9-1974

Prenatal Instruction of Breast Feeding Mothers

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PRENATAL INSTRUCTION OF BREAST FEEDING MOTHERS

by

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A Thesis in Partial Fulfillment

of the Requirements for the Degree

Master of Science

in the Field of Nursing

September 1974

Each person whose signature appears below certifies that this thesis in his opinion is adequate, in scope and quality, as a thesis for the degree Master of Science.

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ACKNOWLEDGMENTS

Sincerest appreciation is expressed to my research committee: Mrs. Clarice Woodward, Mrs. Betty Lonnstrom and Dr. Jerome Niswonger. Their critical analysis, patience and understanding contributed greatly to the completion of this research.

I am grateful to Dr. Grenith Zimmerman for her assistance in the statistical analysis of this data.

Recognition is extended to the United States Department of Health, Education and Welfare for the nurse traineeship grant that helped finance my graduate study.

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER I

THE STUDY

God gave each mammal the unique ability to suckle its progeny but many humans find this to be a problem. Breast feeding has been declining in the western world for the past 50 years in spite of the fact that artificial feedings cannot be proven to be superior to natural breast milk. In recent years in the United States the incidence of breast feeding has been particularly low among the lower socioeconomic populace who could truly benefit from the lower economical requirements of breast feeding (Newson, 1962, 1745).

Those mothers who do desire to breast feed their infants should receive the assistance needed. Nurses in the prenatal clinics have an opportunity to provide the necessary information to these mothers.

THE PROBLEM

Purpose of the Study

The purpose of this study was to determine if lower socio-economic class mothers receiving prenatal instruction on breast feeding in a clinic setting would have a higher success rate of breast feeding at five weeks post partum than mothers who did not receive this instruction.

Need for the Study

Lack of information appears to be one of the prime factors in a mother's failure to successfully breast feed her child. Mothers

generally do not receive the assistance needed during the post partum period (Ladas, 1970, 703).

The question arises whether education prenatally would have a positive influence. Applebaum encourages mothers to make a decision about feeding method before delivery. If breast feeding is elected, he advocates beginning instruction antenatally (Applebaum, 1970, 793). Another view is that instruction should not begin until after delivery (Kimball, 1968, 63-0). A study of individualized post partum instruction by a public health nurse indicated that teaching individually in a community setting could positively influence the success of breast feeding (Moore, 1972, 53). Some studies indicate that the lower socio-economic classes tend not to be future oriented and do not emphasize personal responsibility in accomplishing a goal, therefore, education prior to parturition may not influence mothers in this class (Simmons, 1958, 111).

However, if one assumes the position that mothers desiring to breast feed their infants should be assisted to do so successfully, then prenatal instruction should be studied to determine if it would be effective.

Literature was reviewed for the past ten years to determine if any studies on the effectiveness of instruction on breast feeding techniques given prenatally to lower socioeconomic class mothers had been done. None were found.

REVIEW OF LITERATURE

Breast milk may be the most perfect food produced by nature and yet the incidence of human lactation has been steadily declining for the past 50 years. In a world where malnutrition is frequently present, such a potential source of nutrition should not be ignored.

Multitudinous articles have been written on the physiological, psychological and nutritional facets of breast feeding. A review of literature was done to examine possible reasons for the current trend in infant feeding and factors which may influence successful breast feeding.

The Status of Breast Feeding

In ancient times, mothers did not electively reject breast feeding although the wet nurse has always been available where the mother was unable or unwilling to feed her own child. In some societies breast feeding was considered a religious obligation (Salber, 1960, 430). However, there are prevailing fashions in infant feeding with members of the middle and upper classes being the first to be influenced by the current mode (Salber, 1958, 711). Wet nurses flourished among the Greeks of 950 B.C. (Wickes, 1953, 154). The peak of popularity in England of wet nurses was during the 18th century when the aristocracy viewed breast feeding as unfashionable (Wickes, 1953, 239). With the employment of women during England's Industrial Revolution of the 19th century, breast feeding declined in the working class but the women of the upper classes were displaying a renewed interest in breast feeding

(Wickes, 1953, 337). As artificial feedings were perfected the wet nurse was replaced by a bottle.

In the 20th century breast feeding has steadily declined in the western world. The first United States survey in 1948 revealed a national breast feeding incidence of 38% among mothers in hospitals, with the least incidence in South Carolina and Alabama. It is interesting to note that breast feeding occurred more frequently away from metropolitan centers (Bain, 1948, 319). A survey in 1956 noted a further decline to 21% nationally (Meyer, 1958, 121). A trend appears to be evident as this survey was repeated in 1968 and showed another decline to 18% nationally (Meyer, 1968, 708). A midwest survey among the lower socioeconomic population revealed an incidence of only 11% (De Castro, 1968, 703).

