INFORMATION AND CHOICE OF INFANT FEEDING METHOD

Frequency Column %	No Information	Some Information	Total
Did not Breastfeed	9 81.82	14 46.67	23
Did Breastfeed	2 18.18	16 53.33	18
Total	11 100.00	30 100.00	41

Frequency Missing = 3

Chi Square Value = 4.038
Probability = 0.044

TABLE XVIII

FREQUENCY AND PERCENT OF SUBJECTS ACCORDING TO OTHER FACTORS INFLUENCING THE CHOICE TO BREASTFEED

Other factors	N	%
Health benefits for the baby	15	68.2
Easier to do than bottlefeeding	10	45.5
Costs less than bottlefeeding	10	45.5
Breastfeeding was supported by family members	8	36.4
Benefits for the mother	7	31.8
None	5	22.7
Breastfeeding encourages bonding of mother and baby	2	9.1

"Health benefits for the baby," "Easier to do than bottlefeeding," and "Costs less than bottlefeeding" were the most frequently reported additional factors that influenced the decision to breastfeed. A significant association (chi square value = 6.924, $p<.01$) was shown between the influencing factor that breastfeeding provides health benefits for the baby and the subject's choice to breastfeed, as shown in Table XIX. Of the 15 subjects that cited this factor as being influencing, 14 (93.3%) chose to breastfeed and 1 (6.7%) chose to bottlefeed their infants.

TABLE XIX

CHI SQUARE ASSOCIATION BETWEEN THE INFLUENCING FACTOR "BREASTFEEDING PROVIDES HEALTH BENEFITS FOR THE BABY" AND CHOICE OF INFANT FEEDING METHOD

Frequency Column %	Not Influencing	Influencing	Total
Did not Breastfeed	4 57.14	1 6.67	5
Did Breastfeed	3 42.86	14 93.33	17
Total	7 100.00	15 100.00	22

Frequency Missing = 22

Chi Square Value = 6.924
Probability = 0.009

Among the 10 subjects reporting that breastfeeding was "Easier to do than bottlefeeding," 8 (80.0%) chose to breastfeed and 2 (20.0%) chose to bottlefeed their infants.

Ten subjects reported "Costs less than bottlefeeding" was a factor that influenced their decision of infant feeding method. Of these 10 subjects, all 10 (100.0%) chose to breastfeed their infants. This association was statistically significant (chi square value = 5.392, $p<.05$), as shown in Table XX.

TABLE XX

CHI SQUARE ASSOCIATION BETWEEN THE INFLUENCING FACTOR "BREASTFEEDING COSTS LESS THAN BOTTLEFEEDING" AND CHOICE OF INFANT FEEDING METHOD

Frequency Column %	Not Influencing	Influencing	Total
Did not Breastfeed	5 41.67	0 0.00	5
Did Breastfeed	7 58.33	10 100.00	17
Total	12 100.00	10 100.00	22

Frequency Missing = 22

Chi Square Value = 5.392
Probability = 0.020

The fact that breastfeeding was supported by family members was a factor that influenced 8 subjects on their infant feeding method. However, only 7 of these subjects (87.5%) did in fact choose to breastfeed their infants.

An association was found between the influencing factor "Benefits for the mother" and maternal choice to breastfeed. Of 7 subjects reporting as being influenced by this factor, all 7 (100.0%) chose to breastfeed their infants. A similar association was found between the influencing factor "Encourages bonding of mother and baby" and maternal choice to breastfeed. Both subjects that reported being influenced by this factor breastfed their infants. Among the 6 subjects reporting to be influenced by none of these factors, 4 (66.7%) chose to breastfeed and 2 (33.3%) chose to bottlefeed their infants.

Other Factors Influencing the Choice to Bottlefeed

Data in Table XXI shows the frequency and percent of subjects according to other factors influencing the choice to bottlefeed. Six subjects did not report this information. "More convenient than breastfeeding," "Formula supplied through WIC," "Easier to do than breastfeeding," and "Had to return to work" were the most frequently reported additional factors influencing the choice to bottlefeed. A significant association (chi square value = 5.956, $p<.05$) was shown between the influencing factor "Formula supplied through WIC" and subject's choice to bottlefeed, as shown in Table XXII.

