

BREAST FEEDING SUCCESS RATE: A  
COMPARISON OF TWO GROUPS

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## DEDICATION

This thesis is dedicated to  
Marilynn Wallis, my typist  
Sylvia Ulloa, the graduate secretary  
Britt Canada, the statistician.

Thank you.

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## CHAPTER 1

### INTRODUCTION

Breast feeding, its benefits and problems, has long been a topic of study and controversy. Societal trends of breast versus bottle feeding have fluctuated between populations and within subsections of the same population over time. Despite scientific studies supporting clear cut, even dramatic, benefits to most infants, this information is often not stressed by the medical community to the consumers.

A variety of factors have been noted to affect a mother's decision whether or not to breast feed and her success at the endeavor. Only recently has the medical community made efforts to address the large group of mothers who for psycho-social reasons have chosen not to breast feed and to evaluate the factors leading up to that decision. A deeper understanding and appreciation of the factors influencing these women will contribute to our body of knowledge as health professionals. Only with such a background of such information can health professionals offer guidance and support to those mothers who are undecided or to those who fail at breast feeding.

Incidence of breast feeding has been shown to vary significantly with social class and with educational level (Martinez & Nalezienski, 1979). A variety of reasons have been offered to explain this phenomena; all remain speculation. Less emphasis has been placed upon the study of women who choose to breast feed, but who are unsuccessful. The factors that precede this unfortunate sequence are necessarily a complex interplay of physical, psychological, and social events. Among the influencing forces, lack of anticipated support by health team members has been cited as significant (Lawrence, 1980). The void felt by the new mother may initiate or otherwise contribute to the cycle that results in a failure to achieve a successful mother/infant breast-feeding relationship.

Within the last year, the American Academy of Pediatrics has officially acknowledged the supportive role of the health team regarding a mother's decision to breast feed (News and Comments, 1981). The significance and validity of this position must not be overlooked or underestimated. The health care consumer, regardless of social class or educational level, is necessarily influenced by the health related advice communicated by the team of health professionals. Unfortunately, the subject of breast feeding is often not stressed by the obstetrical



team (Magnus, 1978). The outcome of any effort at breast feeding is often established prior to the maternal/infant dyads' first visit to the pediatrician's office. Failure of the health team to acknowledge and support the efforts of the breast-feeding mother may be interpreted as disapproval or unappreciation.

The question is raised that perhaps the hospital nursing staff is not knowledgeable on the topic of breast feeding. If this is the case, a more knowledgeable nursing staff could offer more meaningful reassurance to those dyads who are breast feeding.

#### Problem Statement

The problem addressed by this study was: Is there a difference in the breast-feeding success rate among the maternal/infant patient population prior to and following a breast-feeding educational program for the nursing staff?

#### Justification of the Problem

Bottle feeding of formula or water is unnecessary even for the hungriest neonate. The sucking and infant "hunger behavior" will stimulate maternal supply of breast milk to meet the demands of the infant (Magnus, 1978). Studies consistently show that breast milk production is a

function of supply and demand. Despite this, a large number of studies on a broad variety of patient populations have consistently found that "insufficient milk" is the most frequently cited reason for early termination of breast feeding (Gussler & Briesemeister, 1980; Lawrence, 1980).

A variety of factors may contribute to the development of unsuccessful breast-feeding relationships within the dyad. In industrialized societies, physiological distance between mother and infant is the norm. With the current tendency toward hospital births, medical personnel have replaced the roles that kinfolk have traditionally played during the early postpartum period. Modern medical personnel and their technology intervene between mother and infant at birth. Time, space, and objects are placed between the dyad.

If the baby is not rooming-in with the mother, feeding schedules are given priority and established without regard to the infant's hunger. In the event of scheduled feedings, the mother is deprived of the strongest stimulant to milk production, the infant's "hunger behavior".

The distance producing objects go beyond the hospital and beyond the first few days of the infant's life. Cribs, carriages, strollers, and other baby furniture,

coupled with the time and schedule needs of mothers in our society, have produced a change in the physical closeness experienced by the mother and the infant. In the presence of physical barriers between the dyad, cues of growing hunger are masked, and the response to the cues may be delayed and inhibited.

Studies citing the actual rate of unsuccessful attempts at establishing a satisfactory breast-feeding relationship could not be located, but sources suggest that it may be as high as 50 to 65% in industrialized societies (Lawrence, 1980). Dr. J. Hopkinson (Note 2), a breast-feeding consultant of the Children's Nutrition Research Center stated that among a population studied by the center, only one-half of 1% of new mothers had been successful in establishing a breast-feeding relationship with their month-old infants. Although such failure is multi-causational, lack of support to the mothers while in the hospital has been specifically cited as a contributing factor (Hopkinson, Note 2; Lawrence, 1980).

In view of the barriers to success present during the critical first few days and of the complexities involved in manipulating most of them, nursing staff support to the dyad is a reasonable area to institute constructive change. Without a broad base of knowledge on the subject

of breast feeding, the nursing staff may be ineffective in offering support to the dyad who appear to be doing well. Unprepared members of the nursing staff are even less helpful to dyads who encounter problems.

This study evaluated the feasibility of educating nursing staff members in the hope of influencing the behavior of the patient population. Performed in a real patient care setting, the findings and implications can be generalized to areas of nursing where patient behavior or compliance may be influenced. The findings of the study will contribute not only to neonatal/maternal nursing, but also to all areas of nursing. While the study may lack the rigors of a scientifically controlled experiment, it is representative of what we as health professionals face in our work situations.

The information provided by the results of the study may suggest to us whether the "staff education" approach is a viable method of dealing with a problem of this type. If no increase in the success rate is found, it will reflect our need to investigate further the factors that contribute to "breast-feeding failures". Such information will contribute to the general body of knowledge on the subject of breast feeding. The most significant item of information offered by this study is the identification

of a baseline (prior to educational inservice) success rate among the patient population who have elected to breast feed. Whether there is any significant difference in the success rate prior to and following the nursing staff breast-feeding educational program will be valuable to all health professional who work in maternal/infant areas.

#### Theoretical Framework

To gain a deeper understanding of factors contributing to the development of successful/unsuccessful breast-feeding relationships, Mandler's (1975) theory of interruption has been selected. This theoretical framework may help to explain what actions of the health team will enhance success among the dyads.

Traditionally the health care team has directed its educational efforts regarding infant care to the prenatal couple. Combining educational emphasis to cover prenatal, childbirth, and postpartum areas covers a variety of patient needs and minimizes the costs. Additionally, the educators have a reasonable time frame to work in and have an established communication network from which to recruit participants. The combination is clearly prudent in terms of costs and participation.

Educators must evaluate at what time the expectant couple is most receptive to the materials being presented. Convenience and efficiency support the continued utilization of the prenatal classes to educate parents on the topic of breast feeding, but it is important to understand the drawbacks to this approach. This population may be compromised in its capacity to assimilate new information and, therefore, effective education will require additional emphasis.

The specific factor being considered in this study is the role of the mother's readiness as a factor in processing the information presented. Utilization of readiness, appropriate timing, and the basic principles of repetition will enhance the retention of the relevant materials.

To gain a deeper appreciation of the relationship of readiness and the learning process, it is helpful to study Mandler's (1975) theory of interruption. Mandler's theory developed the concept that environmental status plays a significant role in an organism's readiness and capacity to learn.

Interruption is described as any input that disturbs the execution of ongoing structures. It is a sufficient and possibly necessary condition of autonomic nervous

system (ANS) arousal. Interruption of ongoing cognitive or behavioral activity sets the stage for many cognitive and action system changes. Whenever interruption occurs, the organism responds with both a physiological preparedness and with a potential for cognitive and behavioral restructuring. The subsequent action of the organism will be dependant upon the availability and accessibility of alternative response actions.

Mandler (1975) elaborated on the concept that human cognitive efficiency bears a U-shaped correlation to ANS arousal. A state of arousal will facilitate focus of attention but simultaneously restricts the number of environmental cues perceived. In a situation where attention focus is beneficial, performance is improved. Conversely, in a situation where effective action demands attention to a wide range of stimuli, performance is impaired by ANS arousal.

Interruption of any sort produces a state of ANS arousal, and therefore affects the organism's cue perception and utilization. The status of pregnancy and the childbirth experience are both events that produce a state of interruption in a woman's life continuum. The hormonal changes in the gravid female, coupled with the conceptual awareness of the significance, result in a state of

arousal. Cognitive processing is affected with a focusing of attention and a disregard for irrelevant cues. While unlikely that arousal would be of a dramatic or constant intensity throughout the pregnancy, it is reasonable that it would bear a role in the mother's education seeking activities.

In an effort to determine the optimal conditions to educate the parents on the subject of breast feeding, one can identify the time period that Mandler (1975) would describe as providing the greatest cognitive efficiency. The period of time during the pregnancy has the benefit of the interruption of the mother's life continuum created by the pregnancy itself. During this time period much new information must be assimilated. Physiological adjustments, scheduling changes, self image perception and role changes are only a few of the factors that compete for the gravid mother's attention. It is reasonable to conclude that the optimal time to deliver information relevant to breast feeding is within a few days after the childbirth experience. Not only does the mother have the benefit of the arousal produced by the childbirth experience, but also the infant itself is now necessarily the focus of attention.



### Assumptions

The assumptions of this study were:

1. Pregnancy and childbirth are significant interruptions in a woman's life continuum.
2. Information relative to the pregnancy and childbirth experience are processed in a manner reflective of an arousal state.
3. A great deal of new information is processed during the pregnancy period. These include physiological adjustments, time schedule changes, planning and purchasing for the needs of the changing family, and the psychological changes relative to the role changes.
4. Information regarding infant care competes with the aforementioned when presented to the gravid mother.
5. Information regarding infant care is most efficiently processed during the first few days postpartum.
6. Lack of health team support to the mothers is a contributing factor in some cases where there is a failure to achieve a successful breast-feeding relationship.
7. Education of the nursing staff on the topic of breast feeding, will enhance the support offered by the health team to the breast-feeding dyads.
8. Women who indicate on their infant's charts that they want to breast feed expect to do so for 4 weeks.

### Hypothesis

The hypothesis of this study was: There will be no difference in the breast-feeding success rate of the maternal/infant patient population prior to an education program on the topic of breast feeding for the nursing staff as compared to the success rate of breast feeding in the maternal/infant patient population after such an educational program.

### Definition of Terms

For the purpose of this study, definitions of terms were:

1. Nursing staff: Those members of the nursing team, including Registered Nurses (RNs), Licensed Vocational Nurses (LVNs), and nursing assistants who are involved in direct patient care in the areas of prepartum, labor and delivery, postpartum, and well-baby nursery.
2. Breast-feeding mothers: Those mothers who have indicated on the infants' charts that they plan to breast feed their babies.
3. Success at breast feeding: Those mothers who are determined to be successful as indicated by the breast-feeding questionnaire instrument.

