Factors that influence successful breastfeeding in low-income women
by Joyce Hultman Meyer

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Nursing
Montana State University
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Abstract:
Many women choose not to breastfeed in spite of the benefits in doing so. Studies have found this to be particularly true of low-income women (Solem, Norr, & Gallo, 1992; Ryan, Rush, Krieger, & Lewandowski, 1991).

The purpose of this study was to determine what helps low-income women succeed at breastfeeding. The specific aims were to explore the impact of (a) family and friend support, (b) infant characteristics, (c) sociocultural factors, and (d) professional support on successful breastfeeding.

This study was a replication, cross-sectional survey design (Hill, 1991). Sixty-six women completed questionnaires either at a low-income prenatal clinic or the local Women, Infant, and Children (WIC) agency. Two groups were compared: (a) those who were successfully breastfeeding at six weeks postpartum with four ounces or less of formula and (b) those who had stopped breastfeeding or were supplementing with eight ounces or more of formula in 24 hours.

Of the 66 subjects, 56% successfully breastfed. Forty-four percent were unsuccessful. The successful breastfeeding group had a higher median income and were older, with only 28% under 20 years of age. Of the unsuccessful group, 45% were under 20 years. Sixty-nine percent of the unsuccessful breastfeeding group had never married compared with 28% of the successful breastfeeding group. Those women who had breastfed a previous child comprised 56% of the breastfeeding group. Only 22% of the unsuccessful breastfeeding group had previously breastfed a child. Significant factors that influenced successful breastfeeding were marital status, the infant's sucking behavior the first week, the infant's fussiness after feedings, and the woman's perceived success.

The results suggest that women who are not married or have infants with poor sucking behavior or are fussy after most feedings are less likely to succeed at breastfeeding. The results further indicate that women's perceived success was positively related to breastfeeding success. Implications of this study suggest that early education about normal infant behavior, perceptions of breastfeeding, and referrals to support groups for single and breastfeeding mothers could prove helpful to new mothers.

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This thesis has been read by each member of the graduate committee and has been found to be satisfactory regarding content, English usage, format, citations, bibliographic style, and consistency, and is ready for submission to the College of Graduate Studies.

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ABSTRACT

Many women choose not to breastfeed in spite of the benefits in doing so. Studies have found this to be particularly true of low-income women (Solem, Norr, & Gallo, 1992; Ryan, Rush, Krieger, & Lewandowski, 1991). The purpose of this study was to determine what helps low-income women succeed at breastfeeding. The specific aims were to explore the impact of (a) family and friend support, (b) infant characteristics, (c) sociocultural factors, and (d) professional support on successful breastfeeding.

This study was a replication, cross-sectional survey design (Hill, 1991). Sixty-six women completed questionnaires either at a low-income prenatal clinic or the local Women, Infant, and Children (WIC) agency. Two groups were compared: (a) those who were successfully breastfeeding at six weeks postpartum with four ounces or less of formula and (b) those who had stopped breastfeeding or were supplementing with eight ounces or more of formula in 24 hours.

Of the 66 subjects, 56% successfully breastfed. Forty-four percent were unsuccessful. The successful breastfeeding group had a higher median income and were older, with only 28% under 20 years of age. Of the unsuccessful group, 45% were under 20 years. Sixty-nine percent of the unsuccessful breastfeeding group had never married compared with 28% of the successful breastfeeding group. Those women who had breastfed a previous child comprised 56% of the breastfeeding group. Only 22% of the unsuccessful breastfeeding group had previously breastfed a child. Significant factors that influenced successful breastfeeding were marital status, the infant's sucking behavior the first week, the infant's fussiness after feedings, and the woman's perceived success.

The results suggest that women who are not married or have infants with poor sucking behavior or are fussy after most feedings are less likely to succeed at breastfeeding. The results further indicate that women's perceived success was positively related to breastfeeding success. Implications of this study suggest that early education about normal infant behavior, perceptions of breastfeeding, and referrals to support groups for single and breastfeeding mothers could prove helpful to new mothers.

CHAPTER 1

INTRODUCTION

Health experts have abundant praise and support for breastfeeding. The advantages of human milk as the ideal food for infants has centered around four areas. Human milk provides (a) optimal growth and nutrition, (b) a decreased risk of allergic diseases (Applebaum, 1978; Cunningham, 1979), (c) defense against infection (Cunningham, 1979, Lawrence, 1989), and (d) enhancement of mother-infant bonding (Kennell & Klaus, 1989). Evidence also associates breastfeeding with significant reductions in nongastrointestinal infections including pneumonia, bacteremia, and meningitis (Cunningham, Jelliffe, & Jelliffe, 1991; Lawrence, 1989). Breastfeeding is also credited with a reduced frequency of certain chronic diseases later in life (Cunningham et al., 1991).

Much of the important data concerning health benefits of breastfeeding has appeared in the last decade. These benefits go beyond the prevention of diarrhea and acute infections during infancy to longer lasting effects. One of the most interesting developments is the consistent association between bottle feeding and immune system

disorders (Cunningham et al., 1991). The following studies have opened up an interesting area for investigation in the promotion of breastfeeding.

A study done in Finland on the association between the type of feeding in infancy and the incidence of insulin dependent diabetes mellitus (IDDM) found that the risk of IDDM was significantly decreased ($p<.05$) among children breastfed for at least seven months or exclusively breastfed for at least three or four months (Virtanen et al., 1991). Additionally, children over four months of age at the time of introduction of supplementary milk feeding had a lower risk of diabetes. These researchers concluded that the protective influences of long duration of breastfeeding and late introduction of dairy products were significant.

Another Scandinavian study on the relationship between breastfeeding and insulin dependent diabetes mellitus, suggested an inverse correlation between breastfeeding frequency and IDDM in childhood (Borch-Johnsen et al., 1984). Data on the breastfeeding habits of mothers of diabetic children developing IDDM before 18 years of age as well as breastfeeding data for healthy siblings were collected. A pattern emerged: when the breastfeeding frequency was high, IDDM incidence was low. IDDM incidence seemed to peak some years after the nadir of the

breastfeeding curve. When breastfeeding frequency increased, the IDDM incidence declined.

Davis, Savitz, and Graubard (1988) studied the possibility that inadequate exposure to the immunological benefits of human milk may affect infants' response to infection and increase their susceptibility to childhood malignancies. Children from Denver (n=201) with cancer diagnosed at one and one-half to fifteen years of age were compared with controls (n=181). Infant feeding categories were breastfeeding greater than six months, breastfeeding less than or equal to six months and formula feeding. There was an increased incidence of lymphoma (n=26) in children who were breastfed less than six months or had formula feeding.

One study in England investigated 771 infants to learn the association between a mother's choice to provide breast milk to her preterm infant and her baby's developmental status at 18 months (Morley, Cole, Powell, & Lucas, 1988). Babies fed breast milk via nasogastric feeding tube had an eight point advantage in mean Bayley mental developmental index over infants fed formula. A 4.3 point advantage remained after adjusting for demographic and perinatal factors.

Three hundred of these same children were evaluated in a follow-up study done at seven and one-half to eight years of age. An abbreviated Wechsler Intelligence Scale for

children assessed the intelligence quotient (IQ) in these children who were born preterm. Children who had consumed mothers' milk in the early weeks of life had an IQ higher than those who had received no mothers' milk. An 8.3 point advantage remained even after adjustment for differences between mothers' education and social class (Lucas, Morley, Cole, Lester, & Leeson-Payne, 1992).

In addition to these benefits of breastfeeding, it is important to consider the impact on the cost of infant health care (Anholm, 1986). In the United States, diarrheal disease is uncommon in breastfed infants and the treatment is usually to continue to breastfeed. Also, breastfed babies have fewer episodes of respiratory illnesses and otitis media. With febrile illnesses, the breastfed baby does not become dehydrated and rapidly toxic (Lawrence, 1989). With fewer serious illnesses, hospital costs for breastfed infants are significantly lower than for non-breastfed infants (Anholm, 1986).

Breastfeeding can be considered a preventive or wellness approach to health care in infancy. Merely increasing the incidence of breastfeeding until three months of age would prove to be an important health intervention (Anholm, 1986).

Problem Statement

Despite the demonstrated benefits of breastfeeding, many women do not choose to breastfeed, or only do so for a short period of time. The 1990 national objective for breastfeeding incidence, 75% breastfeeding at the time of hospital discharge and 35% at six months of age, was not met (Department of Health and Human Services, 1991). On the basis of a survey conducted by a private pharmaceutical corporation, the percentage of mothers in Montana who were breastfeeding in the hospital in 1990 was 74.1%, but dropping to 52.4% by the time the infant was two months old. The percentages of breastfeeding mothers in the rest of the United States were 51% breastfeeding in the hospital and 36.9% breastfeeding by the time the infant was two months old (Ross Laboratories, 1990) (see Appendix A).

The rates of breastfeeding declined from 1984 to 1989. Rates among those earning less than $7,000 dropped from 36.8% to 28.8% while those in the greater than $25,000 income dropped from 71.8% to 66.3% (Ross Laboratories, 1990). The infants in the lower income families who could benefit most from the immunologic benefits of breastfeeding are the ones least likely to receive this protection (Spisak & Gross, 1991).

The benefits of breastfeeding are established and recognized by health experts. The Healthy People 2000

National Health Objectives concerning breastfeeding are to increase to 75% the proportion of mothers who breastfeed in the early postpartum period and to at least 50% the proportion of those breastfeeding at five to six months of age (Spisak & Gross, 1991). To reach this goal, it is important for health care providers to know what helps mothers to successfully breastfeed.

Purpose

The overall purpose of this study was to determine factors that help women succeed at breastfeeding. The specific aims were to explore the impact of (a) family and friend support, (b) infant characteristics, (c) sociocultural factors, and (d) professional support on successful breastfeeding.

Assumptions related to these concepts and relevant to the proposed study are: (a) Breastfeeding is beneficial to infant well-being, and (b) the four factors will impact breastfeeding success.

Definition of Terms

Family/friend support were assessed by (a) presence of a doula (support person), (b) presence of a mentor/friend, and (c) encouragement for breastfeeding by the child's father.

Infant characteristics were assessed by (a) baby's sucking behavior during the first week, (b) baby's sucking behavior at two to six weeks, (c) baby's fussiness after feeding, and (d) time of introduction of formula. Sociocultural factors were assessed by (a) race and (b) income.

Professional support was assessed by (a) subject's attendance at childbirth classes, (b) subject's attendance at breastfeeding classes, and (c) how soon after birth the infant breastfed, a factor dependent upon nurse support.

Successful breastfeeding was defined as breastfeeding at six weeks with no more than four ounces of formula in any 24 hour time span.

Unsuccessful breastfeeding was defined as having stopped breastfeeding at six weeks or breastfeeding with eight ounces or more of formula in 24 hours.