TABLE XXI

FREQUENCY AND PERCENT OF SUBJECTS ACCORDING TO OTHER FACTORS INFLUENCING THE CHOICE TO BOTTLEFEED

Other factors	N	%
More convenient than breastfeeding	13	34.2
Formula supplied through WIC	11	28.9
Easier to do than breastfeeding	11	28.9
Had to return to work	10	26.3
Could not breastfeed because of a health problem	4	10.5
Breastmilk would not come in	2	5.3
None	2	5.3

TABLE XXII

CHI SQUARE ASSOCIATION BETWEEN THE INFLUENCING FACTOR "FORMULA IS SUPPLIED THROUGH WIC" AND CHOICE OF INFANT FEEDING METHOD

Frequency Column %	Not Influencing	Influencing	Total
Did not Breastfeed	21 77.78	4 36.36	25
Did Breastfeed	6 22.22	7 63.64	13
Total	27 100.00	11 100.00	38

Frequency Missing = 6

Chi Square Value = 5.956
Probability = 0.015

Of the 11 subjects who reported this factor as being influencing, 7 (63.6%) chose initially to breastfeed but reported discontinuing breastfeeding early and switching to bottlefeeding. The remaining 4 (36.4%) chose to bottlefeed their infants. The fact that formula is routinely supplied through WIC is of great concern. The knowledge that formula is a readily available alternative and easily obtained, provides little incentive to breastfeed.

Among the 13 subjects who reported that it was "More convenient to bottlefeed than to breastfeed," 4 (30.8%) chose to begin breastfeeding and 9 (69.2%) chose to bottlefeed. Similar associations were shown for those who reported "Easier to do than breastfeeding" and "Had to return to work." No associations could be made for those who reported "Could not breastfeed because of a health problem," "Breastmilk would not come in," or for those who reported no additional influencing factors for bottlefeeding.

Opinions and Beliefs

Data in Table XXIII shows the frequency of subjects according to their opinions and beliefs about ten general statements concerning infant feeding.

Thirty-three subjects reported that they agreed with the statement "Breastmilk is the best food for a baby." However, of these 33, only 16 (48.5%) chose to breastfeed their infants while 17 (51.5%) chose to bottlefeed their infants. This association seems to contradict the subject's opinions.

TABLE XXIII

FREQUENCY OF SUBJECTS ACCORDING TO THEIR OPINIONS AND BELIEFS ABOUT TEN GENERAL STATEMENTS CONCERNING INFANT FEEDING

N = 44

Statement	Agree	Disagree	Don't Know	Frequency Missing
Breastmilk is the best food for a baby.	33	4	6	1
Formula-fed babies grow better than breastfed babies.	8	21	13	2
Breastmilk protects a baby from illness.	26	6	10	2
Breastfeeding can help mother to lose weight.	21	9	12	2
Breastfeeding makes you feel closer to your baby than bottlefeeding does.	28	8	6	2
Your breasts will return to their normal size and shape soon after you stop breastfeeding.	16	8	18	2
Any woman can breastfeed, regardless of the size of her breasts.	28	4	10	2
Women who work can't breastfeed their babies.	9	31	3	1
You are tied down if you decide to breastfeed.	5	34	3	2
It is more economical to breastfeed than to bottlefeed.	33	7	3	1

Of the 4 subjects disagreeing with the statement, all 4 (100.0%) chose to bottlefeed their infants. Of the 6 subjects unsure about the statement, only 1 (16.7%) chose to breastfeed her infant and 5 (83.3%) chose to bottlefeed their infants.

Eight subjects agreed with the statement "Formula-fed babies grow better than breastfed babies." Only 1 (12.5%) of these subjects chose to breastfeed and 7 (87.5%) chose to bottlefeed their infants. Twenty-one subjects disagreed with the statement, with 11 (52.4%) choosing to breastfeed and 10 (47.6%) choosing to bottlefeed their infants. Of the 13 subjects unsure about the statement, 5 (38.5%) chose to breastfeed and 8 (61.5%) chose to bottlefeed.

A significant association (chi square value = 8.465, $p<.05$) was made between the reported opinions and beliefs about the statement "Breastmilk protects a baby from illness" and the choice of infant feeding method, as shown in Table XXIV. Twenty-six subjects agreed with the statement with 15 (57.7%) of these subjects choosing to breastfeed and 11 (42.3%) choosing to bottlefeed. Among the 6 subjects disagreeing with the statement, only 1 (16.7%) chose to breastfeed and the remaining 5 (83.3%) chose to bottlefeed their infants. Ten subjects were unsure about the statement with only 1 (10.0%) choosing to breastfeed and 9 (90.0%) choosing to bottlefeed their infants.