4. Nursing staff breast-feeding educational program: A program designed for nursing staff inservice education.

#### Limitations

The limitations of this study were:

1. Participants in the nursing staff breast-feeding educational program enter with varying degrees of education, competency, skill, knowledge, and prejudices.

2. Staff support of breast-feeding mothers may not bear a relationship to the staff's knowledge of the same.

3. Measurement of the success rate may not accurately reflect nursing staff support to the patient population.

4. Contaminating factors, such as patient census, nurse/patient ratio, or specific nurses on duty may skew the findings. Any of these items could influence staff/patient interactions in terms of time spent and quality of support offered.

5. The patient population being evaluated will vary in terms of knowledge level regarding breast feeding, and in terms of personal support and resources.

6. The study relies on information communicated by the mothers to determine success at breast feeding.

7. Poor response to the mailed questionnaire may bias the sample.

8. Two separate populations will be evaluated for success rate.

### Summary

Despite the popularity of the topic of breast feeding among researchers, there remains much to be learned and communicated on the topic. One of the many factors that may contribute to the lack of success at a breast-feeding endeavor, is the lack of anticipated support offered by the health care delivery team to the breast-feeding mother. Mandler's (1975) theory of interruption was utilized to identify the time period of greatest maternal cognitive efficiency for assimilating information relative to the care and feeding of the infant. This study was designed to evaluate whether educating the nursing staff would have an effect on the success rate of breast feeding among the patient population.

## CHAPTER 2

### REVIEW OF THE LITERATURE

Breast feeding has been the subject of considerable study and interest to both researchers and lay groups. Historically, professionals have concentrated their interest studying the constituents of breast milk, the role of breast milk in providing immunological benefits to the infants, and other qualities which are scientifically measurable. At the same time, lay authors have been productive in supplying the public with guides and resource materials. La Leche League, the most widely known community resource, is a lay group that has been actively distributing materials and information since 1958. By 1978, an impressive 9,342,000 copies of their simple guide The Womanly Art of Breastfeeding had been printed (La Leche League, 1978).

The lack of guides, of educational tools, and the lack of the element of support to breast-feeding mothers is currently being acknowledged and addressed by the medical community. Dr. Ruth Lawrence, a pediatrician and advocate of breast feeding, noted that resources to educate health team members are often scattered and

inaccessible. In 1981, she addressed this need by writing Breast Feeding: A Guide for the Medical Profession. Also in 1981, the American Academy of Pediatrics addressed the unavailability of resources for professionals. The Academy issued a formal, official statement in support of breast feeding, and urged all pediatricians to take an active role in support and guidance of breast-feeding mothers. A guide booklet was distributed to all members of the American Academy of Pediatrics (News and Comments, 1981).

#### Trends in Breast-Feeding

Infant feeding practices throughout the world have been dramatically influenced by advertisements and by the availability of refrigeration and of scientifically prepared formula. At the beginning of this century, more than 50% of mothers in the United States breast fed their infants beyond 1 year of age (Lawrence, 1981). Between 1946 and 1955, the number of mothers who breast fed their infants at the time of discharge from the hospital showed a steady decline. One author estimated the incidence in 1955 to be as low as 18% (Hill, 1981). Data collected in 1955 showed that 29% of infants were exclusively breast fed (fed breast milk only) at 1 month of age. The

gradual, steady decline continued into 1971 when only 25% of infants were exclusively breast fed at 1 week of age. At that time, the trend began to reverse itself, and by 1978, 45% of the infants studied were exclusively breast fed at 1 week of age (Martinez & Nalezienski, 1979). The most recent study available showed that the incidence of breast feeding is continuing to rise. Between 1978 and 1980, the incidence of breast feeding in infants up to 6 months of age was 57% (Sarret, Bain, & O'Leary, 1983).

One of the largest studies identifying trends in infant nutrition is a study begun by Ross Laboratories in 1955. The purpose of the study is to provide an ongoing data base of the trends of infant feeding within the United States. Surveys are conducted on a yearly basis, and mailed out to participants selected through the national birth register. The sample, which included in excess of 25 thousand participants in 1978, was designed to represent the national birth distribution. This study compared the use of breast milk (exclusive and partial) to formula, and correlated the mode of infant feeding with a number of variables. Maternal educational levels, social status, income levels, geographic locale as well as other factors have been noted to play significant roles in the incidence and duration of breast feeding. The demographic

data collected in this study correlated higher educationally prepared and higher socioeconomic participants with a higher incidence of breast feeding. In 1971, the percent of college graduates who breast fed their babies at time of discharge from the hospital was 42.1% while those who had a high school diploma or less showed a percentage of 19.4%. In 1974, the percents within these two groups had grown to be 63.4% and 40.2% respectively (Martinez & Nalezienski, 1979).

Another study that looked at factors affecting the incidence of breast feeding was published by Salber, Stitt and Babbott in 1958. This study utilized a population of 114 women who utilized the services of an urban health care clinic over a 6-year interval. The results of the study showed a statistically significant positive correlation between the incidence of breast feeding and both a higher family income level and college education in the mother (Salber et al., 1958).

#### Advantages and Disadvantages of Breast Feeding

Advantages of breast feeding are well documented. Studies consistently show that there are fewer infections, fewer illnesses and fewer hospitalizations among breast fed babies than among bottle fed babies (Hopkinson, 1983).



A retrospective study reported by Cunningham (1979) looked at all well babies born at a specific hospital in upstate New York from 1974 to 1976. All infants who were followed in the hospital clinic at least 6 months were evaluated. Three hundred and forty-eight infants were included in the study. The infants were classified into three groups: breast fed (those receiving some breast milk after 4-1/2 months of age), limited breast fed (those infants weaned between 6 weeks and 4-1/2 months) and artificially fed (those infants who were not breast fed at 6 weeks of age). The study looked at the incidence of illness, and the incidence of hospitalization among the infants. The illnesses looked at were: otitis media, lower respiratory infection, diarrhea and vomiting. The findings of the study showed a 16-fold higher morbidity among artificially fed infants than among breast fed infants for the first 2 months of life. During the first 4 months of life the morbidity was four times greater among the artificially fed infants, and during the first year of life the morbidity of the artificially fed infants was twice that of the breast fed infants (Cunningham, 1979).

A similar study in another upstate New York hospital retrospectively evaluated the charts of all infants (aged 0 to 3 months) admitted to the hospital during the calen-

dar year 1978. A mid-year survey was performed to evaluate the normal incidence of breast feeding within the same community. During the 1 year period, 136 infants were admitted to the hospital for presumed or confirmed infections. Among the hospitalized group, 11% were exclusively breast fed in contrast to 25.2% exclusively breast fed infants in the general population. The study documented a statistically significant over-representation of bottle-fed infants among the infants who were hospitalized for a variety of infections. No bacterial infections were documented among the breast-fed infants, while 27 were documented in the bottle fed infants. The findings of this study suggest that exclusive breast feeding during the first 3 months of life significantly reduces the likelihood of infections in infants (Fallot, Boyd, & Oski, 1980).

In 1979, Chandra reported the results of three prospective studies that had looked at the relationship between breast feeding and the incidence of allergy and infection. The three studies, performed separately, were reported together and documented similar findings.

The first of the studies was performed in urban Canada, and utilized 30 pairs of neonates matched for socioeconomic status, parental education, and for family

size. The study group of infants were exclusively breast fed for at least 2 months of life and breast feeding within this group continued from 4 to 14 months. The control group was fed cow's milk formula, but no breast milk. Parents were contacted by telephone on a bi-weekly basis for a period of 24 months. All morbidity data was recorded, and any diagnosis of illness was confirmed by physical examination. Illnesses documented for study purposes included otitis media, respiratory infections, diarrhea, and dehydration.

In the second study, 35 pairs of neonates were matched for socioeconomic status, parental education and occupation, in rural India. The study group was fed exclusively breast milk for at least two months of life, while the control group was fed fresh cow or buffalo milk from birth. A nurse midwife visited the families on a weekly basis for 1 year and recorded morbidity data. The illnesses looked at in this study included otitis media, respiratory infections, diarrhea and dehydration.

The third study looked at allergic manifestations in the infant siblings of children with known allergic disease. This Canadian study followed two groups of infants for a two year period. The two groups, determined to be statistically similar for socioeconomic variables,

were breast fed (exclusively breast fed for at least the first six weeks of life) or artificially fed (those receiving cow's milk formula prior to six weeks of age). The 74 participants in the study were evaluated periodically for allergic manifestations.

The results of all three of Chandra's studies document the immunologic benefits of breast milk. In each study, the breast-fed infants had significantly fewer episodes of illness or allergy than the artificially fed infants (Chandra, 1979).

The disadvantages of breast feeding are more elusive. Social factors are perhaps the strongest deterrent to breast feeding. The responsibility of feeding a bottle fed baby can be shared by both parents, or even delegated to another party. The responsibility of feeding a breast-fed baby is necessarily that of the mother. If she has other children, or other responsibilities such as working, the task of feeding the infant every few hours around the clock may seem tedious and undesirable. Scheduling one's shopping, and other outings to avoid feeding time can also be very complex.

The nursing mother also faces the possibility of related problems: Sore nipples, mastitis, leaking, vaginal dryness, uterine contractions, etc. Whereas these

problems are rarely noteworthy when appropriately managed, the prospect may discourage ambivalent mothers from attempting to breast feed (Ross Roundtable Report, 1980).

One additional disadvantage to breast feeding is that it does not provide tangible evidence showing how much the baby has consumed. Without this visible evidence, some mothers may have difficulty in evaluating whether or not the infant has had enough to eat (Magnus, 1978).

#### The Insufficient Milk Syndrome

Insufficient milk, whether real or perceived, is an unfortunate and self-perpetuating phenomenon. Maternal anxiety delays the let down reflex. The infant's crying increases maternal anxiety, increases the infant's caloric needs, and interferes with sucking. Insufficient sucking prevents emptying of the breasts, and this decreases the milk supply. These factors may reinforce one another until supplemental feeding becomes necessary. That too will contribute to a decrease in the milk supply, and the inevitable outcome is early weaning (Gussler & Briesemeister, 1980).

A medical anthropological study performed by Gussler and Briesemiester was composed of a comprehensive review of the scientific literature reporting cases of early

termination of breast feeding. The general definition utilized for early termination of breast feeding is cessation of breast feeding prior to 6 months of age. Their investigation, which evaluated research done in 33 separate studies done in various countries, revealed that in nearly every case the most frequently cited reason for early termination of breast feeding is "insufficient milk". The dichotomy of the phenomena is that the medical literature consistantly reports that breast milk supply is a function of supply and demand. The greater the caloric needs of the infant, the more vigorous sucking, and the maternal response is to produce more breast milk (Magnus, 1978).