Conceptual Framework

A conceptual model has been developed to enhance the understanding of the many influences on successful breastfeeding (see Figure 1). The outer circle contains the concepts central to the discipline of nursing; (a) person, (b) environment, (c) health, and (d) nursing (Fawcett, 1989). The circle represents continual flow among these four concepts, a dynamic system with exchange of information and energy. These concepts are not static,

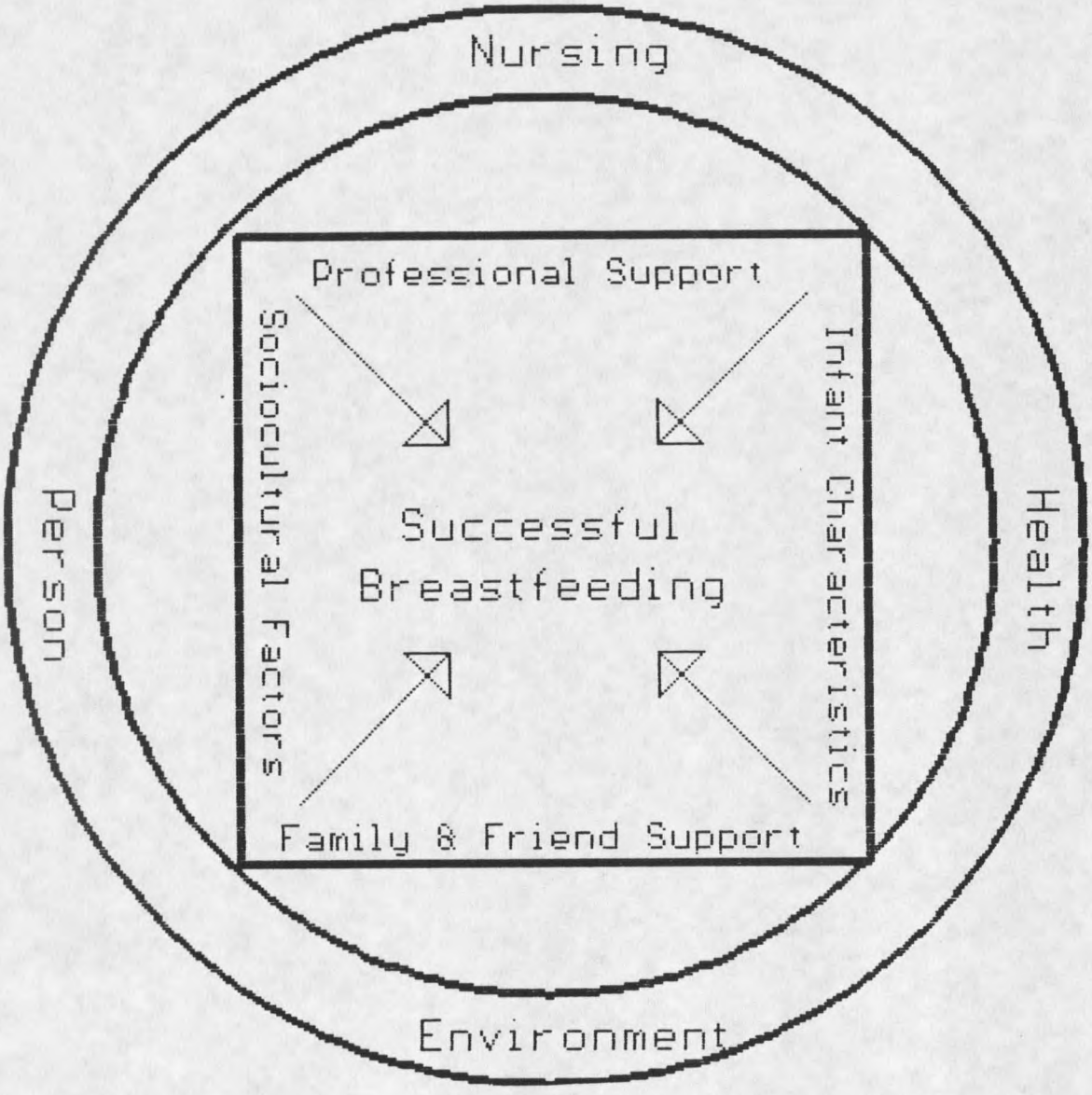


Figure 1. Conceptual Framework.

but there is influence flowing among and away from this outer circle.

Person in nursing's paradigm can be the individual, the infant, the family or a community (Fawcett, 1989). In this model, not only the mother-infant dyad but the father and family are included.

Nursing looks at the client holistically, then identifies the individual needs. These needs are met through support, interaction, encouragement, demonstration, and health education by the nurse. Nursing engages in these numerous roles to promote individual health. The nurse considers the concepts of person, health, and environment in assessing client needs.

Health of the mother, her infant, and family health can contribute to a successful breastfeeding experience. Health is part of the circle because it is continuous, not a one-time influence.

Environment represents a number of elements including education, economic status, culture, political environment, food and shelter. Family and friends as well as surroundings make up the individual's environment. There is continuous interaction between person, environment, health, and nursing, with all of these concepts exerting influence on the factors of successful breastfeeding.

At the center of this model, is the mother-infant dyad represented by successful breastfeeding. Breastfeeding,

the focus of this study, is only one aspect of infant nurturing. Successful breastfeeding is defined in this study, but mothers may have their own concept of successful breastfeeding.

Surrounding the concept of successful breastfeeding are four factors which influence breastfeeding; (a) family and friend support, (b) infant characteristics, (c) sociocultural factors, and (d) professional support. The nurse considers all of these factors in assessing client needs. Arrows lead from the factors in the model toward this mother-infant dyad indicating influence. This influence can be positive or negative. Lines connect the four categories of factors indicating the flow of information and changing status of these factors.

Family/friend support may take the form of the husband's encouragement and enthusiasm for his wife's breastfeeding or there may be a lack of his support. For Anglo-American women the male partner was found to be most important for the breastfeeding decision (Baranowski, 1983). This support varies for each woman and may come from mother or close friend.

Infants are unique and their different behaviors help or hinder the dyad to achieve successful breastfeeding. Infant behaviors such as crying are sometimes wrongly interpreted by mothers as a signal their babies are hungry

when actually this may be normal fussy behavior for that newborn.

Sociocultural factors influence breastfeeding. Hill (1991) found that income was significantly correlated to breastfeeding duration. The Ross Laboratories Mothers' Surveys from 1984 to 1989 found a decline in breastfeeding among the least educated, lowest income, and minority status women (Ryan, Rush, Krieger, & Lewandowski, 1991).

Nursing is part of the outer circle of influence, a part of the metaparadigm of nursing. In this model, professional support is included as one of the factors impacting the successful breastfeeding experience. The inner square lines contact the outer circle indicating exchange of energy back and forth between the outer circle, representing the nursing profession, and the center square with its potential for influencing breastfeeding success. This conceptual framework identifies factors intrinsic to successful breastfeeding.

CHAPTER 2

LITERATURE REVIEW

The literature review supports the theory that many factors can affect successful breastfeeding. This study focused on four factors: (a) family and friend support, (b) infant characteristics, (c) sociocultural factors, and (d) professional support.

Family and Friend Support

One factor that has been found to influence breastfeeding success is the support of family and friends. Baranowski et al. (1983) questioned 358 mothers to determine the individual most influential in their decision to breastfeed. The source of maximum influence varied with the ethnic background of the mother. For Anglo-Americans the male partner was most important; for Hispanics, it was the subject's mother. For black women, close friends were most important (Baranowski et al., 1983).

Bryant (1982) found that values and beliefs about specific feeding practices are transmitted by kin, friend, and neighbor networks. Network members of Cuban, Puerto Rican, and Anglo women contributed to mothers' success with lactation. Fifty percent of women in all three groups

followed advice given by friends, relatives and neighbors more consistently than that offered by health care professionals. However, if the women did not live near influential friends, neighbors, and relatives they were most influenced by advice from health care professionals (Bryant, 1982).

Kaufman and Hall (1989) conducted a study to examine the influence of the social network on choice and duration of breastfeeding among 125 mothers of preterm infants. Of the 88 mothers who initiated breastfeeding, the number of support persons was the most influential factor on duration of lactation. Support persons were identified as family members, friends, and health care professionals. Women with no support were six times more likely to cease lactation than women with six sources of support who were increasingly more likely to continue (Kaufman & Hall, 1989).

Forty low-income breastfeeding primiparas were interviewed to determine whether family members and peer attitude toward breastfeeding and available postpartum support were associated with duration of breastfeeding. Duration of breastfeeding was significantly prolonged for those who participated in WIC than for those who did not participate. The duration of breastfeeding was directly proportional to the number of friends also breastfeeding. Also the presence of a doula (support person) during the

first two weeks postpartum affected the outcome. Mean duration of breastfeeding was 23.4 weeks with a doula compared with 12.2 weeks without a doula (Barron, Lane, Hannan, Struempler, & Williams, 1988).

Using grounded theory methodology, Jordan and Wall (1990) interviewed 28 of 56 fathers six to seven times over the perinatal period through one year after birth. The remaining fathers were interviewed once over the same time period. Fathers expressed concerns about breastfeeding, including the lack of opportunity to develop a relationship with their child, feeling inadequate and being separated from their mate by the baby.

Lawrence (1989) suggested that fathers may object to breastfeeding because they do not want to share this part of their lover with an infant. She also noted that many men take great pride in their infants being breastfed and support their wives in this effort. The involvement of the father in the breastfeeding decision was encouraged.

Mothers who breastfeed successfully for longer than four months were highly motivated, were supported by their husbands, immediate family, and organizations such as the LaLeche League (Rousseau, Lescop, Fontaine, Lambert, and Roy, 1982). This study also found that the successful breastfeeding woman's economic status did not require her to return to work soon after delivery.

Infant Characteristics

Women discontinue breastfeeding for numerous reasons which are infant related. These include a mother's perceived inadequate milk supply (Hill, 1991; Hill & Aldag, 1991; Hill & Humenick, 1989; Rentschler, 1991), frequent feedings (Chapman et al., 1985), a fussy baby (Hill & Aldag, 1991), a sleepy baby (Hewat & Ellis, 1984), sore nipples (Chapman et al., 1985; Mogan, 1986; Rentschler, 1991), and fatigue (Chapman et al., 1985).

Characteristics of infants that might contribute to the likelihood of success in the breastfeeding relationship have been studied. Loughlin, Clapp-Channing, Gehlbach, Pollard, & McCutchen (1985) asked nursery nurses to categorize newborn infant characteristics. The nurses' perceptions of the amount of infant crying, personality, feeding ability, and feeding expectations were predictive of breastfeeding success (Loughlin et al., 1985). These items were not standardized nor formally evaluated for reliability and validity, but discussion with the nurses suggested that observations of the maternal-infant interaction, particularly the mothers' patience and tolerance of infant "fussiness", were important considerations in predicting breastfeeding cessation (Loughlin et al., 1985).

Explanations for these findings were suggested from a study done to determine if there was a relationship between neonatal behavioral responses as measured by the Brazelton Neonatal Behavioral Assessment Scale and lactation outcome (Hughes, Townsend, & Branum, 1988). Data indicated that there were differences in behavioral responses between infants who were still breastfeeding at one month of age and those who were not. The data suggested a strong positive correlation between cuddliness and consolability. In addition, the inter-item correlation suggested that breastfeeding babies tended to score higher in consolability and non-breastfed babies tended to score higher in irritability (Hughes et al., 1988).

In a study to determine predictors of breastfeeding duration in mothers who participated in Women, Infant, and Children (WIC) Programs and those who did not, Hill (1991) found that the most frequently cited reason for giving formula was to satisfy the infant because the baby was fussy. Mothers perceived they had insufficient milk supply (Hill, 1991; Hill & Humenick, 1989).

Insufficient milk supply syndrome is a complex phenomenon which merits further investigation. In a recent study (Hill and Aldag, 1991), mothers who reported insufficient milk supply were asked to explain why they perceived they did not have enough breast milk to satisfy their baby. Sixty-five percent of mothers reported feeling

they did not have sufficient milk because the baby was not satisfied and was fussy after feedings (Hill and Aldag, 1991).

Several infant-related factors have been identified as affecting production of breast milk (Shrago and Bocar, 1990). The efficiency of the infant's suck, frequency of breastfeeding and duration of each breastfeeding session affect production of breast milk. The efficiency of the infant's suck is evaluated by a systematic assessment of the infant at breast, including alignment, areolar grasp, areolar compression and audible swallowing. Since continued milk production depends upon effective removal of milk from the breasts, the infants' contribution of efficient sucking is important (Shrago & Bocar, 1990).

Hawkins, Nichols, and Tanner (1987) interviewed 47 participants of a (WIC) program who had breastfed. They learned that a combination of four variables: (a) age of the infant in weeks at time of introduction of solid foods, (b) maternal report of perceived success, (c) mother's education, and (d) the age of the infant in weeks at the time of introduction of formula (a factor related to infant fussy behavior) explained 52% of the variance in breastfeeding duration (Hawkins et al., 1987).

Kearney, Cronewett, and Barrett (1990) conducted research on breastfeeding problems in the first week postpartum on a sample of 128 families. In this study, 39%

identified fussy infant after feeding and 26% listed fussy infant, and refuses to nurse, as early breastfeeding problems. Another 19% identified baby does not suck effectively as an early problem. The types of problems found in early weeks of breastfeeding in previous studies were also reported by mothers in this sample (Kearney et al., 1990).

In a study by Faden (1988), 27% of the women who quit breastfeeding in less than seven days reported that their main reasons for quitting were because the baby was fussy or the baby rejected the breast. Twenty-three percent gave insufficient milk as a reason for quitting (Faden, 1988).