TABLE XXIV

CHI SQUARE ASSOCIATION BETWEEN THE REPORTED OPINIONS AND BELIEFS ABOUT THE STATEMENT "BREASTMILK PROTECTS A BABY FROM ILLNESS" AND THE CHOICE OF INFANT FEEDING METHOD

Frequency Column %	Agreed	Disagreed	Unsure	Total
Did not Breastfeed	11 42.31	5 83.33	9 90.00	25
Did Breastfeed	15 57.69	1 16.67	1 10.00	17
Total	26 100.00	6 100.00	10 100.00	42

Frequency Missing = 2

Chi square value = 8.465
Probability = 0.015

A significant association (chi square value = 8.071, $p<.05$) was shown between the reported opinions and beliefs about the statement "Breastfeeding can help mother to lose weight" and the choice of infant feeding method, as shown in Table XXV. Of the 21 subjects agreeing with the statement, 13 (61.9%) chose to breastfeed and 8 (38.1%) chose to bottlefeed. However, of the 9 subjects disagreeing with the statement, only 2 (22.2%) chose to breastfeed and 7 (77.8%) chose to bottlefeed their infants. Twelve subjects were unsure about the statement. Only 2 (16.7%) of those subjects chose breastfeeding while 10 (83.3%) chose bottlefeeding.

TABLE XXV

CHI SQUARE ASSOCIATION BETWEEN THE REPORTED OPINIONS AND BELIEFS ABOUT THE STATEMENT "BREASTFEEDING CAN HELP MOTHER TO LOSE WEIGHT" AND THE CHOICE OF INFANT FEEDING METHOD

Frequency Column %	Agreed	Disagreed	Unsure	Total
Did not Breastfeed	8 38.10	7 77.78	10 83.33	25
Did Breastfeed	13 61.90	2 22.22	2 16.67	17
Total	21 100.00	9 100.00	12 100.00	42

Frequency Missing = 2

Chi Square Value = 8.071
Probability = 0.018

A significant association (chi square value = 8.758, $p<.05$) was also shown between the reported opinions and beliefs about the statement "Breastfeeding makes you feel closer to your baby than bottlefeeding does" and the choice of infant feeding method, as shown in Table XXVI. Twenty-eight subjects agreed with the statement, with 15 (53.6%) choosing to breastfeed their infants and 13 (46.4%) choosing to bottlefeed. Among the 8 subjects that disagreed with the statement, only 1 (12.5%) chose to breastfeed and 7 (87.5%) chose to bottlefeed their infants. Six subjects were unsure about the statement, with all 6 (100.0%) choosing to bottlefeed their infants.

TABLE XXVI

CHI SQUARE ASSOCIATION BETWEEN THE REPORTED OPINIONS AND BELIEFS ABOUT THE STATEMENT "BREASTFEEDING MAKES YOU FEEL CLOSER TO YOUR BABY THAN BOTTLEFEEDING DOES" AND THE CHOICE OF INFANT FEEDING METHOD

Frequency Column %	Agreed	Disagreed	Unsure	Total
Did not Breastfeed	13 46.43	7 87.50	6 100.00	26
Did Breastfeed	15 53.57	1 12.50	0 0.00	16
Total	28 100.00	8 100.00	6 100.00	42

Frequency Missing = 2

Chi Square Value = 8.758
Probability = 0.013

These significant associations indicate that maternal knowledge and beliefs may be powerful factors in the decision of infant feeding method, as reported by Jelliffe & Jelliffe (1978) and Matheny, et al. (1987).

Several other interesting associations were made; however, none were statistically significant. Sixteen subjects agreed with the statement "Your breasts will return to their normal size and shape soon after you stop breastfeeding." Of these 16 subjects, 9 (56.3%) chose to breastfeed while 7 (43.7%) chose

to bottlefeed their infants. Of the 8 subjects disagreeing, 4 (50.0%) chose to breastfeed and 4 (50.0%) chose to bottlefeed their infants. Eighteen subjects were unsure about the statement. Only 4 of these 18 (22.2%) chose to breastfeed, while the remaining 14 (77.8%) chose to bottlefeed their infants.