The Role of the Health Care Team  
in Promoting Successful  
Breast Feeding

As the medical community has become more aware of the role of breast milk in maintaining the infant's health, it has accepted more responsibility in the promotion of breast feeding. Gussler and Briesemeister (1980) noted that physicians and nurses play important roles in facilitating the hospitalized mother's initiation of a breast-feeding relationship with her infant. Lawrence (1980) stated that pediatricians can and do play a key

support person to the breast-feeding mother in the antepartum, labor and delivery, and in postpartum areas. In each setting, the nurse plays a significant role in helping the mother to initiate and to maintain a successful breast-feeding relationship with her infant. Health team intervention will be the most effective if primary prevention is practiced. Early support and education of the mothers by the health care delivery team, may avert maternal anxiety reactions altogether, or provide her with resources to cope with problems that arise.

The significance of success or failure at breast feeding goes beyond the physiological aspect of nourishment. It is a form of maternal/infant communication. The success or failure of the early breast-feeding experience can enhance or interfere with all aspects of the maternal infant relationship (Leighton, 1978).

#### Summary

Breast feeding has been the subject of considerable study by both researchers and lay groups. Despite this, there remains much to be learned. The lack of educational resource material for the health professionals is an area that is currently being acknowledged and addressed.

Infant feeding practices are subject to the influence of a variety of socioeconomic variables. There remains sharp discrepancies in the incidence of breast feeding among the social classes within this country. The immunological benefits of breast milk are well documented. Studies consistently show fewer illnesses, fewer hospitalizations and fewer infections among breast-fed babies than among artificially fed babies. The insufficient milk syndrome has been cited as being the single most important factor in the early termination of breast feeding. As the health care delivery team has become more aware of the role of breast milk in the maintenance of the infant's health, it has accepted more responsibility in the promotion and support of breast feeding. Health care team intervention is most effective when primary prevention is practiced. The ability of the mother to establish a successful breast-feeding relationship with her infant can enhance or interfere with all aspects of the maternal/infant relationship.



## CHAPTER 3

### PROCEDURE FOR THE COLLECTION AND TREATMENT OF DATA

The following is a discussion of the procedure utilized in the collection of and the statistical treatment of the data. The setting, population, and sample are described, as is the procedure for protection of human subjects.

The study is a direct comparison of proportions from survey results of two independent samples. Polit and Hungler (1978) pointed out that "survey data plays an important role in areas about which very little is known" (p. 200). In this case, very little has been published regarding the success rate of breast feeding. "Survey research is that branch of research which examines the characteristics, behaviors, attitudes, and intentions of a group of people" (Polit & Hungler, 1978, p. 206).

Once the survey results were compiled, a comparison of the success rate at breast feeding was done. "The calculation of proportions is generally effected in order that, once calculated, they may be used in further applications" (Reichmann, 1962, p. 84). By reviewing the

proportions of successful/unsuccessful relationships in each group, some insight into whether or not the breast-feeding inservice educational program has any effect on the success rate was revealed.

#### Setting

This study utilized the facilities of a 450-bed metropolitan hospital located in the Southwest. The hospital has about 3,400 deliveries per year. The nursing staff to whom the program was presented was from the areas of antepartum, labor and delivery, postpartum, and well-baby nursery.

The subjects participating in the surveys were selected from the postpartum areas. The homes of the subjects were the locations where the questionnaires were received and completed.

#### Population and Sample

This study utilized an accessible population which is defined by Polit and Hungler (1978) as the group of cases which conform to specific criteria and are available to the researcher. Two surveys were done on independent samples: one prior to and one following the nursing staff breast-feeding inservice educational program.

The sampling technique was convenience sampling. Polit and Hungler (1978) defined convenience sampling as the use of the most readily available persons.

The population of interest was all mothers who chose to breast feed their infants. The samples included those mothers who were in the postpartum unit of the hospital at the time the survey was taken who met the following criteria: (a) carried the baby to term (38-41 weeks by gestational age), (b) had a single primiparous birth, (c) was at least 18 years of age, (d) indicated on the hospital chart that breast feeding was the mode of choice for infant feeding, (e) was free from chronic or acute illness, and (f) was able to read and write English, as determined by their return of the questionnaire.

These criteria were selected to limit the sample to adult women who had made the decision to breast feed at the time of admission to the hospital. Eliminating women who had multiple births, those who have had previous personal experience with breast feeding, and those dyads who experienced illness decreased the chances of other factors influencing the findings.

Names of participants were selected from the charts of the infants in the well-baby nursery. Four weeks after the initiation of the survey a letter (Appendix A) and

questionnaire (Appendix B) and a questionnaire containing demographic information (Appendix C) were mailed to each participant. An enclosed, stamped, addressed envelope was included to facilitate response. Since the gathering of names took place over a 3 week period, and it was desired to contact the dyads approximately 4 weeks postpartum, the mailing took place in weekly batches.

#### Protection of Human Subjects

The rights of the subjects were protected. Prior to the initiation of the study, the proposal was submitted to the Human Research Review Committee of Texas Woman's University (Appendix D). Permission was obtained from the Research Review Committee of the hospital (Appendix E), and from the supervisors of the departments in which the study was to be performed. All questionnaires were handled anonymously, as was described in the letter to the participants. The right to refuse to participate was also described in the letter, which was included in Appendix B. The study was exempt in compliance with risk category 1 of the Federal Regulations for Protection of Human Subjects and therefore did not necessitate committee review.

### Instruments

Two instruments had been developed for use within this study. One of the tools was a demographic questionnaire. Seven questions were asked that identified the population in terms of baby's sex, maternal age, ethnic group, household income, educational level, whether the mother was breast fed as an infant, and whether the mother was working outside the home. All of these variables have been shown to bear a significant influence on the incidence and duration of breast feeding (Martinez & Nalezienski, 1979; Hopkinson, Note 2).

A second instrument was designed to determine whether those mothers who chose breast feeding as their mode infant feeding were successful. This questionnaire was composed of five questions that discussed the frequency of breast feeding, the reasons for supplementation, and whether or not the infant had a satisfactory weight gain. A detailed discussion of each question will follow the section on scoring and interpretation. This instrument was designed and modified with the advice of a panel of experts. Face validity of the instruments was confirmed by the panel of experts. The panel utilized was composed of (a) a physician specializing in neonatology,

(b) a physician specializing in family medicine, and (c) a professional breast-feeding consultant (Erickson, Note 1; Hopkinson, Note 2; Laos, Note 3)

Two additional questions pertained to the health of the dyad. All dyads with significant health problems were deleted from the study.

A breast-feeding inservice educational program for nursing staff was designed by the researcher for use in this study. The contents of the program appear in Appendix F. The program was designed for use in the hospital selected for the study, and was set up according to the protocol format of the hospital. Eight members of the hospital staff reviewed the program and contributed the contents. The staff members cooperating were: The director of newborn services, the assistant director of newborn services, the head nurse of the well-baby nursery, the head nurses of the postpartum and postpartum overflow units, the neonatal nurse practitioner, and the maternal-child services coordinator. The program was presented to the staff in the antepartum, labor and delivery, postpartum, and well-baby nursery areas. Attendance by nursing staff members was considered mandatory.

The instrument developed to determine success or lack of success in breast-feeding relationship is composed of five questions. Each question has been assigned a value, with the total possible score being 60 points. The method for interpreting the questionnaire was as follows:

Question 1: Are you still breast feeding your baby?

Participants responding yes were given 10 points; those responding no were given no points.

Question 2: How many times a day do you breast feed your baby?

Participants responding 1 time or more received 10 points.

Question 3: Are you giving your baby any other foods or liquids?

All participants exclusively breast feeding or supplementing with water only were given 10 points, those giving formula, juice, or solids received no points.

Question 4: Why did you begin feeding your baby the above items?

Participants who were not supplementing, or who began supplementation because it was the "right time" to start received 10 points.

Participants who indicated that supplementation was started because it was inconvenient to breast feed, were given 5 points.

Participants who indicated that supplementation was begun because of "not enough breast milk" received no points. All literature reviewed consistently noted that breast milk production is a function of supply and demand.

Question 5: Is the baby growing/gaining weight to your satisfaction?

Participants who were satisfied with their infants weight gain received 20 points. Those who were not satisfied received no points.

Sixty points are possible to attain by this method of scoring. It has been determined that any score above 40 was considered successful, and any score 40 or below was considered unsuccessful. The scoring system was evaluated and agreed upon by the team of experts.

#### Data Collection

The first study period was the 3-week period prior to the initiation of the nursing staff inservice program on breast feeding. The charts of all the mothers whose infants were admitted to or already in the well-baby nursery during the first study period were reviewed. All



mothers who met the study criteria were considered subjects. Staff members indicated about 30 mothers per week would meet the criteria. A record was made of the subjects' names and addresses. This group of subjects was referred to as the "prior to" group.

The following week a nursing staff inservice educational program on the subject of breast feeding was initiated. The program was taught repeatedly over a 3-week period to accommodate maximum staff participation.

Four weeks after the beginning of the first study period, letters, questionnaires, and return envelopes were mailed to the subjects in the "prior to" group. Mailings were made on a weekly batch basis so that the infants of the participants would all be approximately 4 weeks of age at the time the questionnaire was received.

The week following the conclusion of the nursing staff education inservice on breast-feeding, a second 3-week study period began. The method for gathering subjects was identical to the method used the first study period. This group will henceforth be referred to as the "following" group.

Four weeks after the commencement of the second study period, subjects in the "following" group were mailed letters, questionnaires, and return envelopes. The weekly

mailing procedure was repeated so that the infants in this group were also approximately 4 weeks of age.

#### Treatment of the Data

All returned questionnaires were reviewed and it was determined whether or not the subject had developed a successful breast-feeding relationship with her infant. All dyads in which either the mother or infant had had significant health problems or was on medications other than analgesics were deleted from the study.

Descriptive statistics were used to summarize the demographic variables. The demographic qualities considered were maternal age, race, income and educational level, and whether or not she was breast fed as an infant.

The hypotheses that: There will be no difference in the breast-feeding success rate of the maternal/infant patients population prior to a nursing staff education program on the topic of breast feeding, as compared to the success rate of breast feeding in the maternal/infant patient population after such an educational program, was tested using the chi-square test.

Polit and Hungler (1978) stated that:

The chi-square statistic is used when we have categories of data and hypotheses concerning the proportions of cases which fall into various categories. . . . The chi-square statistic is

applied to contingency tables to test the  
significance of different proportions. (p. 559)

Significance was considered to be at the .05 level. Analysis of the results was done on the computer at Texas Woman's University.

## CHAPTER 4

### ANALYSIS OF THE DATA

This study looked at the breast-feeding success rate of two independent groups. A tool was developed to evaluate the success or lack of success of the establishment of satisfactory breast-feeding relationships among maternal/infant dyads 1 month postpartum. A teaching program was developed to provide inservice education on the topic of breast feeding to the nursing staff who are responsible for the care and education of the dyads while they are in the hospital. The two independent groups looked at were those maternal/infant dyads who were in the hospital the week prior to and the week following the presentation of the breast-feeding inservice educational program for the nursing staff. The hypothesis for the study was: There will be no difference in the breast-feeding success rate of the maternal/infant patient population prior to an educational program on the topic of breast feeding for the nursing staff, as compared to the success rate of breast feeding in the maternal/infant patient population after such an educational program.