A qualitative, descriptive, investigation of 50 breastfeeding subjects studied the concerns of mothers who breastfed their infants from birth to four months (Chapman, Macey, Keegan, Borum, and Bennett, 1985). Three broad categories of concerns were determined: (a) breast concerns, (b) infant concerns, and (c) postpartum concerns. Of the infant concerns, emerging themes included fussy behavior which mothers thought was due to lack of milk or a sick or colicky infant (Chapman et al., 1985).

Sociocultural Factors

Breastfeeding success is especially limited for mothers who are economically disadvantaged and for those who are members of ethnic minority groups (Spisak & Gross,

1991). The Ross Laboratories Mothers' Surveys (RLMS)) found that 28.8% of mothers breastfed while in the hospital in the less-than-$7000 income level. In comparison, 66.3% of mothers in the over-$25,000 income level breastfed while in the hospital (Ross Laboratories, 1990). The survey at five to six months again showed disparity; 7.9% breastfed in the low-income group versus 27.6% in the higher income group (see Appendix A).

These findings are consistent with those from another study that examined the breastfeeding duration among WIC and non-WIC mothers (Hill, 1991). Although income was not one of the original 37 variables it was significantly correlated with breastfeeding duration ($p=0.018$).

Rassin et al. (1984) studied the incidence of breastfeeding in a low socioeconomic group of mothers. They found that ethnic background of the population appears to have a strong influence upon the incidence of breastfeeding. In contrast, Ross Laboratories (1990) found that mothers in higher income groups tend to breast feed longer regardless of ethnicity.

Socioeconomic status was controlled in a 1989 study by Baisch, Fox, Whitten, and Pajewski (1989). Breastfeeding attitudes were significantly related to setting, race, and age among the two teenage groups and one adult group of low-income mothers. Breastfeeding rates were 16.7% and

32.4% for the teenage mothers groups and 35.4% for the adult sample.

Another study on breastfeeding focused on 294 low-income urban women (Solem, Norr, & Gallo, 1992). The predominant ethnic group was black (78%) and most of the remaining mothers surveyed were Hispanic. The most common method of initial infant feeding was formula feeding (84%). Only four percent of infants were exclusively breastfed initially, and another 12% were initially fed both bottle and breast. By three months of age, 95% of the babies were not receiving any breast milk.

Breastfeeding statistics from a study of New York City's low-income population (Biegelson, Cowell, & Goldberg, 1986) showed a slight increase in breastfeeding in 1982. The rate was still low as 3.2% infants were exclusively breastfed and 8.5% were breastfed with occasional formula feeding. This study documented that only a relatively small percentage of low-income women breastfeed.

Data from a state supported project of high-risk, low-income women from 1976 to 1985 were analyzed by Grossman, Larsen-Alexander, Fitzsimmons, and Cordero (1989). Like their more affluent counterparts, low-income women who chose to breastfeed were older, better educated, married and more likely to demonstrate good health habits. There was a slight increase from 15% to 22% in the

percentage of breastfeeding among low-income women in the ten years available for study.

Comparing the Ross Laboratories Mothers' Surveys for 1984 and 1989, a decline of approximately 13% was noted in those who initiated breastfeeding (Ryan, Rush, Krieger, and Lewandowski, 1991). There was a 24% decline in the rate of breastfeeding at six months of age. This decline most affected those with the least education, lowest income, minority status, and those who were younger and did not live in the western region of the United States.

Frantz (1991) explained a woman's decision not to breastfeed by referring to Maslow's hierarchy of needs. If a woman is struggling not to be homeless, attempting to feed other children, trying to keep a relationship with a partner, and returning to work, she may view breastfeeding as something one does if one has time. After all, someone else can give the baby a bottle. Speaking to her about the protection from illness with breastfeeding may appeal to her survival thinking more than a discussion of maternal-infant bonding.

In a study of 84 subjects, Hellings (1985) examined the following factors: (a) individual--years of education and feelings about the pregnancy, (b) sociocultural--income and race, (c) family--whether the mother was breastfed as an infant and family support for breastfeeding, and (d) physiological--health during pregnancy and type of

delivery. The data from Hellings' study showed that a woman was more likely to be successful at breastfeeding if she had positive feelings about the pregnancy, was in a higher income group, had a more extensive education and had undergone a vaginal delivery. One of the conclusions of this study was that the measure of feelings of family members needed to be revised so that the concept of support could be explored in greater depth.

Professional Support

The fourth variable to be discussed is the role of the professional in support of the breastfeeding mother. Numerous studies have been done with respect to education and support by professionals. Professionals were not consistently perceived to be sources of influence in the feeding decision nor were they regarded as sources of help or support with breastfeeding (Hewat and Ellis, 1984).

Hall (1978) randomly assigned 40 postpartum women to one of three groups. Group I received routine hospital care. Group II received routine care plus a slide/tape presentation on breastfeeding and an informational pamphlet to take home. Group III received the slide/tape and pamphlet instruction plus expert nursing support. Eighty percent of Group III mothers were breastfeeding at six weeks postpartum compared to only 50 percent of those mothers in Groups I and II.

Another study with a sample of 194 women was made up of two groups that either did or did not have access to a hospital-based class on breastfeeding as well as extra support from an expert clinician, plus a control group with none of these (Ellis and Hewat, 1984). Women in the control group were actually breastfeeding in higher percentages than those who had received extra support. The differences were no longer significant at the end of six months. At six months, 40% of the control group and 36% of one and 11% of the second treatment group were breastfeeding.

A later study may offer an explanation for the above findings. A study to determine the effect of postpartum lactation counseling on the duration of breastfeeding in low-income women (Grossman, Harter, Sachs & Kay, 1990) investigated the effectiveness of a program of intensive postpartum support. Despite the intense postpartum support, there was no significant difference in the duration of breastfeeding between the intervention and control groups. The investigators had expected to see twice as many intervention group mothers still nursing at six weeks compared with the controls, but this was not the case. The researchers suspected that in spite of their attempts to limit the effect of the intervention among control subjects, there may have been some degree of contamination or Hawthorne effect. Introduction of

supplement at an earlier age, younger maternal age, and lack of participation in prenatal classes predicted breastfeeding duration by logistic regression.

Bernard-Bonnin, Stachtchenko, Girard, and Rousseau (1989) found that early contact and nursing support with telephone follow-up appeared to be positive factors in duration of breastfeeding. Nursing support did not have an impact on breastfeeding duration in the absence of telephone follow-up. If telephone follow-up was carried out in addition to nursing support, a positive effect on breastfeeding was found.

Mothers who began breastfeeding less than four hours after delivery did so significantly longer than those who began eight hours or later after delivery (Hill, 1991). Early breastfeeding is dependent upon nurse support in the delivery room.

Taylor, Maloni, and Brown (1986) compared the median duration of breastfeeding of three groups of infants. Those whose mothers elected to postpone physical contact had a median duration of five months; those whose mothers chose early physical contact but later suckling had a median duration of four months. For those infants whose mothers elected to suckle during early contact, the median duration of breastfeeding was eight and one-half months.

Faden (1988) reported that in a study of urban and rural women, four variables were identified as significant

predictors of failure to breastfeed more than seven days. These included (a) lower scores on confidence in breastfeeding ability, (b) less certainty in decision to breastfeed, (c) delayed first breastfeeding, and (d) no rooming-in with the baby.

Wood (1990) reported that the incidence of mothers initiating breastfeeding in Great Britain began falling slightly from 65% in 1980 to 64% in 1985. The percentage dropped to 26% by four months, with the steepest decline in breastfeeding occurring in the first week of life. Delays in starting breastfeeding, feeding at set times, and giving of complimentary feedings in the hospitals were listed as important factors in the decline of breastfeeding beyond the first week.

Mother-infant interactions were the focus of a study by Mogan (1987). Seventy-eight primiparous women were part of a longitudinal study that consisted of periodic structured observations of feeding sessions plus collection of demographic and perinatal data. Breastfeeding within the first hour after birth positively affected scores at the first visit done at 55-70 hours ($p=.005$). However, differences were not significant at any later visit.

Prenatal and postpartum interviews with 187 women who intended to breastfeed revealed that 18% of these never initiated breastfeeding or stopped within one week (Buxton, Gielen, Faden, Brown, Paige, & Chwalow, 1991). This

research identified four variables as significant predictors of failure to breastfeed more than seven days: (a) lower confidence in ability to breastfeed, (b) less certainty about their decision to breastfeed, (c) a delayed first breastfeeding experience, and (d) lack of baby rooming-in during the day.

In Wiles' (1984) study on prenatal breastfeeding education and its effect on breastfeeding success, the concept of anticipatory guidance as a theoretical basis for prenatal breastfeeding education was supported. Sixteen of the nineteen successful breastfeeding mothers reported that the prenatal breastfeeding education class was the primary factor contributing to their success. The prenatal class gave the prospective mothers time to receive and digest the information on breastfeeding. With short hospital stays, the time in the hospital should be used for reinforcement and review, not initial learning.

Information and achievement motivation theories were used to develop the hypotheses for a study on correlates of successful breastfeeding (Rentschler, 1991). Breastfeeding for at least six weeks was the criterion for success. Both the women's achievement motivation and level of information about breastfeeding were positively related to successful breastfeeding.

A randomized controlled trial to measure the effectiveness of a lactation nurse on the establishment and

duration of breastfeeding was conducted in Wales (Jones & West, 1986). The nurse was employed to assist, support, and encourage mothers during early weeks of breastfeeding. There were 649 mothers interviewed at twelve months and it was determined that the lactation nurse significantly extended the duration of breastfeeding (84% of the experimental group and 72% of the control group), particularly during the first four weeks and among women of lower social class.

CHAPTER 3

METHODS

Design

The overall purpose of this study was to determine factors that help women succeed at breastfeeding. This study was a replication, cross-sectional survey design to examine the predictors of successful breastfeeding in low-income women (Hill, 1991). Women who were breastfeeding at the time of hospital discharge were surveyed at approximately six weeks postpartum. Responses of those still breastfeeding at six weeks were compared with those who had stopped to show association and difference between the two groups (Woods & Catanzaro, 1988).

The study was conducted at a hospital-based, low-income, prenatal clinic and at a Women, Infants, and Children (WIC) Agency. Approval to conduct the study was obtained from the hospital and from the State of Montana WIC agency (see Appendix B).

Sample

A convenience sample was surveyed from low-income postpartum women in an urban area of approximately 80,000

population. Criteria for inclusion in the study were (a) reading and writing English, (b) breastfeeding at the time of discharge from the hospital, and (c) attendance at either the low-income prenatal clinic or WIC. Women did not have to be breastfeeding at the time of the survey.

Women who met these criteria were asked to participate at the time of their six week postpartum checkup at a low-income prenatal clinic. This clinic sees approximately 22 women per day and delivers an average of 24 babies per month. At the time of certification for breastfeeding at the WIC agency, women who met the criteria were asked to participate. The WIC agency sees approximately 2,300 women per month from a three county area with the majority from Yellowstone County.

The sample was 88% Caucasian and 12% were Black, Oriental, Mexican American or Native American. Thirty-five percent of the women who participated were under 20 years of age, 54% were between 20 and 30 years of age, and only 11% of the sample were over 30. Forty-six percent had never married, and 54% were married or had been married at one time. Only 12% of the women had less than 12 years of education while 58% had at least 12 years of education. Thirty percent had some post-secondary education.

Forty-one percent of the women did not work outside the home, 36% planned to returned to work, and 23% were employed either part-time or full time outside the home.

Median income for this sample was under $10,000, with a range from less than $3,000 to $45,000. Ninety-five percent of the sample had an income of less than $25,000.

Of this sample of women who were breastfeeding at the time of hospital discharge, 42% had breastfed a previous child. It was the first breastfeeding experience for 58% of the women.

Data Producing Instrument

A 14-page questionnaire in booklet form was used to obtain the information for the study. The questionnaire used by Dr. Pamela Hill (1991) in her research on the "Predictors of Breast-Feeding Duration Among WIC and Non-WIC Mothers" was utilized with her permission. Content validity was established by a literature review, Dr. Hill's experience with a previous breastfeeding questionnaire, questions used in a study by Dusdieker and co-workers (1985), and an expert consultant in the area of breastfeeding. An expert with a master's degree in reading determined the reading comprehension level of the questionnaire to be grade five to six (Hill, 1991). A pilot study was done with four professionals and three mothers from the low-income clinic, resulting in modifications for this study (see Appendix C).