Twenty-eight subjects agreed with the statement "Any woman can breastfeed, regardless of the size of her breasts." Only 10 (35.7%) of these subjects chose to breastfeed while 18 (64.3%) chose to bottlefeed. Of the 4 subjects disagreeing with the statement, 2 (50.0%) chose to breastfeed and 2 (50.0%) chose to bottlefeed their infants. Ten subjects were unsure about the statement with 4 (40.0%) choosing to breastfeed and 6 (60.0%) choosing to bottlefeed their infants.

Nine subjects agreed with the statement "Women who work can't breastfeed their babies." Only 2 of these subjects (22.2%) chose to breastfeed while the remaining 7 (77.8%) chose to bottlefeed their infants. Thirty-one subjects disagreed, with 15 (48.4%) choosing to breastfeed and 16 (51.6%) choosing to bottlefeed. Only 3 subjects were unsure about the statement. All 3 (100.0%) chose to bottlefeed their infants.

Five subjects agreed with the statement "You are tied down if you decide to breastfeed." Only 1 of these subjects (20.0%) chose to breastfeed while 4 (80.0%) chose to bottlefeed their infants. Thirty-four subjects disagreed with the statement with 15 (44.1%) choosing to breastfeed and 19 (55.9%) choosing to bottlefeed their infants. Only 3 subjects were unsure about

the statement. All 3 (100.0%) chose to bottlefeed their infants.

Thirty-three subjects agreed with the statement "It is more economical to breastfeed than to bottlefeed." Sixteen of these subjects (48.5%) reported choosing to breastfeed and 17 (51.5%) reported choosing to bottlefeed their infants. Seven subjects disagreed with the statement, with only 1 (14.3%) choosing to breastfeed and the remaining 6 (85.7%) choosing to bottlefeed. Three subjects reported being unsure about the statement, and all 3 (100.0%) chose to bottlefeed their infants.

Hypotheses Testing

In this study, the factors that influence a mother's choice of infant feeding method were evaluated using a frequency distribution and chi square tests. The results of the testing of the three null hypotheses are indicated.

H1: There will be no significant associations between the demographic and socioeconomic characteristics of the participants who chose to breastfeed and of those who chose to bottlefeed their infants.

Of the demographic and socioeconomic characteristics including age, race, education level, and employment status, only education level was found to be significantly associated with maternal choice to breastfeed. No other characteristics were found to be significantly associated with choice of infant feeding method; therefore, the researcher failed to reject hypothesis 1.

H2: There will be no significant associations in the supportive factors of participants who chose to breastfeed and of those who chose to bottlefeed their infants.

Several supportive factors were found to be significantly associated with encouragement for breastfeeding including the husband/male partner, female relatives other than the subject's mother or grandmother, and the subject's doctor. Books, as well as previous breastfeeding experience were also shown to have a significant influence on the choice to breastfeed. Due to these and other significant associations, the researcher failed to accept hypothesis 2.

H3: There will be no significant associations between the opinions and beliefs about breastfeeding of participants who chose to breastfeed and those who chose to bottlefeed their infants.

Among the opinions and beliefs about breastfeeding, significant associations were made with three statements: "Breastmilk protects a baby from illness," "Breastfeeding can help mother to lose weight," and "Breastfeeding makes you feel closer to your baby than bottlefeeding does." No other significant associations were found; therefore, the researcher failed to reject hypothesis 3.

CHAPTER V

SUMMARY AND CONCLUSIONS

Summary

A study was undertaken to assess the factors that influence the choice of infant feeding method among mothers of infants enrolled in a WIC program in Oklahoma City, Oklahoma. Forty-four subjects participated in the study.

The objectives of the study were: (1) to determine whether demographic and socioeconomic characteristics affect the participant's choice to breastfeed or to bottlefeed her infant; (2) to determine which supportive factors were most effective in influencing the participant's choice to breastfeed or bottlefeed her infant; and (3) to assess the participant's opinions and beliefs about breastfeeding and how they affect the choice to breastfeed or bottlefeed her infant.

A questionnaire was administered by the researcher for data collection. Data were analyzed for frequency of subject's responses and also for significant associations as related to choice of infant feeding method.