This declining breast feeding pattern is evident worldwide. It is primarily a peri-urban problem in developing countries (Berg, 1973, 31). Reasons for the decline seem to be intertwined with economic, cultural, psychological and social influences of urbanization and sophistication (Jelliffe, 1968, 96). New social values in some countries which are emulating the western world label breast feeding as outmoded and the bottle is becoming a status symbol.

Eva Salber has hypothesized that in societies where male and female roles are ambivalent or not clear, breast feeding will not flourish (Salber, 1960, 431). Woman's acceptance of her biological role seems to be related to her psycho-sexual behavior, including lactation (Newton, 1967, 1183). In a study of maternal personality and prenatal selection of feeding method, those mothers electing to breast feed had less psycho-sexual disturbances (Adams, 1959, 146).

Breast feeders often give more positive, infant centered reasons for breast feeding while bottle feeders tend to give negative, maternal centered reasons for selecting artificial feeding (Grosvenor, 1972, 34).

It may be that this trend toward artificial feeding will be changed, especially among certain segments of society. A resurgence of interest in breast feeding in the United States is becoming evident among the educated, often well-to-do, and sophisticated women (Brown, 1973, 559). In a Boston study, breast feeding was practiced more often by the higher socioeconomic class, particularly among students' wives (Salber, 1966, 300). A study at the Mayo Clinic's Well-Baby Clinic demonstrated similar findings (Harris, 1969, 483). An extensive study of mothers in New York and San Francisco revealed that middle class mothers were six times as apt to breast feed as lower class mothers (Rivera, 1971, 280).

Conclusion. In reviewing these studies, it becomes evident that although the middle and upper class mothers may be ready to alter their trend toward artificial feeding, the poorer and less educated mothers are still committed to this method and generally consider breast feeding to be unacceptable.

The Comparative Aspects of Breast and Artificial Feeding

The biochemical, bacteriostatic, developmental, maternal and economic aspects of breast and artificial feeding were reviewed to determine if women should be encouraged to breast feed their infants.

Composition of Human and Cow's Milk. Nature seems to have created a unique milk for each mammal. It is becoming more evident

that the differences between human milk and milk from other mammals are more complex than originally thought.

The protein content in cow's milk is more than twice as high as in human milk but there is a qualitative difference. The primary protein in cow's milk is caseinogen compared to lactalbumin in human milk. The casein portion of milk will curdle when it encounters gastric acids while the lactalbumin will remain in solution. Consequently, cow's milk is slower and more difficult to digest. Modified cow's milk formulas are available to which additional acid has been added to provide a smaller curd in imitation of human milk (Blake, 1970, 121). The high buffering capacity of cow's milk casinogen reduces gastric acidity thus lessening the bacteriostatic effect of the gastric juices (Vorherr, 1972, 132). It is known that human milk contains a larger amount of nucleotides than cow's milk. It has been suggested that a higher dietary intake would positively affect protein synthesis (Gyorgy, 1971, 971).

The fat content of the two milks is approximately the same but the emulsion ability and activity of the lipases is greater in human milk resulting in better fat absorption, thus increasing the caloric intake and absorption of Vitamins A and D. The fatty acid composition affects the absorption of calcium. Although the formula preparations contain a higher content of calcium, they also contain a high content of palmitic and stearic acids which adversely affect calcium absorption (Hanna, 1970, 224). The decreased calcium absorption in the presence of the higher phosphorus content of cow's milk leads to a higher serum phosphorus level and depressed serum calcium levels. This tendency toward hyperphosphatemia and hypocalemia produces a climate conducive

to neonatal tetany (Oppe, 1968, 1047). It is interesting to note that neonatal tetany occurs almost exclusively in bottle-fed babies.

Another significant mineral is sodium which is present in higher quantities in cow's milk. It has been theorized that a high sodium intake in infancy may predispose to hypertension as an adult (Dahl, 1963, 1205).

Breast milk contains a higher proportion of lactose. Hydrolysis of this carbohydrate produces galactose which may contribute to the synthesis of cerebrosides of myelin and glycoproteins of collagen. These substances are formed during early life (Baum, 1971, 128). It may affect the nature, composition and reaction to stress in later life of the extracellular matrix and connective tissue (Platt, 1955, 184).

Bacteriostatic properties. Lactose promotes the growth of Lactobacillus bifudus by providing an acid pH which leads to a condition unfavorable to the growth of gram-negative enteric organisms, such as Escherichia Coli. The high buffering quality of cow's milk combined with the low lactose quality would reverse the pH contributing to a fertile environment for growth of gram-negative bacilli (Bullen and Willis, 1971, 342).

Another factor present in breast milk in high proportion is lysozyme which has an antibacterial activity (Hanson and Winberg, 1972, 847).