The questionnaire covered demographic factors as well as infant biobehavioral and psychosocial factors of support by family/friends and professionals (see Table 1).

Table 1. Factors that May Determine Successful Breastfeeding Used in This Study.

Factors	Measurement
Sociocultural	Maternal age Income Race Marital status Education level of mother Education level of father Maternal employment Type of delivery
Family/Friend Professional	Who encouraged mother to breastfeed Support from husband, family, friends and professionals Attendance at childbirth classes Attendance at breastfeeding classes Time of first breastfeeding
Infant Characteristics	Infant sucking behaviors first week Infant sucking behaviors two-six weeks Infant fussiness after feeding Perceived adequate milk supply Amount of formula taken in 24 hours

Data Collection Procedure

At the time of their six weeks postpartum check-up, mothers who were breastfeeding at the time of hospital discharge were asked to participate at the hospital-based clinic by the receptionist or a nurse. Before data

collection began, both the questionnaire and procedure were explained to the employees by the investigator.

Participants were asked to fill out the questionnaire while at the clinic awaiting their appointment, then return it to the receptionist or nurse before leaving. It was estimated that about 20 minutes were required to answer the questions.

Breastfeeding mothers who came to the WIC office to be certified for breastfeeding at approximately six weeks postpartum were also asked to participate. To avoid duplication, they were not asked to participate if they had completed the questionnaire at the clinic. The WIC participants filled out the questionnaire while at the clinic and returned it to the nutritionist or the receptionist. The procedure and questionnaire were explained to the WIC director prior to data collection.

Eighty questionnaires were collected. Two questionnaires could not be used because they were given to women who had not breastfed. Twelve could not be used because of missing data necessary for analysis. Sixty-six questionnaires were available for analysis.

Data Analysis

Data from the questionnaires were coded and entered into the computer. After evaluation for completeness, a total of 66 questionnaires were analyzed using the

Statistical Package for the Social Sciences (Norusis, 1992).

Descriptive statistics were used to examine the characteristics of the sample. The dependent variable was breastfeeding. Participants responded to a question regarding the amount of formula given in 24 hours: none, four ounces or less, eight ounces or more, and total formula feeding. Those exclusively breastfeeding or giving four ounces or less of formula were grouped as successfully breastfeeding. Those breastfeeding with eight ounces or more of formula or total formula feeding at six weeks were grouped as unsuccessfully breastfeeding.

Chi-square statistics were used for demographic and categorical variables such as "who most influenced your decision to breastfeed." Chi-square statistics were also used for nominal data such as previous breastfeeding experience and type of delivery. T tests were used to test significance between the two groups and family/friend support, infant characteristics, and professional support.

A Pearson correlation matrix was produced for the independent variables (see Appendix D). The dependent variables were regressed in separate equations on the key independent variables of marital status, sucking behavior and fussy behavior after feeding.

Human Subjects

Participants were told in a cover letter that the investigator was conducting a study on how long mothers breastfeed their babies and why some mothers stop while others continue (see Appendix C). The only potential risk for participants was how they perceived themselves after answering the questionnaire. No mention was made of failure nor was successful breastfeeding defined in the questionnaire. The potential benefits of the information gained in helping future mothers was pointed out to the women.

Completion of the questionnaire and its return to the receptionist/nurse/nutritionist constituted consent. These instructions were given in the cover letter. Participants were instructed not to write their names in the booklets which were placed in a manila envelope marked "Completed Breastfeeding Booklets." Questionnaires were number-coded to provide for anonymity of subjects. The booklets were picked up weekly by the investigator (see Appendix C). The data will be kept locked at the College of Nursing for five years.

Permission to conduct the study was obtained from the hospital sponsoring the low-income clinic and from the State of Montana WIC office. A proposal was prepared for submission to the Montana State University College of

Nursing, Human Subjects Review Committee. Approval to proceed with data collection was granted by the committee on April 3, 1992 (see Appendix B).

A block grant was obtained from the College of Nursing, Montana State University. Permission has been granted by the principal investigator, Dr. Jean Gullicks, to use this data (see Appendix B).

CHAPTER 4

RESULTS

The overall purpose of this study was to determine factors which help women succeed at breastfeeding. Findings of the study include some infant characteristics and sociocultural factors which may predict the successful outcome of breastfeeding. The significance level in this study is considered to be .05 or less.

Demographics

Demographic data for the two groups are presented in Table 2. Those mothers who stopped breastfeeding or supplemented with eight ounces or more of formula in 24 hours were grouped as unsuccessful and those who were breastfeeding exclusively, or breastfeeding with four ounces or less of formula in 24 hours were grouped as successful.

Of the 66 participants, 56% (n=37) were successful and 44% (n=29) were unsuccessful as defined by the study. The two groups were similar in their educational level, and in the incidence of vaginal and Cesarean birth. Based on the *t* test, there was a significant difference in the median income for the groups with the successful breastfeeding group having the higher median income.

Table 2. Demographic Data of Comparison Groups.

Participants	Unsuccessful Breastfeeding < 6 weeks n=29	Successful Breastfeeding > or = 6 weeks n=37
Age <20	(13) 44.8%	(10) 27.8%
20-29	(16) 55.2%	(19) 52.8%
>30	(0) 0%	(7) 19.4%
Mother's Education (mean years)	12.3	12.4
Child's Father's Education	12.0	12.3
Vaginal Birth	75%	84%
Cesarean Birth	25%	16%
Income (median)	$3,000-$6,999	$10,000-$12,999
Race--Caucasian	79%	95%
Other	21%	5%
Married	31%	72%
Never Married	69%	28%
Previous Breastfed		
Yes	22%	56%
No	78%	44%
Employment--Full or Part Time	31%	16%
Not employed	48%	35%
Plan return	21%	49%

The breastfeeding group had 94.6% Caucasian mothers, and the group which was unsuccessful had 79.3% Caucasian mothers. Marital status varied for the two groups with 69% who had never married in the unsuccessful breastfeeding

group, and 27.8% never married in the successful breastfeeding group.

Age was another factor which varied between the groups. The unsuccessful breastfeeding group had 13 mothers less than 20 years of age. The successful breastfeeding group had 10 mothers less than 20 years of age and 19 mothers in the 20-29 year age group. There were no mothers over 30 years of age in the unsuccessful breastfeeding group, but there were 7 over 30 years of age in the breastfeeding group. The successful breastfeeding group was significantly older than the unsuccessful breastfeeding group.

Those women who had breastfed a previous child comprised 56% of the breastfeeding group. Only 22% of the non-breastfeeding group had previously breastfed a child.

Thirty-one percent of the unsuccessful breastfeeding group were employed either part or full time at the time of the survey. Only 17% of the breastfeeding group were employed at the time of the survey, 35% did not work outside the home, but 49% planned to go back to work. Of the unsuccessful breastfeeding group, 48% did not work outside the home, while 21% planned to return to work.

Family/Friend Support

No family and friend support measurements were significant when examined using *t* tests. Examples of measurements included statements about the husband's support measured on a five-point Likert scale from "no problems at all so I continued to breastfeed" to "lots of problems to the point that I stopped breastfeeding." Resources such as encouragement from others who had breastfed and shared experiences with people who had breastfed their babies were measured on a five-point Likert scale from "never available to me during breastfeeding" to "very often available to me during breastfeeding."

One question, "Who most influenced your decision to breastfeed?" was answered "self" by 26 of the 56 mothers who answered the question. Ten answered husband and nine gave mother as the one who most influenced their decision to breastfeed.

Infant Characteristics

Three infant characteristic measurements were significant when examined using *t* tests. The three factors were (a) baby refused breast ($p \leq .05$), (b) baby fussy after most feedings ($p \leq .01$), and (c) baby's sucking behavior the first week ($p \leq .01$) (see Table 3).

Table 3. Significant Infant Characteristics.

Infant Characteristics		Mean	SD	T-Value
Refused breast	Unsuccessful	2.11	1.53	2.28*
	Successful	1.35	.95	
Fussy after most feedings	Unsuccessful	2.18	1.52	2.67**
	Successful	1.32	.82	
Sucking behavior	Unsuccessful	2.14	.84	2.69**
	Successful	1.59	.76	

*$p \leq .05$ **$p \leq .01$

Sociocultural Factors

Sociocultural factors measured were race, income, and employment outside the home. T tests were used to test the significance between the means of the successful breastfeeding group and the unsuccessful breastfeeding group on the income. Income was a significant indicator of breastfeeding success ($p \leq .01$).

Marital status was not one of the sociocultural factors originally considered in the conceptual framework, but it did prove to be significant. Chi-square results for marital status indicated a significant association ($r=10.963$, $p \leq .001$) between successful breastfeeding and being married and unsuccessful breastfeeding and never married. Race was not significant with Chi-square analysis ($r=3.56$, $p=.06$). Eighty-eight percent of those women surveyed were Caucasian.

Professional Support

Using *t* tests, the professional support measurements (a) how soon after birth they breastfed and (b) if nurses encouraged or discouraged breastfeeding were not significant. Chi-square tests examined (a) attendance at breastfeeding classes and (b) attendance at childbirth classes. Results revealed that 72% of each group did not attend breastfeeding classes. Seventy-nine percent of the non-breastfeeding group had attended childbirth classes and 70% had attended childbirth classes.

Pearson product moment correlations were used to examine relationships among the significant independent variables identified by *t* tests and frequencies on demographic data (see Appendix D). Variables identified as significantly correlated were marital status, age, income, previous breastfeeding, infant sucking behavior first week, infant refused breast, perceived no milk, infant fussy after feeding, and race (see Table 4).

The infant behaviors which were significantly related were refused breast and sucking behavior, refused breast and previous breastfeeding experience, fussy after feeding and sucking behavior, fussy after feeding and refused breast. A negative correlation was shown between age and previous breastfeeding, marital status and previous breastfeeding, income and sucking behavior, and race and

Table 4. Correlation Matrix of Significant Independent Variables.

	Marital Status	Age	Income	Refused Breast	Fussy
Race			-.25*		
Previous Breastfeeding	-.33*	-.48***		.39**	.26*
Sucking Behavior			-.26*	.49***	.33**
Refused Breast					.33**
Perceived No Milk					.28*

*p≤.05 **p≤.01 ***p≤.001

income. These results indicated that the younger mothers had less previous breastfeeding experience, married mothers had more previous breastfeeding experience, higher income was associated with vigorous sucking behavior of the infant, and Caucasian race was associated with higher income.

The positive correlations indicated that babies who sucked vigorously did not refuse the breast, mothers who had previously breastfed did not consider fussy after feeding to be a problem, babies who sucked poorly presented problems when fussy after feedings. Characteristics of fussy after feeding and refused breast were identified as problems by mothers. If babies were fussy after feeding,

mothers perceived they had no milk, and babies who refused the breast did not present a problem to mothers who had previously breastfed.

Multiple regression analysis was used to examine those independent variables which were shown to be significantly correlated with the two dependent variables. Based on the conceptual framework and preliminary correlations, the continuous variable of breastfeeding was regressed on the following variables: work, race, age, income, marital status, infant sucking behavior the first week, previous breastfeeding experience, perceived inadequate milk supply, baby refused breast, and baby fussy after feeding. Marital status, sucking behavior, and baby was fussy after most feedings accounted for 32.3% of the variance in successful breastfeeding. These findings suggest that a mother who is not married, has a baby with poor sucking behavior the first week, and a baby who is fussy after feeding is less likely to successfully breastfeed (see Table 5).

Table 5. Breastfeeding Regressed on Marital Status, Baby Sucking Behavior First Week, and Baby Fussy After Feedings.

Variable	b	Beta	T	P
MARITAL	-.92	-.36	-3.38	.001
SUCKING	.31	.21	1.87	.067
FUSSY	.34	.32	2.82	.006

$R^2 = .32$

Because of the replication of Dr. Hill's breastfeeding study, the continuous breastfeeding variable of this study was regressed on the significant predictors found in her study. The significant predictors in Dr. Hill's study were introduction of formula, perceived success, frequency of feeding, income, and time of first feeding. All but perceived success were included in the independent variables measured by t tests in this study. Twenty-six of the 37 successful breastfeeding women reported feeling very successful and eight of the 29 unsuccessful breastfeeding women perceived success.