Of the demographic characteristics of age, race, education level, and employment status, only education level was statistically significant in its association with maternal

choice to breastfeed. Non-white minorities illustrated a tendency to choose bottlefeeding as their infant feeding method. Those subjects whose head of household was unemployed, possibly revealing lower income status, were also more likely to choose to bottlefeed their infants.

Several subjects started breastfeeding but discontinued breastfeeding early. Reasons given for this included "too painful," "didn't satisfy my baby," "didn't produce enough milk," "didn't like to breastfeed," and "baby was losing weight."

Decision of infant feeding method was made by 90% of the subjects before the birth of their infants. This indicates the need for early breastfeeding education and promotion.

An association was shown between number of children and choice of infant feeding method. With an increase in number of children, the choice to bottlefeed also increased. Previous breastfeeding experience was shown to be a factor in initiating breastfeeding for subsequent infants.

Among supportive factors that provided encouragement for breastfeeding, significant associations were found to exist with the husband/male partner, female relatives other than the subject's mother or grandmother, and the subject's doctor. Encouragement for breastfeeding from the subject's mother seemed to have a positive effect on the subject's choice of infant feeding method, but the association was not found to be significant. The other sources of encouragement seemed to have only a slightly positive effect on the subject's choice to

breastfeed. These included close friends, the WIC nutritionist, the subject's grandmother, a nurse, and the subject's neighbor.

Other sources of influence on infant feeding method include pamphlets, childbirth education classes, magazines, newspaper articles, and books. Of these sources, only books were found to show a significant association to the subject's infant feeding method. Previous breastfeeding experience was also shown to be a significant influencing factor.

Of the additional factors influencing the choice to breastfeed, "Health benefits for the baby," "Easier to do than bottlefeeding," and "Costs less than bottlefeeding" were the most frequently reported factors. Significant associations were shown between the influencing factors that "Breastfeeding provides health benefits for the baby," "Costs less than bottlefeeding," and the subjects' choice to breastfeed.

The most frequently reported additional factors influencing the decision to bottlefeed included "More convenient than breastfeeding," "Formula supplied through WIC," "Easier to do than breastfeeding," and "Had to return to work." A significant association was shown between the influencing factor, "Formula supplied through WIC" and the subject's tendency to bottlefeed.

Among the opinions and beliefs of the subjects, significant associations were made with the statements "Breastmilk protects a baby from illness," "Breastfeeding can help mother to lose weight," and "Breastfeeding makes you feel closer to your baby

than bottlefeeding does." No other significant associations were found.

Conclusions

Based on the findings of this study, the researcher arrived at several conclusions. First, mothers with a higher education level are more likely to choose to breastfeed their infants. Other demographic and socioeconomic factors such as age, race, and income level may also be important in the choice of infant feeding method. Second, support from health care workers as well as from family members is extremely important for successful initiation and continuance of breastfeeding. The husband/male partner and doctor seem to be the most influential in the choice of infant feeding method. Finally, the mother's opinions and beliefs about breastfeeding and bottlefeeding are important predictors of infant feeding intentions. Increased breastfeeding education and promotion could help reduce barriers that interfere with successful breastfeeding.

Recommendations for Further Study and Research

1. A similar study with a different population, such as mothers of higher socioeconomic status.
2. A study to determine the extent to which WIC nutritionists are knowledgeable about the physiological, psychological, and social benefits of breastfeeding and how they incorporate these factors into WIC nutrition education classes.

3. A study of the effectiveness of utilizing lay support groups such as the La Leche League to provide support and encouragement for WIC participants who desire to breastfeed their infants.

4. A study to determine specific educational approaches and educational materials from health care professionals that are most conducive to breastfeeding.

5. It is suggested that a more extensive study be carried out on the relationship between certain social and demographic variables and the choice of infant feeding methods.

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APPENDIXES

APPENDIX A

LETTER OF CONSENT TO PARTICIPATE IN A SURVEY

Letter of Consent to Participate in a Survey

This is a survey about breastfeeding and bottlefeeding practices among mothers of infants in the WIC program. You will be asked questions about yourself, your baby, and your family. You will also be asked questions about your breastfeeding or bottlefeeding experiences. The questionnaire will only take about 9 minutes to finish.

The information which you provide on the questionnaire will be completely confidential. There is no need to put your name on the questionnaire.

Your choice to complete or not to complete the survey will <u>not</u> affect your WIC program participation in any way.