### Description of the Sample

The hospital utilized in the study was a 450 bed metropolitan hospital, currently delivering approximately 3,400 babies per annum. The obstetrical, postpartum, and neonatal areas all fall under the division of Maternal Child Health. Within the obstetrical, postpartum, and neonatal areas, a total of 94 registered nurses, 5 licensed vocational nurses, and 11 nursing assistants were employed at the time the program was presented. Four additional registered nurses are employed in affiliated administrative or educative roles. The nurses in the area of postpartum and well-baby nursery are those with the primary responsibility for educating and supporting the breast-feeding dyads in their early breast feeding experiences. Staff members estimate that the average, uncomplicated obstetrical patient establishes communication with a minimum of 8 members of the nursing team, and more likely 10 to 12 members of the nursing team.

The breast-feeding inservice educational program for the nursing staff was repeated 12 times during the 3-week interval between samples. The presentations were made at times selected by members of all three shifts, and were presented at the times described as being convenient for staff members to attend. The total number of staff

members attending was 75 (79%). A breakdown of the attendance, by department, is presented in Table 1.

A total of 50 questionnaires were mailed out, 25 in each of the pre and post inservice educational program groups. Nineteen questionnaires (76%) were returned from the pre-educational inservice group. Of those, two participants were eliminated; one due to health complications in the mother, and one due to health problems in the infant. Fifteen questionnaires (60%) were returned from the post group, all of which were utilized. All participants met the criteria for inclusion within the study.

An overall success rate of breast feeding was found to be 84%. The distribution of breast-feeding success rate within the two groups is illustrated in Table 2. It is noted that a larger percentage of mothers were successful in the prior to breast-feeding inservice educational program than in the group following the breast-feeding inservice educational program for the nursing staff.

### Findings

The hypothesis: There will be no difference in the breast-feeding success rate of the maternal infant patient population prior to an inservice educational program on the topic of breast feeding for the nursing staff, as

Table 1  
An Analysis of Nursing Staff Attendance at the Breast-feeding  
Inservice Educational Program

Department	RNs	LVNs	NAs
Labor & delivery	17 of 30 (56%)	n/a	n/a
Postpartum	12 of 12 (100%)	4 of 5 (80%)	n/a
Well-baby nursery	13 of 17 (76%)	n/a	6 of 11 (54%)
Neonatal ICU	25 of 35 (66%)	n/a	n/a

Table 2

Distribution of the Maternal/infant Breast-  
feeding Success Rate in the Prior to and  
Following Breast-feeding Inservice  
Educational Program for the  
Nursing Staff Groups

	Prior to Group ( <u>n</u> = 17)	Following Group ( <u>n</u> = 15)
Successful	15 (88%)	12 (80%)
Unsuccessful	2 (12%)	3 (20%)

compared to the success rate of breast feeding in the maternal/infant patient population after such an educational program, was tested using the chi squared test with one degree of freedom. The value obtained is  $\chi^2 = 0.68$ ,  $p = .410$ . The null hypothesis is supported by these findings.

The chi squared analysis is based upon the assumption that the expected cell size in the 2 x 2 design will be equal to or greater than five. In this case we find that the distribution does not meet this criteria. Siegle (1956) stated that:

The Fisher exact probability test is an extremely useful nonparametric technique for analyzing discrete data (either nominal or ordinal) when the two independent samples are small in size.  
(p. 96)



This stance is supported by Lombard (1975), who stated that:

Occasionally a sample is small or a moderate size sample has data that contain a rear event, so the expected value for one or more of the boxes in a 2 x 2 table is less than five. When this occurs the usual methods of analysis may be invalid. Fisher devised a technique for determining the probability of observing a set of frequencies, plus any more extreme sets, which he called the "exact treatment of a 2 x 2 table." (p. 93)

The Fisher exact probability test was run, and value obtained was  $p = 0.44$ . The results of the Fisher exact probability test agreed with the results obtained from the chi squared test.

#### Additional Findings

In previous studies reported in the literature, a number of sociological factors are attributed with bearing a statistically significant influence on the incidence and duration of breast feeding. The criteria for inclusion within this study controlled some of the phenomena. Other factors, for which there was no control, were included on the questionnaires. When the data was gathered, the variables were isolated and statistical analyses were run. The purpose of this was to evaluate whether any of these factors may have introjected an overriding influence on the outcome of the study. It was discovered that none of

the variables had any statistically significant influence on the outcome of the study.

Education and income levels have both been reported to positively influence the success rate of breast feeding (Hopkinson, Note 2). Working outside of the home is another variable that can interfere with the establishment of a successful breast-feeding relationship (Gussler & Briesemeister, 1980). Table 3 illustrates the distribution of income level, educational level, and employment status of the participants within this study.

The additional variables looked at include maternal age, ethnic background, and whether the mother was breast fed as an infant. An extensive review of the literature failed to produce any that looked specifically at this information; however several sources suggested that they may play a role in the development of a breast-feeding relationship (Gussler & Briesemeister, 1980). Table 4 illustrates the maternal age, ethnic identification, and whether or not the mothers had been breast fed as infants.

In addition to the variables that are introduced with the maternal population, there are also some variations in the groups of infants. Of the infants included in the study, 34% of the infants were male. The distribution of the infants' sex in each group is illustrated in Table 5.

Table 3

Maternal Income and Educational Levels,  
and Whether or Not Mothers are  
Employed Outside of the Home

	(n = 17) Prior to		(n = 15) Following	
	Success- ful	Unsuccess- ful	Success- ful	Unsuccess- ful
Income: \$/year				
Under 10,000	1 (06%)	0	1 (07%)	0
10,000-20,000	3 (18%)	0	2 (13%)	0
20,000-40,000	9 (52%)	1 (06%)	7 (47%)	1 (07%)
Over 40,000	0	1 (06%)	2 (13%)	2 (13%)
No answer	2 (12%)	0	0	0
Education				
8th grade or below	1 (06%)	0	0	0
High school graduate	5 (29%)	0	2 (13%)	0
Some college	5 (29%)	1 (06%)	5 (33%)	2 (13%)
College graduate	4 (24%)	1 (06%)	4 (27%)	1 (07%)
Graduate school	0	0	1 (07%)	0
Work outside home				
Yes	4 (23%)	1 (06%)	2 (13%)	1 (07%)
No	11 (65%)	1 (06%)	10 (67%)	2 (13%)

Table 4

Maternal Age, Ethnic Group and Whether the  
Mothers had been Breast Fed as Infants

	Prior to (n = 17)		Following (n = 15)	
	Successful	Unsuccessful	Successful	Unsuccessful
Maternal age, in years				
18-25	6 (35%)	1 (06%)	4 (26%)	0
26-30	9 (53%)	1 (06%)	7 (47%)	2 (13%)
31-35	0	0	1 (07%)	1 (07%)
Ethnic Group				
White	13 (76%)	2 (12%)	12 (80%)	3 (20%)
Hispanic	2 (12%)	0	0	0
Mother breast fed as baby				
Yes	7 (41%)	1 (06%)	3 (20%)	2 (13%)
No	8 (47%)	1 (06%)	9 (60%)	1 (07%)

Table 5  
The Sex of the Infants  
Included in the Study

	Prior to (n = 17)		Following (n = 15)	
	Successful	Unsuccessful	Successful	Unsuccessful
Boy	6 (35%)	2 (12%)	1 (07%)	2 (13%)
Girl	9 (53%)	0	11 (73%)	1 (07%)

An effort was made to mail the questionnaires so that the mother would receive them when the baby was 3-1/2 weeks of age. Although the accompanying letter requested that the forms be completed "today", most of the mothers retained the forms for several days or longer. The age of the baby was determined by asking today's date, and the baby's date of birth. The variation in the ages of the infants is larger than desired. It is noted that the infants in the pre-group ( $\bar{x} = 35$ ) are older ( $t(30) = 2.12$ ,  $p = 0.042$ ) than the infants in the post-group ( $\bar{x} = 31$ ). Due to the decreasing likelihood of success over time, and the higher proportion of successful dyads in the older group, this finding was judged not to be clinically significant. The age distribution of the infants included in the study is illustrated in Table 6.

Table 6  
Age Variations of the Infants  
Participating in the Study

	Prior to (n = 17)		Following (n = 15)	
	Successful	Unsuccessful	Successful	Unsuccessful
Mean age	34.50 days	39.00 days	31.70 days	30.00 days
Standard deviation	3.81 days	11.30 days	6.30 days	2.52 days
Maximum age	41.00 days	47.00 days	45.00 days	33.00 days
Minimum age	29.00 days	31.00 days	23.00 days	28.00 days

An additional factor looked at was supplementation of the successful breast-fed babies. Although literature clarifies that supplementation is unnecessary for the breast-fed infant's first 6 months of life, supplementation often begins much earlier in our culture (La Leche, 1978). This study found that among the successful mothers ( $n = 27$ ), 12 (41%) supplemented the infants with formula, juice, or cereal. Table 7 shows the distribution of supplementation in the successful dyads.

Table 7  
Supplementation of Successfully  
Breast-fed Infants

	Prior to ( $n = 17$ )	Following ( $n = 15$ )
Supplemented	8 (53%)	3 (25%)
Breast milk only	7 (45%)	9 (75%)

Participating mothers were asked to use the back of the questionnaires if they had any additional comments. In the "Prior to" group, four mothers wrote that they did not receive any instructions or support from the nursing staff. One commented that she had used The Womanly Art of Breastfeeding as her primary source of information. In

the "Following" group, one mother wrote that the nurses were helpful. These and a few other comments were felt to be of a personal nature and not considered to be statistically significant.

#### Summary of Findings

The breast-feeding inservice educational program for the nursing staff was presented a total of 12 times. The overall attendance by the nursing staff was 79%. Fifty questionnaires were mailed out, 25 each in the pre and post groups. A response rate of 68% yielded 32 usable participants. Among the respondents, the overall success rate was 84%. Of the infants participating in the study, 34% were male. The infants ranged in age from 23 to 41 days of age. The mean age of the pre group was statistically higher than that of the post group.

The distribution of the data collected did not meet the criteria for chi squared analysis, so a Fisher exact probability test was run. Although there was a higher percentage of successful dyads in the pre group than in the post group, a statistically significant difference between the two groups did not exist. The null hypothesis was supported.



## CHAPTER 5

### SUMMARY OF THE STUDY

This study has addressed the concept of success at breast feeding. It has looked at the prospect of enhancing success among maternal/infant patient population by educating the nursing staff members who work with the mothers during their hospital stay.