The continuous breastfeeding variable was regressed on perceived success, baby fussy after feedings, marital status, and baby early sucking behavior. These four variables accounted for 44% of the variance (see Table 6).

Table 6. Breastfeeding Regressed on Baby Fussy After Feedings, Marital Status, Baby Sucking Behavior First Week, and Perceived Success by Mother.

Variable	b	Beta	T	P
FUSSY	0.22	0.21	2.00	.0507
MARITAL	-0.84	-0.33	-3.43	.0011
SUCKING	0.05	0.04	.33	.7411
SUCCESS	-0.45	-0.43	-3.79	.0004

R^2 = .44

CHAPTER 5

DISCUSSION

In this study, 56% of the mothers were successfully breastfeeding. This is consistent with the average of 52.4% for breastfeeding at two months for the state of Montana in 1990. The national average for 1990 was 36.9%, considerably less than for the women in this study (see Appendix A).

Women younger than 20 years old with lower incomes were less likely to breastfeed. This supports the findings of Hill (1991) in her study of WIC and non-WIC women. Although this study is considered to be a replication of Dr. Hill's work, only one of the significant predictors of breastfeeding duration identified in Hill's study, woman's perceived success, was a factor in successful breastfeeding for this study. Income was not a factor since the sample was comprised of low-income women who either qualified for low-income clinic care or who met WIC eligibility standards. Even in this low-income sample, the women in the successful breastfeeding groups had higher median incomes.

Two of the three factors associated with successful breastfeeding were infant characteristics, sucking behavior

the first week and fussy baby after most feedings. These findings suggest that infant behavior plays a part in the outcome of the mother's attempt to breastfeed. Helping her understand her own infant's behavior, including normal crying, sleep/wake cycles, and hunger cues, would be beneficial to the new mother.

Lack of information about infant behavior and a higher percentage of unsuccessful breastfeeding women younger than 20 years of age has implications for health care professionals. More education about infant behavior and the benefits of breastfeeding should be available to all adolescents, preferably during junior and senior high school years. When these young women come to prenatal classes with background information on breastfeeding, the classes could be in the form of reinforcement. Rousseau et al. (1982) made similar recommendations for education of adolescents since most women chose the method of infant feeding before they became pregnant. Shorter hospital stays in 1993 make early education classes on breastfeeding and infant behavior even more crucial.

The third factor was marital status. According to a March, 1993 news report, one in four births is to a single mother. In this study, the percentage of unsuccessful breastfeeding single mothers was high. Although family, specifically husband, support has been significant in other studies, none of these factors were significant in this

study. In our current mobile society, young single mothers may not have any of the sources of support that were found to influence breastfeeding in other studies (Kaufman & Hall, 1989). Hospital referrals to community health nurses, breastfeeding support groups and peer support groups are vital to the success of breastfeeding for young single mothers.

Employment is another important factor affecting child care today. Of the unsuccessful breastfeeding group, more than half were either employed or planned to return to work. The successful breastfeeding group had 65.9% who were either working or planned to return to work. With this high rate of employment among new mothers, professionals who wish to encourage breastfeeding should include information on pumping breast milk in breastfeeding classes. Hospitals should consider substituting breast pumps for formula in the discharge packs given to breastfeeding mothers. WIC agencies could further support breastfeeding by promoting breast pump loan programs for those women who may benefit from having a pump (Spisak & Gross, 1991).

Employers need to be informed of the economic advantages of breastfeeding. A reduced infection rate and decreased hospitalization for breastfeeding infants (Anholm, 1986) are dividends for the employer in terms of less time lost from work by mothers of ill infants.

Perhaps more information on these benefits would motivate them to facilitate breastfeeding for their working mothers by providing necessary facilities and time for these mothers to pump their breast milk.

When queried about the person most influential in their decision to breastfeed, self was the response given by 26 of the 56 women who answered the question. The response of self may be due to a lack of perceived support surrounding the woman. Another possible explanation might be that the clinics are furnishing individual education in the form of written, audio-visual, and personal information that make it possible for the woman to arrive at an informed decision. A nurse midwife at the low-income clinic where data was collected confirmed that the clinic planned such an education approach prenatally. Although the woman designates self as the most influential in her decision to breastfeed, she may need support to succeed.

Limitations of this study include the small sample size and non-probability sampling making generalizability from the results of this study inadvisable. The 88% Caucasian sample further limits generalizability. Questionnaire length and the time required to complete it may have reduced the return of completed questionnaires.

Implications for Future Study

Nurses and other professionals working with pregnant women and new mothers can help them identify at least one person in their environment whom they consider supportive of their breastfeeding endeavors. This may prove helpful to the women attempting to breastfeed.

There will continue to be a need for breastfeeding research. Investigators in future breastfeeding studies should specifically define breastfeeding for their studies. Labbok and Krasovec (1990) advocated a distinction between full and partial breastfeeding and to further divide these categories into exclusively and almost exclusively breastfeeding. Partial breastfeeding would be designated high if more than 80% of feedings are breastfeedings, medium would indicate 20-80% breastfeedings and low, less than 20% breastfeedings. An additional category would be termed token breastfeeding. Some of the immunologic properties and long term protections depend upon exclusive or nearly exclusive breastfeeding and this reasoning is offered as an explanation for the specific definitions (Labbok & Krasovec, 1990). These are the definitions generally endorsed by a national group, Interagency Working Group on Breastfeeding (Spisak & Gross, 1991).

Studies should consider infant behaviors, essential education, and possible interventions regarding infant

behavior in the first weeks. These studies could identify information which would assist the breastfeeding mother, specifically the adolescent, to better understand her infant and have a successful breastfeeding experience.

Breastfeeding remains the optimal way of nourishing full-term infants, making it important to strive for the Healthy People goals for breastfeeding in the year 2000 which are 75% breastfeeding in the hospital and 50% breastfeeding at six months (DHHS, 1990). To do this will require the combined, concentrated, efforts of health care professionals, educators in secondary and elementary schools, media, government agencies, families, and friends.

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APPENDICES

APPENDIX A

ROSS LABORATORIES MOTHERS' SURVEYS DATA

Table 7. Percentage Breastfeeding - Montana.

	IN HOSP.	1 MON.	2 MON.	3 MON.	4 MON.	5 MON.	6 MON.	7 MON.	8 MON.	9 MON.	10 MON.	11 MON.	12 MON.
1987 (N=351)													
TOTAL	73.6	66.7	60.3	53.0	44.4	35.5	30.6	33.0	26.2	23.1	20.9	16.5	10.3
Breast Alone	62.5	54.4	44.7	37.5	27.7	20.9	20.1	20.2	15.4	11.2	9.6	6.4	1.5
+ Supplement	11.1	12.4	15.6	15.5	16.7	14.6	10.5	12.8	10.8	11.9	11.2	10.0	8.8
1988 (N=319)													
TOTAL	77.0	66.5	57.5	48.8	42.0	37.6	31.3	36.1	27.2	24.5	19.6	17.1	13.6
Breast Alone	67.8	55.2	45.5	34.7	28.1	23.9	20.1	25.8	19.0	16.2	10.8	7.4	6.1
+ Supplement	9.2	11.4	12.0	14.1	13.9	13.8	11.2	10.4	8.2	8.3	8.7	9.7	7.5
1989 (N=307)													
TOTAL	70.8	63.0	55.6	45.5	36.5	33.0	28.2	35.8	28.7	26.3	22.3	18.6	14.3
Breast Alone	61.1	51.7	44.4	32.8	24.4	20.0	18.1	24.2	20.9	17.9	14.7	11.6	6.1
+ Supplement	9.7	11.3	11.2	12.7	12.1	13.0	10.1	11.7	7.8	8.4	7.7	6.9	8.2
1990 (N=310)													
TOTAL	74.1	62.8	52.4	43.8	37.9	33.6	29.3	37.5	27.2	23.8	21.1	16.3	12.7
Breast Alone	62.9	51.2	40.8	29.2	23.5	18.5	17.5	26.2	18.8	14.7	13.1	7.0	5.7
+ Supplement	11.2	11.5	11.6	14.6	14.4	15.0	11.7	11.3	8.4	9.1	8.0	9.3	7.0

Table 8. Percentage Breastfeeding in 1990 (Includes Supplementation).

	-N-	IN HOSP.	1 MON.	2 MON.	3 MON.	4 MON.	5 MON.	6 MON.	7 MON.	8 MON.	9 MON.	10 MON.	11 MON.	12 MON.
Montana	310	74.1	62.8	52.4	43.8	37.9	33.6	29.3	37.5	27.2	23.8	21.1	16.3	12.7
Idaho	399	73.3	65.4	55.8	45.6	39.3	32.1	28.4	32.3	25.6	23.5	19.1	16.0	13.9
Wyoming	235	73.5	65.2	58.6	48.9	44.3	39.5	34.4	37.1	29.6	27.2	23.9	21.9	17.3
Utah	835	75.1	67.9	59.6	51.7	44.6	39.1	34.9	35.3	27.3	23.6	20.1	15.7	13.3
Oregon	1031	79.9	70.0	59.9	51.2	43.1	37.6	32.7	37.4	29.2	25.3	22.0	18.9	17.8
Washington	1504	74.2	64.6	56.7	47.1	40.0	34.6	31.2	36.1	27.4	23.0	20.2	16.3	14.0
North Dakota	314	51.4	43.8	37.6	30.4	24.2	20.2	17.2	22.9	17.7	13.5	10.8	7.7	6.6
South Dakota	277	53.6	45.9	35.0	29.4	23.9	20.0	16.4	21.6	13.7	11.1	10.0	8.5	7.3
Total U.S.	84826	51.5	43.5	36.9	29.9	24.2	20.4	17.6	20.2	14.9	12.9	11.1	9.4	7.8

Table 9. Breastfeeding of All Infants.