I have read the information above and I understand the purpose of the survey. My signature below indicates my agreement to participate in the survey.

_____ _____

Name Date

APPENDIX B

QUESTIONNAIRE

Questionnaire

Please answer all of the following questions:

1. Your age: _____12-17 years
_____18-25
_____26-35
_____36-45

2. Race: _____White (Caucasian)
_____Black
_____Hispanic
_____American Indian
_____Asian

3. Education: _____grade 8 or less
_____some high school
_____graduate of high school
_____graduate of technical or 2 year school
_____some college
_____college graduate

4. Head of household: _____husband/male partner
_____yourself
_____relative (please specify) _____
_____other (please specify) _____

5. Employment status:

	employed	unemployed	student
Head of household			
Yourself (if not head of household)			
Other adult members of the household			

6. Present age of your new baby: _____

7. Weight of new baby at birth: _____ Present weight: _____

   Length of new baby at birth: _____ Present length: _____

8. Did you breastfeed your new baby at all? _____yes

   _____no

   If yes, how long did you breastfeed? (specify how many weeks or months)

   _____

   If you stopped breastfeeding, please give your reason(s):

   _____

   If you have used formula in addition to your breastmilk, please explain your reason: _____

   _____

9. If you have given your new baby any foods or beverages in addition to breastmilk or formula, how old was he/she when you first gave these foods?

   _____

10. When did you decide to breastfeed or bottlefeed your new baby?

    _____before pregnancy

    _____during pregnancy

    _____after birth of the baby

11. Has your new baby had any health problems? _____yes

    _____no

    If yes, please specify: _____

12. If you have given birth to any children in addition to your new baby, please answer the following questions:

    In addition to your new baby, how many other children have you had?

    _____ none

    _____1-2

    _____3 or more

    Ages of these children: _____

    Did you breastfeed any of your previous children? _____yes

    _____no

    If yes, how many of them did you breastfeed? _____

    How long did you breastfeed each child? (specify how many weeks or months for each child)

    _____

13. Which of the following people gave you encouragement or support for breastfeeding your new baby? (check all that apply)

_____husband/male partner
_____your mother
_____your grandmother
_____other female relatives
_____close friend
_____neighbor
_____doctor
_____nurse
_____WIC nutritionist
_____no one

14. From the above list of people, who influenced you the most in making your decision whether to breastfeed or bottlefeed your new baby? (please list only one person)

_____

15. Did you get any information that influenced your decision to breastfeed or bottlefeed your new baby from any of the following sources? (check all that apply)

_____magazines
_____books
_____newspaper articles
_____childbirth education classes
_____pamphlets
_____previous breastfeeding experience
_____other (please specify) _____
_____none

16. If you breastfed your new baby, what other factors influenced you to breastfeed? (check all that apply)

_____health benefits for the baby
_____benefits for the mother
_____easier to do that bottlefeeding
_____costs less that bottlefeeding
_____breastfeeding was supported by family members
_____other (please specify) _____
_____none

17. If you bottlefed your new baby, what other factors influenced you to bottlefeed? (check all that apply)

_____had to return to work
_____easier to do that breastfeeding
_____formula is supplied through WIC
_____more convenient than breastfeeding
_____breastmilk would not come in
_____could not breastfeed because of health problem
_____other (please specify) _____
_____none

Place a check (✓) in the box that best describes your opinion about the following statements:

	Agree	Disagree	Don't know
1. Breastmilk is the best food for a baby.			
2. Formula-fed babies grow better than breastfed babies.			
3. Breastmilk protects a baby from illness.			
4. Breastfeeding can help mother to lose weight.			
5. Breastfeeding makes you feel closer to your baby than bottlefeeding does.			
6. Your breasts will return to their normal size and shape soon after you stop breastfeeding.			
7. Any woman can breastfeed, regardless of the size of her breasts.			
8. Women who work can't breastfeed their babies.			
9. You are tied down if you decide to breastfeed.			
10. It is more economical to breastfeed than to bottlefeed.			

VITA 2

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Candidate for the Degree of

Master of Science

Thesis: ASSESSMENT OF FACTORS THAT INFLUENCE THE CHOICE OF INFANT FEEDING METHOD AMONG MOTHERS OF INFANTS PARTICIPATING IN A WIC PROGRAM

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