#### Summary

Breast feeding is a practice that has been subject to the influence of a wide variety of socioeconomic variables. The immunological benefits of breast feeding are well documented. Health professionals have a responsibility to educate mothers in the benefits of breast feeding as a means of primary prevention. Support by the health care delivery team may specifically serve to avert the development of the insufficient milk syndrome. The question is raised as to whether the nursing staff who is more knowledgeable on the topic of breast feeding will offer more meaningful and more effective support to the breast-feeding maternal/infant dyad than will the nursing staff who is less knowledgeable on the topic.

The problem addressed by this study was: Is there a difference in the breast-feeding success rate among the maternal/infant patient population prior to and following a breast-feeding inservice educational program for the nursing staff.

The hypothesis for the study was: There will be no difference in the breast-feeding success rate of the maternal/infant patient populations prior to a breast-feeding inservice educational program for the nursing staff as compared with the breast-feeding success rate in the maternal/infant population after such a program.

The setting utilized for the selection of subjects was a 450 bed metropolitan hospital delivering approximately 3,400 babies per year. Two surveys were performed on independent convenience samples; one prior to and one following an inservice educational program on the topic of breast feeding for the nursing staff. A breast-feeding protocol was designed. The protocol was introduced to the nursing staff in this inservice educational program. An instrument in the form of a mailed questionnaire was also designed for use within the study. The questionnaire determined the success or lack of success at breast-feeding endeavors 1 month postpartum.

### Discussion of the Findings

Mandler's (1975) theory of interruption was utilized to identify factors that may affect the mother's ability to assimilate information relative to the care and feeding of the infant. The time period that seems best to match the period of highest maternal cognitive efficiency is the first few days immediately postpartum. Support and information given to the breast-feeding mothers during the first few days postpartum may have a more meaningful and far reaching effect than the same information offered at an earlier or later date.

Perhaps the most interesting information produced by this study is the delineation of a success rate at breast feeding within this particular patient population. The relatively high success rate suggests that this population may have entered the study with a higher level of skill or knowledge than average. The additional support offered during the period of highest maternal cognitive efficiency may have been irrelevant to a group pre-destined for a high rate of success. This period of maternal cognitive efficiency, as determined by utilizing Mandler's (1975) theory of interruption, is vulnerable to a wide range of support measures offered by the nursing staff. The broader results of increased nursing support to the

maternal/infant dyads are more discrete and may be expressed only in alterations of the mother's perception and appreciation of the services offered by the health care delivery system.

### Conclusions and Implications

A number of conclusions may be derived from the results of this study. Among them are:

1. The nursing staff inservice educational program on the topic of breast feeding did not seem to have any effect on the success rate of breast feeding in the patient population.
2. The overall success rate of breast feeding in the patient population was measured at 84%. This percentage is higher than noted in similar studies referred to in the review of literature.
3. No significant relationships were noted in the variables that were evaluated. These variables were: maternal income level, employment status, age, ethnic group, whether the mother had been breast fed as an infant, and the sex and age of the infant.

The nursing implications derived from this study are:

1. Nursing staff should be familiar with the patient population whom they serve. The socioeconomic variables

and the health belief concepts within the population served will affect how nursing actions are perceived and followed through.

2. Interventions should be directed at the specific problems which they are designed to affect. Approaching a patient behavior or compliance problem by modifying the behavior of the nursing staff may not be the most efficient way to produce positive results.

3. Nursing administrators should be familiar with the perceived needs of the nursing staff members. The introduction of an inservice over an area where the nursing staff does not perceive a deficit may not yield positive results.

#### Recommendations for Further Study

The following recommendations for future studies are suggested:

1. To design a study using a larger sample that would evaluate the success rate at breast feeding among various ethnic and socioeconomic groups.

2. To design a study that will evaluate the effect of educational programs for parents on the success rate of breast feeding.

3. To establish an inquiry into patient perceptions of support measures offered by the nursing staff to breast-feeding mothers.

4. To establish an inquiry into the nursing staff's perception of their role in support of breast-feeding mothers.

5. To establish an evaluation tool that would measure the level of knowledge on the topic of breast feeding for use with maternal/child nurses.

## APPENDIX A

Dear Participant:

I am involved in a study to evaluate the success rate of mother/infant breast-feeding relationships, and I am asking for your help.

You will not receive any pay or compensation for participating, but you may feel some satisfaction in knowing that you are helping with this study. The goals for the study are to identify and clarify ways in which the hospital nurse can help the mother/infant pair to develop a good breast-feeding relationship.

All questionnaires will be handled anonymously, and results will be compiled without any attempt to identify the participants. Some descriptive questions are included to help clarify other factors which may contribute to the development of a good mother/infant breast-feeding relationship. Please do not answer any question that you feel is too personal. Your return of the completed questionnaire will be interpreted as informed consent to participate in this study.

I will appreciate it very much if you will take 3 to 7 minutes to complete the enclosed questionnaire, and return it to me as soon as possible. Please do it today.

If you wish any further information regarding this study, I will be happy to answer your questions. My telephone number is 371-4352.

Thank you very much for participating.

Sincerely,

Roxanna Klein, R.N.  
Graduate Student  
Texas Woman's University

PLEASE RETURN THE QUESTIONNAIRE EVEN IF YOU DO NOT WISH TO PARTICIPATE.



## APPENDIX B

COMPLETION AND RETURN OF THIS QUESTIONNAIRE CONSTITUTES  
INFORMED CONSENT TO SERVE AS A SUBJECT IN THIS STUDY

Today's date \_\_\_\_\_

Baby's birth date \_\_\_\_\_

PLEASE CHECK THE CORRECT ANSWER

1. Are you still breast-feeding your baby?

- ☐ Yes  
☐ No

2. How many times a day do you breast-feed your baby?  
(approximately)

- ☐ 1 time  
☐ 2 times  
☐ 3 times  
☐ 4 times  
☐ more

3. Are you giving your baby any other foods or liquids?

- ☐ breast milk only  
☐ water  
☐ formula  
☐ juices  
☐ solids  
☐ other \_\_\_\_\_

4. Why did you begin feeding your baby the above items?

CHECK ONE ANSWER ONLY

- ☐ It was the right time to start, the baby  
was old enough.  
☐ I didn't have enough breast milk.  
☐ It was too inconvenient to breast feed all  
the time.

5. Is your baby growing and gaining weight to your satisfaction?

- ☐ Yes  
☐ No

## APPENDIX C

## THESE QUESTIONS ARE FOR DESCRIPTIVE PURPOSES ONLY

1. The baby is a:    ☐ boy  
                         ☐ girl
  
2. My age is:        ☐ 18-25 years  
                         ☐ 26-30 years  
                         ☐ 31-35 years  
                         ☐ 36 years and over
  
3. I belong to this ethnic group:  
                         ☐ White  
                         ☐ Black  
                         ☐ Mexican, Spanish, Latin American  
                         ☐ Oriental  
                         ☐ Other \_\_\_\_\_
  
4. What is your household income range?  
                         ☐ Under \$10,000 a year  
                         ☐ \$10,000-\$20,000 a year  
                         ☐ \$20,000-\$40,000 a year  
                         ☐ Over \$40,000 a year
  
5. What is the highest level of school that you have completed? (circle)  

Grade	1	2	3	4	5	6	7	8	
High school	1	2	3	4	GED				
College	1	2	3	4					
Graduate school	1	2	3	_____					
  
6. Were you breast-fed as a baby?  
                         ☐ Yes  
                         ☐ No
  
7. Are you working outside the home at this time?  
                         ☐ Yes  
                         ☐ No
  
8. Is your baby in good health?  
                         ☐ Yes  
                         ☐ No (please explain) \_\_\_\_\_

9. Have you had any health problems since the baby was born?

( ) Yes (please explain) \_\_\_\_\_

( ) No \_\_\_\_\_

IF YOU HAVE ANY ADDITIONAL COMMENTS, PLEASE USE THE BACK OF THIS PAPER.

THANK YOU.

## APPENDIX D



P.O. Box 22479, Denton, Texas 76204 (817) 383-2302, Metro 434-1757

THE GRADUATE SCHOOL

June 1, 1983

Mrs. Roxanna Lucy Klein  
606 Misty Glen Lane  
Dallas, TX 75232

Dear Mrs. Klein:

I have received and approved the Prospectus for your research project. Best wishes to you in the research and writing of your project.

Sincerely yours,

A handwritten signature in dark ink that reads "Robert S. Pawlowski / RPV". The signature is written in a cursive, flowing style.

Robert S. Pawlowski  
Provost

tb

cc Dr. Sandra Strickland  
Dr. Anne Gudmundsen

## APPENDIX E



TEXAS WOMAN'S UNIVERSITY  
COLLEGE OF NURSING

AGENCY PERMISSION FOR CONDUCTING STUDY\*

THE \_\_\_\_\_  
GRANTS TO ROXANNA E. KLEIN RN  
a student enrolled in a program of nursing leading to a  
Master's Degree at Texas Woman's University, the privilege  
of its facilities in order to study the following  
problem.

BREAST-FEEDING SUCCESS RATE:

A COMPARISON OF TWO GROUPS

The conditions mutually agreed upon are as follows:

1. The agency (~~may~~) (may not) be identified in the final report.
2. The names of consultative or administrative personnel in the agency (~~may~~) (may not) be identified in the final report.
3. The agency (wants) (~~does not want~~) a conference with the student when the report is completed.
4. The agency is (willing) (~~unwilling~~) to allow the completed report to be circulated through interlibrary loan.
5. Other \_\_\_\_\_

4-19-83  
Date

Deborah Braden, RN, MS  
Signature of Agency Personnel

Roxanna E. Klein RN  
Signature of Student

Jandea Shukland, RN  
Signature of Faculty Advisor

## APPENDIX F

## BREAST FEEDING PROTOCOL

PURPOSE: To assist the mother/infant dyad in establishing a successful breast feeding relationship.

To communicate to the mother of the dyad that staff members are knowledgeable and concerned with the establishment of the breast feeding relationship.

To assure that the breast fed infant receives adequate nutrition during the initial neonatal period.

To promote skin and nipple care for the breast feeding mother.

To identify and provide early intervention for problems related to the breast feeding experience.