	IN HOSPITAL						AT 5-6 MONTHS					
	1984	1985	1986	1987	1988	1989	1984	1985	1986	1987	1988	1989
All Infants	59.7	58.0	56.9	55.5	54.3	52.2	25.7	23.7	23.1	21.8	21.1	19.6
Primiparous	61.0	59.8	57.9	56.8	55.2	52.6	22.4	20.8	19.8	18.8	18.4	16.6
Multiparous	58.3	56.2	55.9	54.2	53.5	51.7	29.5	27.2	26.8	25.2	24.2	22.7
Grade School	40.4	34.1	33.6	32.8	31.4	31.7	17.6	12.8	13.3	10.9	10.9	12.3
High School	51.4	49.8	48.1	46.4	44.9	42.5	19.3	17.4	16.6	15.7	14.7	13.4
NonCollege	50.7	48.8	47.2	45.9	44.5	42.1	19.2	17.1	16.4	15.5	14.6	13.4
College	77.5	76.2	74.7	73.2	72.2	70.7	38.8	36.8	35.4	33.3	33.0	31.1
Employed Fulltime	56.2	55.9	55.4	54.5	53.5	50.8	12.3	11.7	11.6	11.3	11.3	10.2
Employed Parttime	67.6	64.2	64.4	61.9	61.4	59.4	28.9	25.7	26.6	24.3	23.9	23.0
Total Employed	60.3	59.0	58.7	57.1	56.3	53.9	18.2	16.9	17.0	15.9	15.8	14.8
Not Employed	58.6	57.5	55.9	54.5	53.0	51.0	29.2	28.0	27.1	26.0	24.9	23.1
Less than $7,000	36.6	35.1	32.6	32.0	31.6	28.8	12.4	10.1	9.2	8.8	8.7	7.9
$7,000-$14,999	54.5	52.8	51.5	47.6	45.4	44.0	21.1	19.7	18.7	16.8	14.8	13.5
$15,000-$24,999	64.8	63.1	61.2	59.0	57.3	54.7	29.2	26.6	25.6	23.8	23.1	20.4
$25,000 +	71.8	70.6	70.3	69.4	68.2	66.3	33.4	31.4	31.4	29.6	29.0	27.6
Less 20 years	36.8	36.8	34.3	34.8	31.3	30.2	10.2	8.0	7.4	7.5	6.7	6.2
20-24 years	58.0	54.6	52.5	49.9	48.4	45.2	19.7	18.1	16.8	15.5	14.4	12.7
25-29 years	66.6	64.9	63.6	62.2	61.3	58.8	30.6	28.3	27.1	25.6	24.5	22.9
30-34 years	69.4	69.9	68.2	67.1	66.6	65.5	39.1	26.8	35.6	33.0	33.5	31.4
35+ years	64.7	63.2	65.1	64.5	66.6	66.5	38.5	37.7	36.2	36.4	36.6	36.2
Prematures	44.1	42.4	39.8	37.0	38.0	36.2	14.3	12.6	12.4	10.8	10.8	10.7
New England	58.5	61.0	59.9	59.0	55.3	52.2	25.8	27.0	25.9	24.5	23.2	20.3
Middle Atlantic	50.9	49.8	51.7	49.8	50.5	47.4	23.4	21.6	22.5	20.7	20.8	18.4
East North Central	57.7	55.3	52.5	50.8	49.0	47.6	24.9	23.0	21.2	20.0	18.7	18.1
West North Central	66.0	64.8	60.3	59.3	57.4	55.9	28.2	24.8	23.4	21.3	20.6	19.9
South Atlantic	50.5	49.8	48.7	47.2	45.4	43.8	20.2	18.6	18.1	17.3	16.3	14.8
East South Central	45.9	43.3	38.7	39.3	37.0	37.9	17.3	15.9	13.7	13.7	12.8	12.4
West South Central	55.9	52.1	51.3	50.4	48.7	46.0	20.2	17.5	16.7	16.9	16.2	14.7
Mountain	77.6	76.8	76.9	74.3	71.8	70.2	37.6	34.8	35.0	33.1	31.6	30.4
Pacific	77.7	75.8	75.6	73.8	73.9	70.3	36.0	33.7	34.2	31.2	31.0	28.7
WIC	39.1	40.1	38.0	37.3	35.4	34.2	13.0	12.8	11.6	11.5	10.1	9.2
Non-WIC	67.6	66.2	66.1	64.9	64.3	62.9	30.8	28.7	28.7	27.2	26.9	25.7
Pediatricians	60.7	59.1	57.9	56.5	55.2	52.9	26.2	24.0	23.6	22.2	21.4	19.9
General Practitioners	59.0	57.3	55.8	54.4	52.9	51.2	25.4	23.3	22.5	21.4	20.9	19.4
Black	33.3	29.0	27.1	24.9	24.9	23.0	11.7	9.4	8.4	7.9	7.7	7.0
White	65.0	64.2	63.1	62.2	60.4	58.5	28.6	27.0	26.5	25.2	24.3	22.7
Hispanic	53.8	51.1	51.9	50.6	51.1	48.4	19.9	17.5	17.7	15.9	15.8	15.0

Table 10. Incidence of Breast-Feeding.[1/]

	IN HOSPITAL %	1 WEEK %	2 MONTHS %	3 MONTHS %	4 MONTHS %	5 MONTHS %	6 MONTHS %	8 MONTHS %	10 MONTHS %	12 MONTHS %
1951-52		33.8								
1953-54		30.8								
1955		29.2								
1956		28.7								
1957		29.0								
1958		29.1	15.9							
1959		27.4	14.9							
1960		28.4	14.6							
1961		27.8	15.1							
1962		27.5	14.2							
1963		26.2	14.5							
1964		27.2	14.4							
1965	28.2	26.5	14.0							
1966	27.6	25.6	15.0							
1967	27.6	25.5	15.2							
1968	28.7	26.6	15.9							
1969	28.4	25.8	17.6							
1970	26.5	24.9	16.6							
1971	24.7	22.8	13.9	8.5	7.7	5.5	5.4			
1972	28.1	25.9	16.1	10.9	10.9	7.2	5.0			
1973	28.9	26.8	17.9	14.2	12.1	8.6	7.5			
1974	32.2	29.6	19.3	15.3	13.3	9.4	6.5			
1975	35.5	33.4	23.2	17.1	16.0	15.2	14.1			
1976	41.6	39.0	27.3	21.4	19.7	19.1	17.0			
1977	44.7	42.8	32.9	27.8	23.2	19.2	19.6			
1978	46.6	45.1	34.9	29.2	24.4	21.9	18.9			
1979	51.0	49.7	38.5	33.2	28.2	24.4	21.3			
1980	55.3	54.0	42.3	36.2	30.3	26.5	23.2	19.1	10.5	7.5
1981	57.6	56.4	44.2	37.9	32.4	28.4	25.1	18.3	12.6	9.0
1982	61.9	60.5	47.2	40.3	34.7	30.3	27.1	18.2	13.8	9.4
1983	58.4	57.0	43.9	37.0	31.1	26.7	23.3	16.6	12.6	8.1
1984	59.7	58.0	44.7	37.7	31.8	27.5	23.8	15.7	11.8	8.0
1985	58.0	56.4	42.8	35.6	29.5	25.4	22.1	15.0	11.9	7.6
1986	56.9	55.4	42.0	34.8	28.7	24.6	21.6	15.7	11.4	7.7
1987	55.5	54.1	40.8	33.7	27.5	23.5	20.2	15.2	11.0	7.6
1988	54.3	52.7	39.6	32.5	26.7	22.7	19.5	14.5	10.4	6.9
1989	52.2	50.6	37.7	30.7	24.9	21.1	18.1	13.7	9.8	6.6

1/ Includes supplemental feedings, ie, formula in addition to breast-feeding.

Table 11. Percentage Breastfeeding by State (Includes those Supplementing) Year 1989.

	WIC			NON-WIC			TOTAL	
	- N -	IN HOSP.	AT 6 MONTHS	- N -	IN HOSP.	AT 6 MONTHS	IN HOSP.	AT 6 MONTHS
Total U.S.	28638	34.2	8.4	55343	62.9	23.8	52.2	18.1
Alabama	662	19.1	3.7	817	53.3	15.9	36.8	9.9
Alaska	22	81.2	15.8	106	82.1	35.9	82.9	31.8
Arizona	339	59.6	19.0	1004	76.7	30.4	71.4	26.8
Arkansas	286	24.1	3.4	263	48.6	14.0	35.1	8.2
California	2374	50.9	13.9	8346	74.3	29.2	68.2	25.3
Colorado	293	53.6	15.5	789	79.5	33.2	71.3	28.1
Connecticut	193	34.5	8.3	701	62.1	23.6	55.6	19.9
Delaware	74	28.4	6.3	181	64.0	21.5	52.8	16.9
Washington DC	163	27.6	8.7	156	64.1	27.9	44.0	17.5
Florida	1030	28.3	6.0	2093	58.6	81.5	47.8	14.0
Georgia	1154	23.8	5.6	1261	58.0	19.1	40.5	12.1
Hawaii	191	52.3	17.8	403	77.9	27.6	69.0	24.7
Idaho	119	69.6	22.8	191	79.6	41.8	75.8	34.1
Illinois	1238	23.0	3.8	2464	59.9	24.6	46.4	16.8
Indiana	658	35.6	8.6	1293	56.9	21.2	49.6	16.4
Iowa	273	39.3	9.7	630	64.5	22.9	54.9	18.1
Kansas	341	42.5	8.3	547	65.6	23.7	56.3	17.3
Kentucky	516	21.3	6.3	619	53.5	18.8	37.8	12.7
Louisiana	932	17.1	1.6	830	48.2	15.1	30.8	7.8
Maine	127	34.9	12.2	274	60.2	20.2	51.5	17.6
Maryland	404	22.2	5.0	950	54.3	19.1	42.9	14.6
Massachusetts	499	35.9	7.7	1701	57.0	21.3	50.9	17.7
Michigan	1123	31.9	8.9	1917	60.1	22.2	47.7	16.6
Minnesota	436	47.8	9.2	1058	68.1	23.0	62.2	19.5
Mississippi	534	17.5	2.7	338	48.3	15.0	28.3	7.1
Missouri	721	31.6	7.3	1008	64.0	24.8	49.6	17.4
Montana	101	66.8	17.2	186	73.1	34.0	70.8	28.2
Nebraska	159	41.8	12.7	395	59.4	22.2	53.7	19.2
Nevada	87	46.8	9.7	257	64.7	18.2	60.2	16.8
New Hampshire	53	32.0	10.5	236	70.8	29.6	64.1	25.6
New Jersey	669	30.1	6.0	2113	57.6	20.2	49.7	16.1
New Mexico	342	53.0	16.5	331	80.0	38.2	65.8	27.2
New York	2160	36.8	10.3	3566	54.4	20.7	47.3	16.4
North Carolina	806	21.2	4.2	1161	55.9	17.5	40.8	11.9
North Dakota	135	54.0	14.0	188	65.3	28.5	60.9	21.8
Ohio	1329	26.6	7.1	2160	58.5	23.5	44.7	16.6
Oklahoma	529	40.4	7.7	558	62.3	22.4	51.5	15.2
Oregon	434	72.9	22.4	747	85.1	40.1	80.2	33.4
Pennsylvania	1164	27.6	5.8	2386	58.3	25.5	47.5	18.6
Rhode Island	69	19.8	5.0	238	51.3	18.1	42.9	15.1
South Carolina	510	18.6	2.8	627	56.6	18.7	38.6	11.3
South Dakota	94	59.0	16.5	181	67.2	21.9	62.1	18.2
Tennessee	721	24.6	5.3	1013	58.8	21.5	43.7	14.3
Texas	2329	34.6	7.7	4503	59.4	19.9	50.1	15.4
Utah	234	64.8	22.3	630	76.3	39.5	73.1	34.3
Vermont	88	36.0	7.2	106	66.0	28.1	51.2	18.8
Virginia	586	16.5	5.2	1323	57.0	21.8	43.5	15.9
Washington	499	66.5	19.6	950	83.5	38.5	77.2	31.5
West Virginia	248	28.9	5.0	339	53.2	17.1	43.9	11.7
Wisconsin	523	38.3	8.6	1084	62.6	21.3	54.3	16.8
Wyoming	66	44.9	20.5	124	77.0	30.7	65.7	26.8

APPENDIX B

PERMISSION TO COLLECT DATA AND PUBLISH

DEPARTMENT OF
HEALTH AND ENVIRONMENTAL SCIENCES

STAN STEPHENS GOVERNOR

COGSWELL BLDG.

STATE OF MONTANA

FAX # (406) 444-2606

HELENA MONTANA

WIC --- BUILDING A HEALTHY MONTANA

July 28, 1992

Joyce H. Meyer R.N., B.S.N.
2624 Beth Drive
Billings, MT 59102

Dear Joyce:

Dr. Todd Damrow and I have reviewed your research proposal, "Predictors of Successful Breastfeeding in Low-Income Women." You have our permission to administer the survey to a sample of clients in the local Yellowstone County WIC Program.

Those participating in the survey should understand that this is not a WIC study but is a research project.

I asked Doris Biersdorf, R.D., Yellowstone Countys MCH/WIC director, to share some of the work that has been done in the last few years in the promotion of breastfeeding. Our breastfeeding initiative focuses on the provision of valid and consistent breastfeeding education for the mom-to-be,(as well as for the public), so that she can make an informed decision as to how she chooses to feed her baby. Our partnership with the Child and Adult Care Food Program has expanded this program into the daycare area.

There are several items you will find helpful and I am enclosing copies of them, including the WIC Breastfeeding Position Paper, "Guidelines for the Promotion of Breastfeeding in WIC," the clarification of the spelling of "breastfeeding," a letter from the administrator of USDA, and the information relating to the definition of "breastfeeding."

Please send us a copy of your completed study. We wish you good luck with your project. If we can be of further help, please call me or if I am not available, Dave Thomas, the MT State WIC Coordinator.

Sincerely,

Pat Hennessey, M.S., R.D.
Public Health Nutritionist
FAM/MCH Bureau - WIC

cc: Dave Thomas
Todd Damrow
Doris Biersdorf

AN EQUAL OPPORTUNITY EMPLOYER

Saint Vincent Hospital and Health Center

February 13, 1992

Joyce H. Meyer, RN, BSN
Graduate Nursing Student
Montana State University
College of Nursing
Billings, MT 59102

Dear Joyce:

I am writing to you regarding your request to perform research at Saint Vincent Hospital and Health Center (specifically Predictors of Successful Breast-Feeding Among Low-Income Women). We are granting your request as we are supportive of your research project. This letter will serve as written approval for your study. It appears from the information I have reviewed that everything is in order.