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Information Relative to the  
First Feeding

<u>Essential Steps</u>	<u>Key Points</u>
<u>Preparing for the First Feeding</u>	
1. Instruct mother to wash hands before feeding.	
2. Encourage use of a good nursing support bra.	Sagging of the breasts can block drainage passages and impede proper lactation.
3. Familiarize the mother with various feeding positions.	
4. Allow the mother to position herself comfortably.	
5. Position the baby at the mother's breast.	The weight of the baby should not be allowed to pull at the breast.
6. Assure that the mother feels comfortable in the selected position.	
7. Discuss technique for initiating nursing, timing, terminating, and burping.	These cover the key points for the first nursing experience. Other points may be gone over at the next opportunity.
8. Educate mother as to the presence of and purpose of colostrum.	Is present from the late prepartum period until 2-3 days postpartum: <ol style="list-style-type: none"> <li>a. serves as laxative for baby</li> <li>b. keeps the baby hydrated</li> <li>c. provides some nutrients and antibodies for the baby</li> <li>d. opens the ducts for milk collection</li> </ol>

## Essential Steps

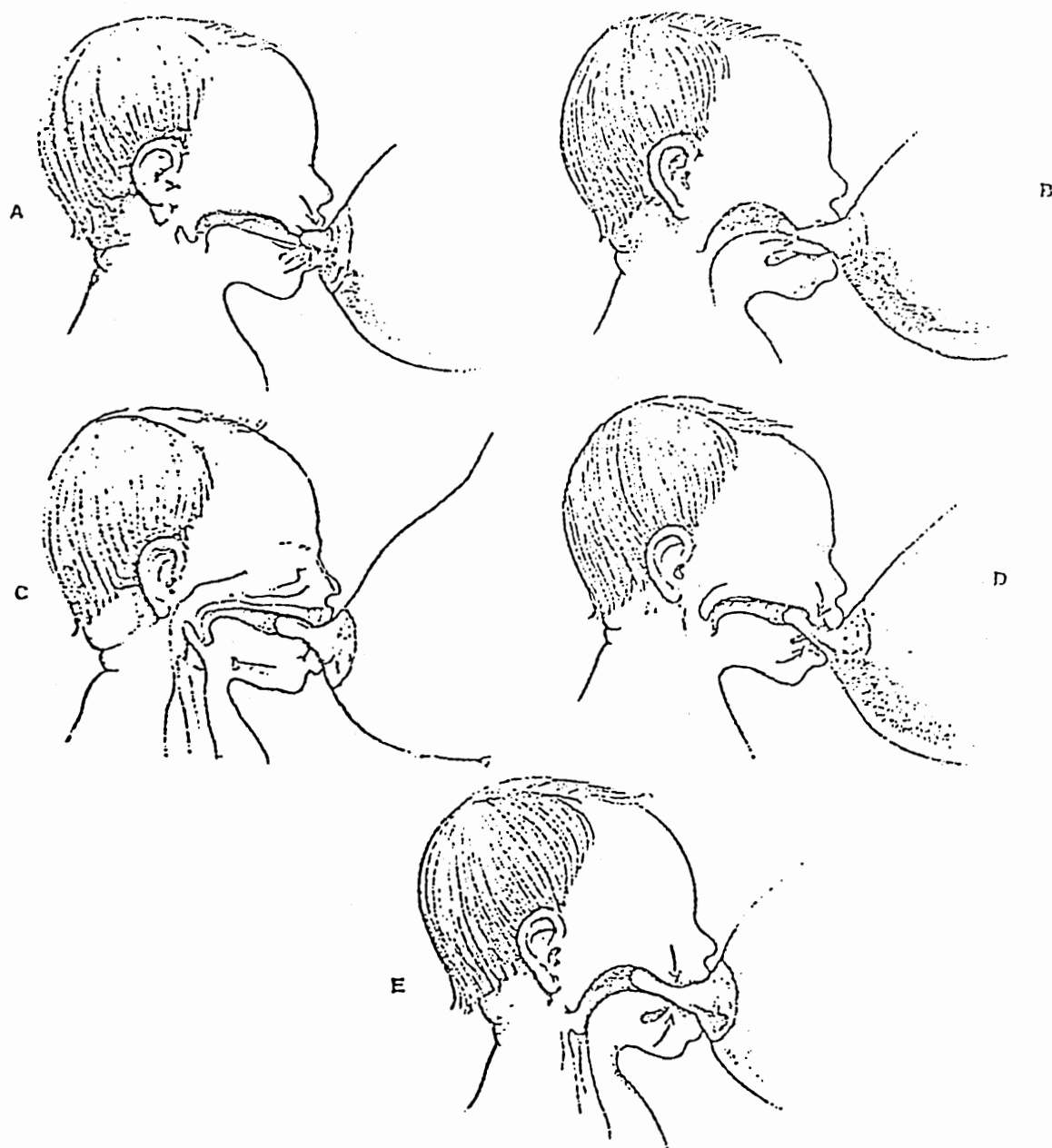
## Key Points

### Positioning and Rotation of Positions

- |   |  |
|---|--|
| 1. Standard positions:  | The weight of the baby should never be allowed to pull on the breast.  |
| a. Cradling in the mother's arms, mother sitting.   | Cradling is the position of choice following a C-section. The knees may be elevated to reduce stress on the incision.  |
| b. Football hold: mother sitting, baby tucked under the arm corresponding to the breast from which he is feeding. |  |
| c. Side lying: mother and baby both lying on their sides facing one another.                                      | Usually the position of choice following vaginal delivery. It avoids the discomfort of pressure on the episiotomy and vaginal tissue. Having the head of the bed slightly elevated will discourage milk drainage into the baby's ear canals. |
| 2. Pillows may be utilized under the baby, behind the mother's back, and under the mother's selected position.    |  |
| 3. Alternate starting side with each feeding.   | Suck is strongest when the baby is hungriest. Safety pin on the bra strap may help the mother to remember which side to begin on.  |
| 4. Rotation of feeding positions will help to prevent soreness of the nipples.                                    | The stress is greatest in a line from the infant's nose to chin.   |

Illustration: Position and Tongue Stroke of the Infant Breast Feeding.

(a) Infant grasps breast, (b) tongue moves forward to draw nipple in, (c) nipple and areola move sucked toward palate, (d) tongue moves along nipple, pressing it along hard palate, (e) ducts under aerola are milked, flow begins. (Lawrence, 1980)



Essential Steps	Key Points
<u>Initiating Nursing</u>	
1. The rooting reflex is useful to get the baby to turn toward the nipple.	Avoid touching the baby's opposite cheek as it may confuse him.
2. The nipple and areola must be taken into the baby's mouth.	Nursing action exerts pressure on the collection sinuses behind the areola.
3. If the baby does not suck, move his chin in a chewing motion or stimulate the baby in some way to increase his awareness.	Some babies need to be aroused repeatedly.
4. Teach mothers to assure that the infant's nose is not blocked by the breast. (Pressing back on the breast with the index finger to keep breast tissue from compressing nostrils.)	Neonates are obligate nose breathers and can experience difficulty breathing.
5. Instruct mothers to expect intermittent nursing. If the nipple is not released, total timing should include rest periods.	
6. Emphasize that the technique that is easiest will be developed over the first few days or weeks.	Technique is not instinct, but must be learned by mother and infant.



Essential StepsKey Points

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Timing

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| 1. Both breasts should be used at each feeding. Five minutes/breast will be sufficient on delivery day.  | Some pediatricians have a specific schedule they prefer the mother to stay on. |
| 2. Gradually increase feeding time to 10-20 min/breast over the first week.  |  |
| 3. Instruct the mother that different babies feed at different rates, and that as she becomes more familiar with her baby, she will learn how long he takes. | The normal range for breast milk flow time is 4-18 minutes.                    |

Terminating the Feeding

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| 1. The mother should use her little finger to break the suction of the baby's suck.       | Proper care taken in these steps will help to prevent soreness of the nipples. |
| 2. The nipples should be air-dried x 15 minutes following each feeding.                   |  |
| 3. Nipple cream can be applied at this time. It needs not be washed off prior to feeding. |  |

Essential StepsKey Points

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Burping

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| <ol style="list-style-type: none"><li>1. Burping should be attempted between breasts and after feeding.</li><li>2. Place the infant upright on the mother's lap or shoulder.</li><li>3. Instruct mother in the procedure.</li></ol> | <p>Breast-fed infants may not take in air with feeding. The need to burp will vary from baby to baby.</p> |
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Scheduling

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| <ol style="list-style-type: none"><li>1. Breast-fed babies should be hungry every 2-4 hours. If the baby is rooming in, the mother may feed ad lib. If the baby is in the nursery, a 3-hour schedule is preferred.</li><li>2. The mother should always be given the opportunity to breast feed, before the infant is fed glucose water or formula by the nurse.</li><li>3. If a baby sleeps more than 4 hours, it should be wakened for feeding.</li></ol> | <p>Recent studies show that healthy breast-fed infants require about 8-10 feedings/day during the first 2 weeks or month of life.</p> |
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Supplementing

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| <ol style="list-style-type: none"><li>1. It is usually preferable not to supplement the breast-fed infant with bottles.</li></ol> | <p>The contrast in sucking action may confuse and delay or prevent the infant from developing a good breast-feeding technique. Frequent feedings help to stimulate the milk production.</p> |
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Essential Steps	Key Points
2. In the event the infant becomes hungry between scheduled visits, the mother should be contacted and given the opportunity to breast feed her baby.	
3. If the mother is too tired or unwilling to practice such frequent feedings, the supplementation should be given immediately upon the termination of breast feeding.	Offered at this time, it will satiate the infant, permit longer periods between feedings, and not jeopardize the breast-feeding schedule.
4. Infants receiving phototherapy should be supplemented after breast feeding, or between feedings if necessary.	
5. (If possible) select a nipple similar to the natural nipple shape. Inform the mother that although most babies adapt readily to the standard nipple, she may wish to try one of these if the baby has trouble adapting.	Playtex and NUK currently market nipples designed for breast-fed babies. (NUK/Ross nipples will soon be made available for breast-fed babies.) Utilizing one of these may make the transition or combination of breast/bottle feeding easier for the baby.

### Maternal Concerns

#### Diet

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| 1. The basic four diet is a sound diet to emphasize: | A balanced diet should include servings from all 4 groups. |
| a. cereals and grains<br>b. meat and eggs            | About 600 calories per day are required to breast feed     |

Essential Steps	Key Points
c. dairy products d. fruits and vegetables	a baby.
2. Calcium intake must be adequate or the mother's calcium stores will be depleted.	If the mother does not like milk, other foods high in Ca+ include: broccoli, salmon, and dairy products. Oyster shell calcium supplements are also available.
3. At least 8 cups of fluid a day are recommended.	
4. If the mother already eats sensibly, no modification of the diet is necessary. Occasionally the infant is sensitive to a certain item and becomes colicky. If that occurs, the mother should review her diet and watch for a recurrence.	Items rarely have to be deleted from the breastfeeding mother's diet.

### Nipple Care

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| 1. Scrubbing the nipple with a washcloth may help to toughen the skin.  | Techniques to toughen skin should begin at the end of the first trimester, and be continued through the breastfeeding period. |
| 2. Avoid using soap to cleanse the nipples. Mineral oil on a cotton-ball may be utilized to cleanse dried colostrum from the duct openings. |   |
| 3. Nipple rolling & wobble shields should be initiated and continued to correct the problems  | Pulling outward in a circular motion should extend the nipple enough for the infant to grasp it.                              |

Essential Steps	Key Points
related to inverted or retracted nipples.	
4. Shields may be utilized for true inverted nipples. For flat or short nipples the infant's suck may pull out the nipple far enough that shields are unnecessary.	If shields are used for flat nipples, they should be removed after 1 minute.