We would request that you furnish us with a copy of your research when it is complete. In addition, if you are describing Saint Vincent Hospital and Health Center in any portions of your research, we are a "288 licensed bed, Not-for-profit, Catholic health care facility. As I was reading through your research materials, it appeared there may have been a mistake on the number of beds we have. Other than that, I did not identify any areas I would have questions or concerns about.

Should you have questions, please feel free to give me a call.

Sincerely,

Rita Turley

Rita Turley
Vice President
Patient/Health Services

RT:bm

c: Kathy Toney

Post Office Box 35200
Billings, Montana 59107-5200
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FORM B

MONTANA STATE UNIVERSITY
COLLEGE OF NURSING

UNIVERSITY HUMAN SUBJECTS COMMITTEE SUMMARY

RECEIVED
APR - 6 1992
MONTANA STATE UNIVERSITY
COLLEGE OF NURSING

Name of Proposal: Predictors of Successful Breast-feeding Among Low-income Women

Name of Investigator/s: Joyce H. Meyer

(Circle one: undergraduate student/s, graduate student/s, faculty member/s)

Faculty Advisor (if student research): Jean N. Gullicks

Date of College of Nursing Review: 1/29/92

Reviewed by:
(List College of Nursing reviewers involved by names and type of committee, e.g. J. Doe, Great Falls Extended Campus Committee)

N. Burman Billings Campus
C Lafrenta " "

Approved by:

Campus H.S.R. Committee N. Burman 2/3/92

Education Director Jean Ballantyne

Brief Description of Subjects (age, sex, health status, etc.)
(To Be Completed by the Investigator/s) A convenience sample of 75-100 mothers will be selected from a low-income prenatal clinic and from mothers at the local WIC program. Participants will be at the clinic for their six weeks postpartum checkup and were breastfeeding at the time of their hospital discharge. WIC participants will be at the local office for nutrition counseling and voucher receipts at six weeks postpartum. They also would have been breastfeeding at time of hospital discharge.

FORM B

Brief Description of Procedure (what is to be asked of or done to subjects)
(To Be Completed by the Investigator/s)

A receptionist trained by the researcher will ask mothers to fill out a breastfeeding booklet developed by Hill(1991) for her study on "Predictors of Breastfeeding duration among WIC and non-WIC Mothers". Questions are asked on topics such as beliefs about breastfeeding, problems encountered, persons who encouraged breastfeeding, resources available, and information about the baby's feeding characteristics.

(over)

[X] Exempt Under Federal Reg. 45 CFR 46
46.101 (2) (b) 3
(Insert number and letter as appropriate)

OR

[ ] Questionable or Ruled Not Exempt Under Federal Reg. 45 CFR 46

*Proposal sent to College of Nursing Dean for Review on _____

Permission has been obtained from Dr. Hill to use the breast-feeding questionnaire which she developed. She agreed to any modifications which might be needed. Some minor modifications have been made.

A pilot study will be done with six to eight mothers from the same clinic and several researchers. This pilot study will be done pending approval from the Human Subjects Committee.

This study has been discussed with the agency which administers the clinic and they have agreed to the study pending approval by the Human Subjects Committee of Montana State University, College of Nursing.

☒ Ruled Exempt by College of Nursing Dean

Julie E Johnson
Signature

4-6-92
Date

Explanation: Involves survey / questionnaire procedures

OR

☒ Sent to University Human Subjects Review Committee by College of Nursing Dean

4/7/92
Date

Notes: Distribution of this form: (After Exempt Ruling OR after review by College of Nursing Dean).

Original: Investigators

Copies: Compass File
College of Nursing Human Subjects Review File in Bozeman
University Human Subjects Committee through College of Nursing Assistant Deans' Office

11/16/88:F-4.POL

MONTANA STATE UNIVERSITY
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College of Nursing

Billings Campus
EMC Campus Box 574
Billings, Montana 59101

Telephone 406-657-2912
FAX 406-657-1715

January 15 , 1992

TO: College of Nursing
Human Subjects Review

FROM: Jean N. Gullicks, Ph.D., R.N.

Joyce Meyer has permission to use selected data from the research study on successful breastfeeding for the purpose of analysis for her thesis. She will be examining predictors of successful breastfeeding among low-income women.

At the end of the study, and after a period of time adequate for her to publish the results, the data will be properly disposed. A year is a customary time frame for such efforts. Since I will be second author on the student's publication, the data are protected.

Please be aware that this study is funded by a College of Nursing Block Grant. That project has approval from Montana State University Human Subjects Committee.

APPENDIX C

BREASTFEEDING QUESTIONNAIRE



BREASTFEEDING

BOOKLET

Dear Mother,

This is an invitation for you to take part in a study about infant feeding. Taking part only involves completing this questionnaire. I am interested in how long mothers breastfeed their infants. I am very interested in why mothers sometimes stop and why others continue to breastfeed. There may be no direct benefits to you from taking part in the study but the answers you give to the questions will provide important information for helping breastfeeding mothers in the future. There are no risks to you in answering these questions but the questions may cause you to think about how you feel about your breastfeeding experience.

By completing the questions in the booklet you are giving your consent to be in the study. You may choose not to answer some questions or you may decide not to answer any of the questions. You will still receive the same care at this clinic.

It will take about 20 minutes to answer the questions. Please do <u>not</u> write your name on the booklet. No names will be used in connection with this study. After completing all items, please give your booklet to the receptionist or the nurse.

Thank you for your help.

Sincerely,

Joyce Meyer

Joyce Meyer RN BSN
Graduate Nursing Student
Montana State University
College of Nursing 657-2912
Billings, MT

Code Number __ __ __ __

Section I: This section asks questions about your beliefs about breastfeeding.

Instructions: Please circle the number that most accurately describes your feelings for each question.

1. During pregnancy, how important was it for you to breastfeed your baby?

Of no importance	Of little importance	Neutral	Important	Very important
1	2	3	4	5

2. When all things are considered, how much do you believe that breastfeeding is better than other types of infant feeding?

Not at all	A little	Neutral	A lot	Very much
1	2	3	4	5

3. During pregnancy, how confident did you feel about breastfeeding your baby?

Very Worried	Slightly Worried	Neutral	Confident	Very Confident
1	2	3	4	5

4. Generally speaking, how anxious were you about breastfeeding once you were actually breastfeeding your baby?

Not Anxious At All	Not Very Anxious	Neutral	Anxious	Very Anxious
1	2	3	4	5

5. What is the most important reason for breastfeeding your baby? (Circle only one)

Believed that you and your baby would develop close feelings..... 1
Believed that breastfeeding was the most natural way to feed your baby..... 2
Convenience of breastfeeding..... 3
Breastfeeding provides better food for baby than bottle feeding..... 4
Breastfeeding would help regain your figure..... 5
Breastfeeding would save time..... 6
Desire to be a "complete" woman or feel self-fulfilled..... 7
Other (please explain)..... 8

Section II: How much of a problem did the following present to you while breastfeeding?

(Assume that the answer "Lots of problems" means that you had problems serious enough to make you stop breastfeeding.)

Instructions: Before responding to the questions that follow, please study carefully what numbers 1-5 mean.

1 = No problem at all so I continued to breastfeed.
2 = A little problem but I continued to breastfeed.
3 = Neutral. I have no opinion about this; I have no feelings one way or another.
4 = A problem, but I continued to breastfeed.
5 = Lots of problems to the point that I stopped breastfeeding.

1. A personal illness.....1 2 3 4 5
2. An illness of other family members.....1 2 3 4 5
3. Inverted/flat nipples.....1 2 3 4 5
4. Your taking medication.....1 2 3 4 5
5. Your husband/child's father feeling "left out".....1 2 3 4 5
6. Your baby was fussy after most feedings.....1 2 3 4 5
7. Your baby was not gaining weight.....1 2 3 4 5
8. Your baby was a poor feeder.....1 2 3 4 5
9. You had painful nipples.....1 2 3 4 5
10. You had leaking breasts.....1 2 3 4 5
11. You had breast swelling/engorgement.....1 2 3 4 5
12. Your baby refused the breast.....1 2 3 4 5
13. You had a breast infection.....1 2 3 4 5
14. Your baby required too many feedings.....1 2 3 4 5
15. You felt tired.....1 2 3 4 5
16. You had no privacy during breastfeeding.....1 2 3 4 5
17. You lost your figure.....1 2 3 4 5

(Section II continued)

18. Older children upset or jealous.....1 2 3 4 5

19. You received no support from your physician or nurse midwife.....1 2 3 4 5

20. You received no support from your husband/child's father for breastfeeding.....1 2 3 4 5

21. You received no support from family members.....1 2 3 4 5

22. Other people gave the baby bottle feedings against your wishes.....1 2 3 4 5

23. Nurse midwife suggested you stop breastfeeding.....1 2 3 4 5

24. Nurse(s) suggested you stop breastfeeding.....1 2 3 4 5

25. Breastfeeding was blamed for your baby's small size or slow growth.....1 2 3 4 5

26. You had to return to work and could not arrange your schedule to continue breastfeeding.....1 2 3 4 5

27. You felt tied down at home.....1 2 3 4 5

28. You felt totally responsible for feeding your baby..1 2 3 4 5

29. Not knowing exactly how much milk your baby had taken.....1 2 3 4 5

30. You felt/believed you did not have enough milk.....1 2 3 4 5
If you circled 4 or 5, what made you think you did not have enough milk?_____
_____
_____
_____

Were you giving formula to the baby at this time?
Yes.....1
No 2

31. You started taking birth control pills.....1 2 3 4 5

32. Other reasons for stopping breastfeeding_____
_____
_____

Section III. This section asks questions about who/what encouraged and discouraged you most while breastfeeding.

Instructions: Before responding to the questions that follow, please study carefully what numbers 1-5 mean.

1 = Definitely discouraged me while breastfeeding.
2 = Slightly discouraged me while breastfeeding.
3 = Neutral I have no opinion about this;I have no feelings one way or another.
4 = Encouraged me while breastfeeding.
5 = Very much encouraged me while breastfeeding.

How much influence did the following have while breastfeeding?

1. Friends who had nursed their babies.....1 2 3 4 5
2. Maternal grandmother.....1 2 3 4 5
3. Mother-in-law/child's father's mother.....1 2 3 4 5
4. Sister.....1 2 3 4 5
5. Your husband/baby's father.....1 2 3 4 5
6. Your physician/nurse midwife.....1 2 3 4 5
7. Nurse(s).....1 2 3 4 5
8. Your friends at work.....1 2 3 4 5
9. Classes on breastfeeding you attended.....1 2 3 4 5
10. Books or magazines on breastfeeding you read.....1 2 3 4 5
11. Television or radio programs.....1 2 3 4 5
12. Organizations or other groups.....1 2 3 4 5

Please specify_____

Section IV. How often were the following resources available to you during the entire time you breastfed your baby?

Instructions: Before responding to the questions that follow, please study carefully what numbers 1-5 mean.

1 = Never available to me while breastfeeding.
2 = Rarely available to me during breastfeeding.
3 = Neutral I have no opinion about this; I have no feelings one way or another.
4 = Available to me during breastfeeding.
5 = Very often available to me during breastfeeding.

1. Shared experiences with people (friends, relatives) who had actually breastfed their babies.....1 2 3 4 5

2. Encouragement by others whom you knew had successfully breastfed their babies.....1 2 3 4 5

3. Practical information on breastfeeding.....1 2 3 4 5

4. Emotional support from people around you.....1 2 3 4 5

5. Generally speaking, how important was/is your husband's (or child's father) support to your efforts to breastfeed during the entire time you breastfed your baby?

Of No Importance	Of Little Importance	Neutral	Important	Very Important
1	2	3	4	5

6. Generally speaking, how did your husband (child's father) react to your breastfeeding during the entire time you breastfed your baby?

Strongly Displeased	Displeased	Neutral	Pleased	Very Pleased
1	2	3	4	5

Section V. This section asks some personal questions including how you are now feeding your infant.

Instructions: Please circle only one number for each question or fill in the blank where specified.