#### Tender Nipples

(Often occurs 3-4 postpartum days)

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| 1. Utilize nipple cream at the end of every feeding.                            | It need not be washed off prior to the next feeding.                                       |
| 2. Air dry nipples for 20 minutes or longer after each feeding.                 |  |
| 3. Institute the rotation of feeding positions.                                 |  |
| 4. Assure the mother is breaking suction at the end of feeding.                 |  |
| 5. Advise the mother not to exceed 5 min/breast/feeding.                        | It may be necessary to increase the frequency of feedings to a two or three hour schedule. |
| 6. Select positions that do not place the greatest stress over the tender area. | The line of maximum pressure is from the infant's nose to chin.                            |
| 7. If cracking is present, it may be necessary to discontinue nursing on        | Manual expression will prevent depletion of the milk supply.                               |

Essential Steps	Key Points
that breast until healing takes place.	
8. Nipple shields may be <u>temporarily</u> used in extreme cases.	Nipple shields if used continuously can impede the baby's development of effective sucking technique. They also prevent emptying of the breasts.

### Engorgement

(Usually occurs 3rd or 4th day postpartum)

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| 1. Warmth or coolness may be applied to reduce discomfort.   | Reaction to heat or coolness may differ with the individual. Encourage the patient to utilize whichever application is more comfortable for her. Warm/cool showers, heating or cooling pad are usually convenient methods of treatment. |
| 2. If the baby has trouble grasping the areola, some hand expression of milk will soften it sufficiently for proper positioning. |   |
| 3. Breast shields may be utilized initially to permit enough expression of milk for softening of the ampulla.                    | Instruct the mother to remove the shield as soon as the nipple is soft enough for the infant to grasp.  |
| 4. Nursing time should not exceed the normal time.   | Emptying the breasts will promote milk production.  |

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## Essential Steps

## Key Points

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### Breast Leakage

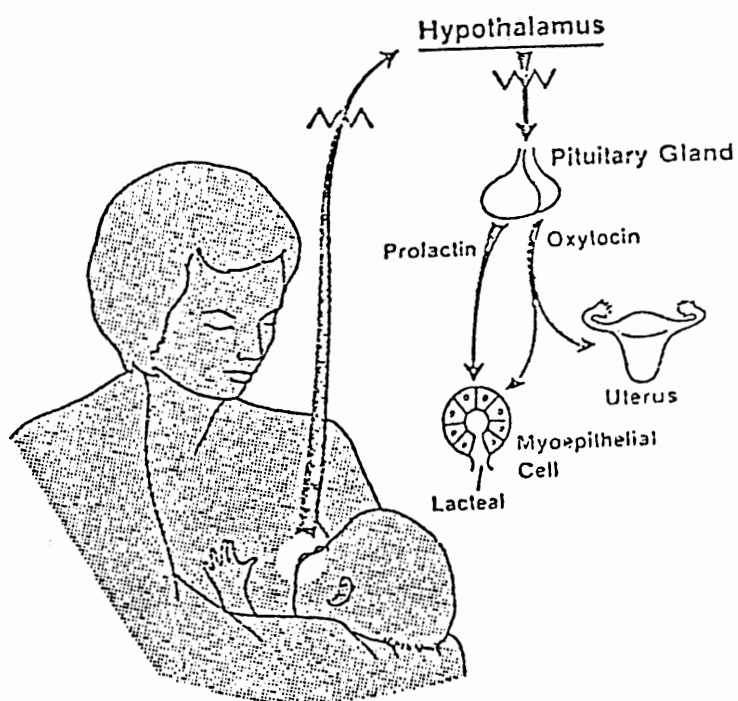
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| 1. Slight pressure exerted by the palm of the hand to the nipple will minimize leakage.              |   |
| 2. Reassure the mother that leakage prior to and from the opposite breast during feedings is normal. | The amount of milk lost will not deplete the baby's share.  |
| 3. Utilization of absorbent pads will protect clothing.  | Plastic backed pads are not recommended as they may harbor bacterial growth.  |
| 4. Vented plastic breast cups are often preferred as a method of protecting clothing.                | <p>Breast cups:</p> <ul style="list-style-type: none"> <li>a. continuously air dry nipple</li> <li>b. help to correct problems of flat or short nipples</li> <li>c. are a one time expense</li> <li>d. do not make the breast appear larger</li> <li>e. often make a smoother appearance under clothing</li> </ul> <p>Mothers using these should be advised not to feed infant milk that gathers in the cups.</p> |

### Cramping

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| 1. Uterine contraction during breast feeding should be anticipated. | The nursing action releases oxytocin which contracts the uterus.                        |
| 2. Educate the mother as to the benefits of the contractions.       | The uterus returns to the normal size quicker, and the risk of hemorrhage is decreased. |

Essential Steps	Key Points
3. Time analgesic medications so that they will be most helpful to the mother.	15 minutes prior to breast feeding is often the best choice.
4. Reassure the mother that cramping will diminish over a one to two week period.	After the uterus has returned to its normal size, the cramping does not occur.

(See Illustration: The Breast Feeding Hormonal Feedback System. Lawrence, 1980)





### Essential Steps

### Key Points

#### Failure of the Letdown Reflex

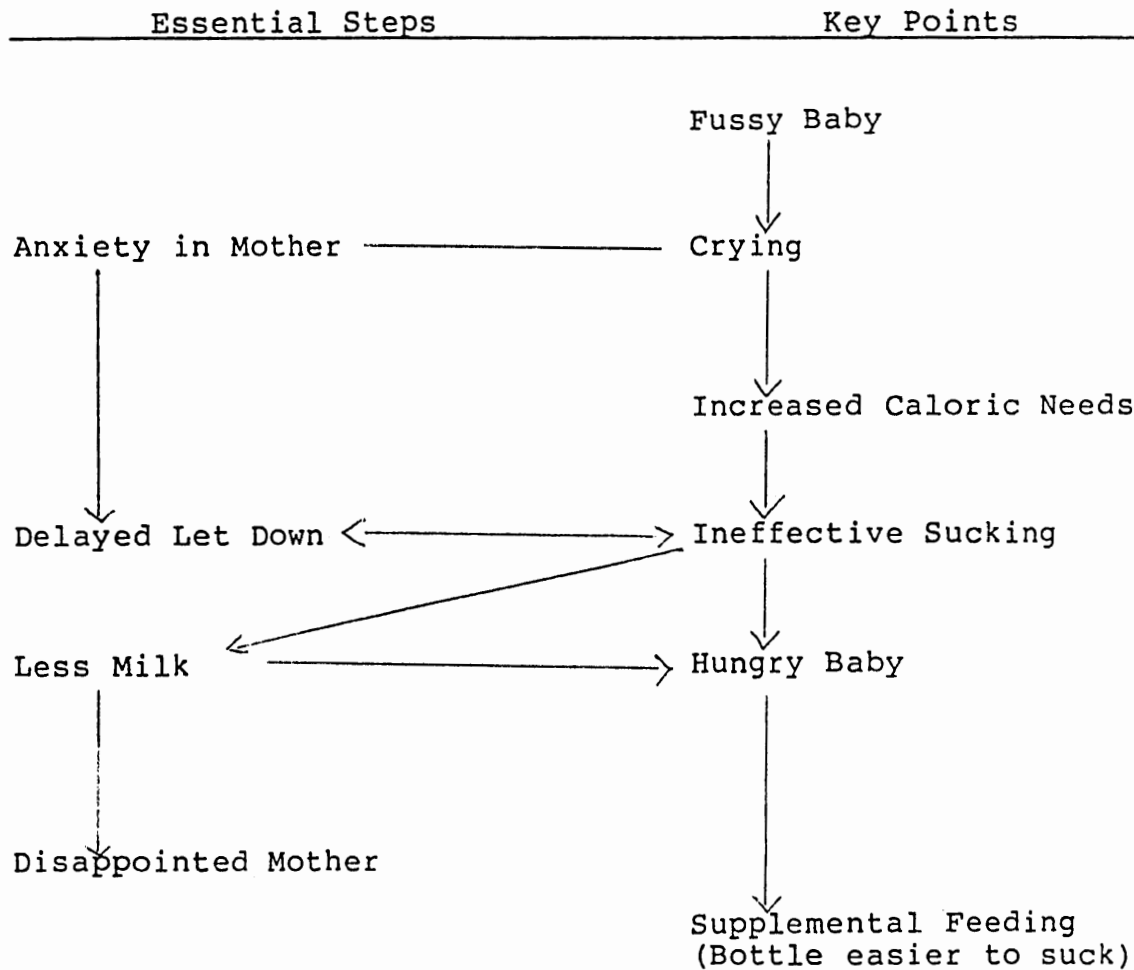
(The letdown reflex is the hormonal action that releases the milk from the collection ducts.)

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| 1. Check for proper positioning of the baby.                            | The maby's mandibular ridges should press on the ampulla. Hand expression can be utilized to identify the location. |
| 2. Provide the mother with peace and quiet for her breast-feeding time. | Distractions as well as stress can inhibit letdown.   |
| 3. Encourage any comfort measure that may enhance relaxation.           | Warm showers, a glass of beer or wine, heat-pad, or fluffy pillow.  |
| 4. Evaluate the mother's overall need for rest.                         | A prolonged or repeated problem may indicate the continuation of stress producing situation.                        |
| 5. Syntocin nasal spray may be prescribed to assist letdown.            |   |

(See Illustration: The Vicious Circle Resulting in the Insufficient Milk Syndrome)

#### Increasing the Milk Supply

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| 1. Keep the baby close to the mother so that she can become familiar with his hunger behavior. | The infant's hunger behavior is the strongest stimuli to milk production. Reassure the mother that milk supply will be built up over a 2-3 day period. |
| 2. Evaluate the adequacy of the mother's fluid intake. Increase as indicated.                  |  |



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| <p>3. Allow the baby to empty both breasts at each feeding.</p>              | <p>Normal emptying time ranges from 4-18 min/breast. The mother will learn to judge whether the milk has been consumed.</p> |
| <p>4. If the infant is feeding less often, increase to a 3-hour schedule</p> | <p>Breast milk is produced as a function of supply and demand.</p>  |

Essential Steps	Key Points
5. Supplement the infant only immediately after a feeding and only if absolutely necessary.	
6. Evaluate the mother's need for rest.	Insufficient sleep/rest of the mother may lead to decreased milk production.