1. Your current age:_____years

2. Your husband's (child's father) present age:_____years.

3. Your marital status (circle number):

Never married.....1
Married.....2
Divorced.....3
Separated.....4
Widowed.....5

4. How many years of schooling have you completed?_____
Highest Degree awarded_____

5. How many years of schooling has your husband (child's father) completed?_____Highest Degree awarded_____

6. What is your race or ethnic background?

White/Caucasian.....1
Black/Afro-American.....2
Oriental.....3
Mexican American/Chicano.....4
Puerto Rican.....5
American Indian.....6
Other.....7

If Other, please specify_____

7. Are you currently employed outside the home?

Yes, presently employed full-time.....1
Yes, presently employed part time.....2
No, do not work outside the home.....3
No, but planning to go back to work.....4

8. Age of baby when you began working or will be returning to work_____.

9. What is your job?_____

10. What is your husband's (child's father) job?_____

11. What was your total household income in the last year?

Less than $3,000.....1
$3,000 to $4,999.....2
$5,000 to $6,999.....3
$7,000 to $9,999.....4
$10,000 to $12,999.....5
$13,000 to $15,999.....6
$16,000 to $19,999.....7
$20,000 to $24,999.....8
$25,000 to $29,999.....9
$30,000 to $34,999.....10
$35,000 to $39,999.....11
$40,000 to $44,499.....12
$45,000 and more.....13

12. Do you smoke? (Circle one)

Yes.....1
No.....2

If Yes, how many cigarettes per day?_____

13. How many children do you have living at home?_____

What are their ages?_____

14. Did you breastfeed any of your previous children?(Circle one)

Yes.....1
No.....2

BREASTFED (Circle one)				(Circle one)		
1st child	Yes	No	How long?_____	Successful?	Yes	No
2nd child	Yes	No	How long?_____	Successful?	Yes	No
3rd child	Yes	No	How long?_____	Successful?	Yes	No
4th child	Yes	No	How long?_____	Successful?	Yes	No
5th child	Yes	No	How long?_____	Successful?	Yes	No

15. Sex of present baby? (Circle one)

Male.....1
Female.....2

16. Baby's birthdate____ ____ ____

17. Today's date ____ ____ ____

18. Baby's birthweight_____

19. How was the baby delivered? (Circle one)

Through the vagina.....1
Cesarean section.....2

20. Did your baby have any problems at birth? (Circle one)

Yes..... 1
No..... 2

If Yes, please explain_____
_____
_____
_____

21. While in the hospital, did you keep your baby in the room with you? (Circle one)

Yes..... 1
No..... 2

If Yes, about how many hours per day was baby in the room with you?_____

22. While in the hospital was your baby fed water and/or formula? (Circle one)

Yes, water only.....1
Yes, formula only.....2
Yes, both water and formula.....3
No water or formula.....4
I am not sure.....5

If Yes, can you explain why baby received water and/or formula in the hospital and about how much?_____
_____
_____
_____

23. While in the hospital, about how many times did you breastfeed your baby between 12 midnight and 6 a.m.?

_____

24. During the first week at home, about how many times did you breastfeed your baby between 12 midnight and 6 a.m.?_____

_____

25. Has your baby had any health problems since delivery? (Circle one)

Yes..... 1
No..... 2

If Yes, please explain_____

_____

_____

26. What has been your general state of health since the birth of your baby? (Circle one)

Excellent..... 1
Good..... 2
Fair..... 3
Poor..... 4

27. Have you had any health problems since delivery? (Circle one)

Yes..... 1
No..... 2

If Yes, please explain_____

_____

_____

28. Did you attend childbirth classes? (Circle all that apply)

Yes, with this pregnancy..... 1
Not with this pregnancy..... 2
Attended with prior pregnancy..... 3
Have never attended..... 4

29. Did you ever attend classes on breastfeeding? (Circle all that apply)

Yes, with this pregnancy..... 1
Not with this pregnancy..... 2
Attended with prior pregnancy..... 3
Have never attended..... 4

30. Did you receive written information about breastfeeding during the pregnancy? (Circle one)

Yes..... 1
No..... 2

If Yes, was the information in a book, pamphlet, etc? (Please explain and identify source of material if possible)

_____

Please indicate where you received breastfeeding instructions or help. (Circle all that apply)

	Received breastfeeding help	Before baby's birth	After baby's birth
31.	In doctor's office by doctor or nurse/midwife	1	2
32.	In doctor's office by nurse	1	2
33.	Classes at hospital	1	2
34.	Clinic WIC Center	1	2
35.	A nurse calling on phone	1	2
36.	A nurse visiting at home	1	2
37.	Friends or relatives that have breastfed	1	2
38.	A member of a group of breastfeeding mothers	1	2

Other (Please explain)_____

_____

39. Before your baby was born, how well informed about breastfeeding did you feel? (Circle one)

Very informed..... 1
Somewhat informed..... 2
Poorly informed..... 3
Not informed..... 4

40. When did you decide to breastfeed your baby? (Circle one)

Before becoming pregnant..... 1
During first 3 months..... 2
During 4-6 months..... 3
During 7-9 months..... 4
After baby's birth..... 5

41. Who most influenced your decision to breastfeed?_____

_____

42. During pregnancy, how long did you think you would breastfeed your baby?_____weeks/ months (Please circle)

43. How soon after the birth of your baby did you begin to breastfeed? (Circle one)

Within 1 hour after delivery.... 1
2 hours after delivery..... 2
3 hours after delivery..... 3
4 hours after delivery..... 4
5 hours after delivery..... 5
6 hours after delivery..... 6
7 hours after delivery..... 7
8 hours after delivery..... 8

If you did not start breastfeeding within 8 hours after delivery, please indicate in the blank how many hours it was after delivery when you breastfed for the first time.

_____hours after delivery..... 9
I am not sure..... 10

44. Have you received samples of infant formula from: (Circle all that apply)

a. Hospital	Yes.....1	No.....2
b. Physician	Yes.....1	No.....2
c. WIC Center	Yes.....1	No.....2

45. On the average, how many times did you breastfeed your baby in a 24 hour period (from midnight to midnight) during the first week after delivery?_____

46. How would you describe your baby's breastfeeding behavior during the first week? (Circle one)

Sucked vigorously..... 1
Sucked well..... 2
Sucked fairly well..... 3
Sucked poorly..... 4

47. For the length of time that you breastfed this baby, did you breastfeed at specific times of the day (like every 3-4 hours) or whenever you thought the baby was hungry? (Circle one)

Specific times..... 1
When hungry..... 2

48. On the average, how many times did you breastfeed your baby in a 24 hours period during weeks 2-6?_____

49. How would you describe your baby's breastfeeding behavior during weeks 2-6?

    For the most part, my baby grasped my nipple with some assistance and... (Circle one)

    Sucked vigorously..... 1
    Sucked well..... 2
    Sucked fairly well..... 3
    Sucked poorly..... 4

50. After hospital discharge, did you give formula to your baby during the first 6 weeks? (Circle one)

    Yes..... 1 (Go to 51)
    No..... 2 (Go to 59)

51. If yes, how old was your baby when you first gave formula? (Be as specific as possible)_____Days or weeks (Circle one)

52. Why did you begin feeding baby formula in addition to breast milk?

    Please explain_____
    _____
    _____

53. Please check(\/) the type of formula you fed your baby:

    Evaporated milk_____
    Advance_____
    Similac_____
    Similac with Iron_____
    Similac with Whey_____
    Isomil_____
    Prosobee_____
    Enfamil_____
    Enfamil with Iron_____
    SMA_____
    Fresh Milk_____
    Nursoy_____
    Other_____

Please explain_____
_____
_____
_____
_____

54. For the most part, when you gave formula, did you give formula immediately after breastfeeding or replace the entire feeding of breast milk with formula? (Circle one)

First breastfed, then gave formula..... 1
Replaced breast milk with formula..... 2

55. How much formula, if any, is your baby now receiving in 24 hours?

none_____ 4 oz._____ 8 oz._____ other_____

56. Does your baby receive formula every day?

Yes_____
No_____

57. During the first 6 weeks, about how many bottles of formula did baby take in a 24 hour period? (From midnight to midnight)
_____bottles.

Please explain_____
_____

58. Would you continue to give infant formula if WIC formula coupons were not available? (Circle one)

Yes..... 1
No..... 2
Not applicable..... 3

59. How old was your baby when you completely stopped breastfeeding? (Be as specific as possible)

_____Days or weeks (Circle one then go on to 60)
_____Am still breastfeeding (Circle and go to 62)

60. If you are no longer breastfeeding, what (if anything) would have helped you to continue to breastfeed longer than you did?

_____
_____

61. Did you feel that you had enough milk to satisfy your baby while you were breastfeeding?

Yes..... 1
No..... 2

If no, please explain_____
_____(Go to 63)

62. What do you feel is the reason you are still breastfeeding at the present time?

_____

_____

_____

_____

_____

63. How successful did you/do you feel about breastfeeding? (Circle the number that applies to you)

Not at all Successful	Slightly Successful	Neutral	Successful	Very Successful
1	2	3	4	5

64. If you have another child, would you breastfeed again? (Circle one)

Yes..... 1
No..... 2

APPENDIX D

PEARSON CORRELATION COEFFICIENTS

Table 12. Correlation Coefficients.

- - Correlation Coefficients -

	MARITAL	PERS1	PERS11	PERS14A	PERS46	PROB12	PROB30A	PROB6	RACE	WORK
MARITAL	1.0000	.2211	.1956	-.3331	.0006	.0700	-.0663	-.1364	-.1228	-.0915
	(65)	(64)	(60)	(54)	(64)	(63)	(62)	(63)	(65)	(65)
	P= .	P= .079	P= .134	P= .014	P= .996	P= .585	P= .609	P= .287	P= .330	P= .468
PERS1	.2211	1.0000	.2612	-.4752	-.1387	-.0794	-.0304	-.0971	-.2241	.1289
	(64)	(65)	(60)	(54)	(64)	(63)	(62)	(63)	(65)	(65)
	P= .079	P= .	P= .044	P= .000	P= .274	P= .536	P= .815	P= .449	P= .073	P= .306
PERS11	.1956	.2612	1.0000	-.0696	-.2622	-.0529	.0909	-.2209	-.2491	.1464
	(60)	(60)	(61)	(52)	(61)	(60)	(59)	(60)	(61)	(61)
	P= .134	P= .044	P= .	P= .624	P= .041	P= .688	P= .494	P= .090	P= .053	P= .260
PERS14A	-.3331	-.4752	-.0696	1.0000	.2628	.3925	.2324	.2679	.1026	-.0462
	(54)	(54)	(52)	(55)	(54)	(53)	(52)	(53)	(55)	(55)
	P= .014	P= .000	P= .624	P= .	P= .055	P= .004	P= .097	P= .052	P= .456	P= .738
PERS46	.0006	-.1387	-.2622	.2628	1.0000	.4947	-.0205	.3283	.1323	-.0213
	(64)	(64)	(61)	(54)	(65)	(64)	(63)	(64)	(65)	(65)
	P= .996	P= .274	P= .041	P= .055	P= .	P= .000	P= .874	P= .008	P= .294	P= .866
PROB12	.0700	-.0794	-.0529	.3925	.4947	1.0000	.1693	.3281	.2478	-.0967
	(63)	(63)	(60)	(53)	(64)	(64)	(63)	(64)	(64)	(64)
	P= .585	P= .536	P= .688	P= .004	P= .000	P= .	P= .185	P= .008	P= .048	P= .447
PROB30A	-.0663	-.0304	.0909	.2324	-.0205	.1693	1.0000	.2771	-.1599	-.0775
	(62)	(62)	(59)	(52)	(63)	(63)	(63)	(63)	(63)	(63)
	P= .609	P= .815	P= .494	P= .097	P= .874	P= .185	P= .	P= .028	P= .211	P= .546
PROB6	-.1364	-.0971	-.2209	.2679	.3283	.3281	.2771	1.0000	-.0966	-.0889
	(63)	(63)	(60)	(53)	(64)	(64)	(63)	(64)	(64)	(64)
	P= .287	P= .449	P= .090	P= .052	P= .008	P= .008	P= .028	P= .	P= .448	P= .485
RACE	-.1228	-.2241	-.2491	.1026	.1323	.2478	-.1599	-.0966	1.0000	.1202
	(65)	(65)	(61)	(55)	(65)	(64)	(63)	(64)	(66)	(66)
	P= .330	P= .073	P= .053	P= .456	P= .294	P= .048	P= .211	P= .448	P= .	P= .336

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