#### Decreasing Breast Milk

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| 1. Intervention is appropriate only to relieve the mother's discomfort at the time the milk comes in. | Engorgement is common when the milk first comes in and need not be treated to diminish.                              |
| 2. Do not allow the infant to empty the breasts. Supplementation may be provided if necessary.        | Emptying the breasts would stimulate additional production. Frequent small feedings will discourage milk production. |
| 3. Skipping feedings or utilizing only one breast can be utilized to diminish the supply.             | Milk supply will diminish over 1 or 2 days. This is a convenient technique for weaning.                              |

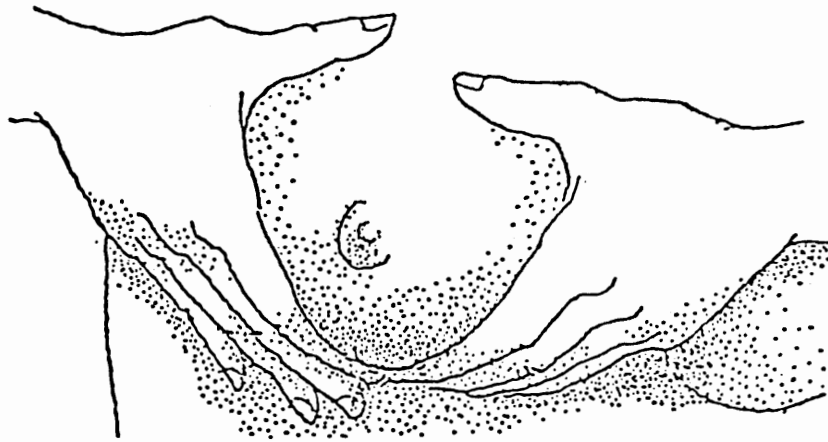
#### Manual Expression

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| 1. Assist the mother in enhancing elements of comfort and privacy in the room selected to teach manual expression. | The letdown reflex is a key element of the flow of breast milk during manual expression. |
| 2. Always wash hands and utilize clean or sterile collection containers for milk collection.                       | Body temperature breast milk is an ideal media for bacterial propagation.                |

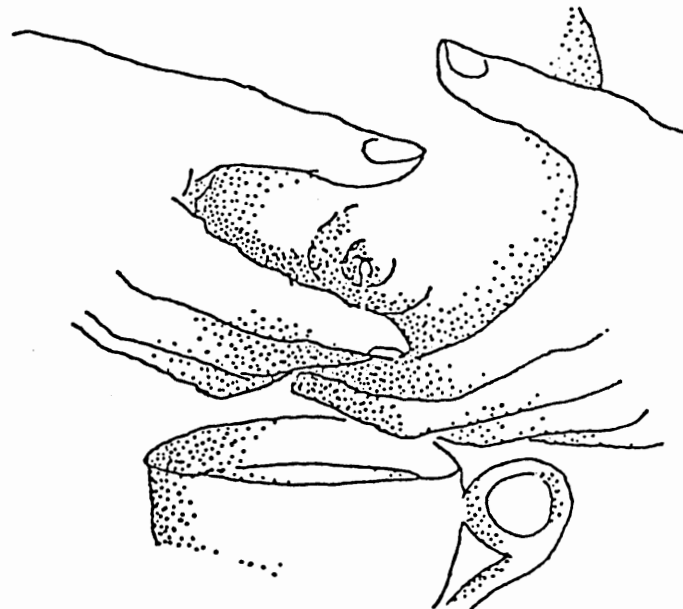
Essential Steps	Key Points
3. Position a pad or collection container under the opposite breast, and a collection container under the initial breast to be expressed.	Bilateral dripping is normal.
4. Instruct the mother in the following technique:	The mother should take note where pressure is being applied at the time the droplets appear. This will identify the location of the collecting ducts.
a. Grasp the first breast to be expressed with the finger pads from both hands resting on the margin or the areola (thumbs above, fingers beneath).	
b. Press back toward the chest wall, squeezing thumb and fingers together.	
c. Rotate position to cover all points around the areola. Repeat the sequence at each position.	
5. Do not attempt to stop the flow of milk from the opposite breast during manual expression.	Stopping the flow from the opposite breast may inhibit flow from both breasts.
6. The mother may express one side entirely before expressing the opposite breast, or may alternate.	
7. Limit the initial session to 30 minutes.	An extended first session may discourage the mother

Essential Steps	Key Points
	the mother from any future attempts.
8. Reassure mothers who are unable to empty their breasts entirely on the first attempt that they will become more skilled with practice.	Complete emptying of the breasts will maintain milk supply.
9. Any amount of milk collected during the first session should be considered successful.	The first session usually yields about an ounce. With practice 4 oz/session can usually be expressed without difficulty.
10. For milk to be stored:	Although it may be safe if handled properly, the nursery will not utilize milk older than 24 hours.
a. Cleanse nipple prior to beginning (sterile water may be used.	
b. Discard first few drops of expressed milk.	
c. Use sterile collection container (Playtex bottle liners tied with a twisty are sterile and convenient).	
d. Refrigerate or freeze milk immediately.	

(See Illustration: The Technique for Hand Expression.  
Eiger & Olds, 1975)



Massage the base of the breast to bring hind milk forward.



Using forefinger and thumb press areola toward ribs.

<u>Essential Steps</u>	<u>Key Points</u>
<u>Drugs and Pharmaceuticals</u>	
1. Any drugs utilized by the mother should be evaluated for effects on the newborn.	The obstetrician/pediatrician/pharmacists can evaluate potential effects of the drugs utilized.
2. Anesthesia used for the delivery may have a sedative effect on the newborn.	Usually by the time the mother is alert enough to breast feed, the infant is also. The baby will not be consuming additional sedative, as the primary mode for metabolism is through the lungs.
3. Over the counter drugs, caffeine, theobromine (found in chocolate), vitamins and herbal teas should also be evaluated regarding compatibility with breast feeding.	Most substance, especially those consumed in excess may be transmitted to the infant via the breast milk.
4. Conservative intake of all foreign substances should be encouraged.	In the event a resource cannot be located, it should be assumed that any substance is excreted in the mother's milk.

### Infant Concerns

#### Multiple Births

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| 1. The mother of twins or triplets should be given the opportunity to simultaneously feed two infants if she desires. Both infants should be placed in the football hold position, propped by pillows. | Those women who are successful with this technique report that it saves a great deal of time. |
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Essential Steps	Key Points
2. If one infant is stronger than the other(s), the strong infant should be fed from alternate breasts each feeding.	A baby with a strong suck will stimulate milk production. The weaker infant will benefit from the extra production.
3. Supplementation may be provided at the end of breast feeding, or the mother may choose to alternate breast feeding only one baby each feeding.	A desire to exclusively breast feed twins may be unrealistic.
4. The mother breast feeding twins or triplets will require extra rest and recovery time following the birth, and in building up the milk supply.	A desire to exclusively breast feed twins may be unrealistic.
5. In ongoing mixed breast/bottle feeding, selection of the artificial nipple may be an important factor.	NUK and Playtex are now marketing nipples designed for breast-fed babies. Many babies find the switching less confusing when one of these is utilized.

### Lethargic Infant

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| 1. The total breast feeding time should include the rest periods, unless the infant is so deeply asleep that the nipple is dropped. | Intermittant nursing and resting is expected.  |
| 2. Limit the feeding time to 5 min/breast.  | This provides the mother with a reasonable time period to attempt to keep the baby awake and responsive. |



<u>Essential Steps</u>	<u>Key Points</u>
3. Diaper changing, washing baby's face and jiggling him when he dozes will prepare him to suck more effectively during the feeding.	May be repeated between breasts.

### Premature Babies

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| 1. The actual desire of a mother to breast feed her infant should be carefully evaluated. | Due to the problems and difficulties of breast feeding a premature or sick infant, a mother who does not have a strong desire may not be successful. Rather than encourage an ambivalent mother to attempt this difficult endeavor, the nurse should carefully weigh the benefits from the mother's point of view. In many cases, reassurance and acceptance of the decision not to breast feed will benefit the dyad family far more than an unsuccessful attempt. |
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(See Illustration: Stress Factors Affecting Mothers of Premature and Healthy Infants.)

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| 2. Breast milk alone may be insufficient to nurture the baby.                                | To simulate the intrauterine growth rate, special high calorie infant formulas are required.                                |
| 3. Instruct the mother on technique to manually express milk, or to use the mechanical pump. | Premature infants frequently are unable to suck, or otherwise have problems that prevent them from breast feeding directly. |
| 4. Milk production by the mother should be   | Providing the infant's milk will enhance the mother's   |

Stress Factors Affecting Mothers of  
Premature and Healthy Infants

<u>Mother of Healthy Infants</u>	<u>Mother of Premature Infants</u>
	(Stress factors--all of those in left-hand column plus those listed below)
Hormonal readjustment	Worry about the condition of the baby
Physical exhaustion and readjustment	Early birth confounding personal time schedule
Demands of the baby	Lack of physical contact with the baby
Worries about the home, children while she's away	Feeling of helplessness in caring for the baby
Increase in the emotional needs of the other children	Failure feelings for not carrying baby to term
New schedule adjustment	Baby unable to suck, possibly unable to utilize the milk produced.

Essential Steps	Key Points
utilized whenever possible to supplement the baby's intake.	preception of her contribution to the baby's care.
5. All milk produced by the mother should be noted with the date and time, and kept refrigerated. Milk more than 24 hours old should be discarded.	Never throw away milk in front of a mother.
6. All milk produced by the mother should be considered successful.	Even "insignificant" amounts of breast milk may produce some immunological benefits, and will contribute to the bonding.

### Cleft Lip/Palate

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| 1. The actual desire of the mother to breast feed her infant should be carefully evaluated.                          | Due to the problems and difficulties of breast feeding, a mother who does not have a strong desire to breast feed may not be successful. In this circumstance, reassurance and acceptance will benefit this dyad far more than an unsuccessful attempt. |
| 2. The mother of the cleft lip/palate infant may need additional emotional support and encouragement to breast feed. | The immunological properties of breast milk are particularly important to these babies who are prone to otitis and face series of surgical procedure.   |
| 3. A position should be selected that will utilize gravity to minimize leaking from the nasal cavity.                | Alert the mother than some backflow is inevitable.  |

Essential Steps	Key Points
4. Identify the location of the collection sinuses on the mother's breast, so that the infant can be properly placed.	Utilizing hand expression, the location can be noted. It is necessary for the infant to stroke the sinus area between his tongue and jaw structure.
5. Holding the breast in position in the infant's mouth will help the infant who is unable to suck.	The purpose of the sucking action is to hold the baby in position at the mother's breast.
6. Burp the baby frequently.	Cleft lip/palate babies take in more air than other breast-fed babies.
7. Feeding sessions may be lengthy.	One study identified the average feeding time to be 45 minutes to 1-1/2 hours.
8. Mothers should be encouraged to be creative in coping with feeding difficulties.	
9. Supplementation may be provided immediately after breast feeding utilizing a nipple that has been selected for the infant.	Lambs nipples are often the best, but each infant must be evaluated individually.

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