Human milk contains more of the iron-binding protein lactoferrin which also appears to have a bacteriostatic effect. Although the content of another iron-binding protein, transferrin, is higher in cow's milk, it is probably denatured in the manufacturing process. The addition of

any iron to the formula would saturate the iron-binding capacity of any remaining protein (Bullen, Rogers & Leigh, 1972, 74).

A high content of immunoglobulins is present in breast milk, particularly IgA in colostrum. The role of these immunoglobulins is not completely understood but it is thought that the primary function of IgA may be to confer passive mucosal immunity until the infant's own immune system has matured (Baum, 1971, 129). It is known that breast fed infants given attenuated polio viruses orally have the ability to neutralize these substances in their gastric tract (Warren, 1964, 11).

Studies of infant morbidity and mortality records of different socioeconomic classes indicate that breast fed infants are healthier among the lower socioeconomic classes but that no significant differences can be noted among the higher classes (Robinson, 1951, 792; Royal College of General Practitioners, 1972, 361).

Oritis media may be more common in bottle fed babies. In an extensive study of Indians from Alaska, Canada and Greenland where chronic suppurative otitis media is a wide-spread problem, Schaefer found an increased incidence in areas where bottle feeding has become popular (Schaefer, 1971, 484). This may have been due to the lack of protective influences of the breast milk but also the usual supine position of artificially fed infants predisposes to middle ear inflammations. Reflux of milk is more apt to occur with the strong negative pressure created when the infant sucks on the bottle (Duncan, 1960, 458).

The Sudden-Death Syndrome occurs more often in bottle fed babies. Infants fed cow's milk generally develop antibodies to the

milk proteins. One hypothesis is that these infants regurgitate some of the stomach contents during the night and then aspirate a small portion of this into the respiratory tract. An anaphylactic reaction occurs due to an antibody-antigen reaction (Parish, 1960, 1106). This hypothesis has not been proven. Other allergies, such as eczema, asthma and ulcerative colitis, are more common among those bottle fed (Davis, 1971, 351).

Stiehm, in a retrospective study of 117 cases of idiopathic jaundice, determined that a higher percentage were among breast fed infants, especially those with bilirubin counts exceeding 15 mgm% (Stiehm, 1965, 216).

The causative factor in hyperbilirubinemia is thought to be pregnandial in the mother's milk which prevents bilirubin conjugation by inhibition of glucuronyl transferase in the liver (Gartner, 1964, 1292). Why the level remains high in breast milk of some post partum mothers and not in others is unknown.

Dahms and associates in a study of 199 infants determined that breast and bottle fed infants have relatively similar degrees of hyperbilirubinemia during the first four days of life. Weight loss or infant fever did not alter this finding (Dahms, 1973, 1053).

Generally the serum bilirubin level falls after interruption of the breast feeding process. If it is resumed, the marked hyperbilirubinemia does not return although the rate of fall may lessen or the bilirubin level may rise somewhat (Stiehm, 1965, 215).

One infant, who was followed for an extended period of time, demonstrated a decline of serum bilirubin concentration from 11 mgm%

to 2 mgm% when artificial feeding was substituted. This level rose to 5 mgm% when breast feeding was reinstituted and remained elevated until breast feeding was discontinued at 70 days (Katz, 1965, 546).

Growth and development. Feeding method does not seem to affect the linear growth of infants (Sellars, 1971, 134). However, artificially fed infants generally gain weight more rapidly (Hooper, 1965, 395). This obesity tends to persist into childhood and adulthood (Eid, 1970, 75). For select populations of the United States, undernutrition may be the problem. The age of onset is generally before one year of age and correlates with physical and mental developmental impairment (Chase, 1970, 933). This is a critical period for cellular division and myelination of the brain. Although no definite relationship has been found between brain growth and function, the earlier the malnutrition occurs, the more severe and permanent is the retardation that occurs (Winick, 1969, 672).

Maternal aspects. Lactation as a method of birth control is usually unsatisfactory unless other methods are not available (Kamal, 1969, 321). The period of amenorrhea is longer in nursing mothers and more annovulatory cycles do occur after menses begin, providing the mother is completely breast feeding (Berman, 1972, 528). Studies differ on the effect of oral contraceptives on lactation. Kaern found no suppression of lactation in his study using Norinyl-1 (Kaern, 1967, 645). Ibrahim found that using Ovulen in the smallest dosage possible affected lactation adversely (Ibrahim, 1968, 564). Another study of American women in Germany showed no significant difference (Gambrill, 1970, 102).

Among breast fed infants an increased incidence of jaundice became apparent in 1963 shortly after oral contraceptives became popular. A study of idopathic jaundiced infants suggests a high correlation between the jaundice and the use of an oral contraceptive (Wong, 1971, 403).

Lactation does not appear to serve as a deterrent to breast cancer in the United States (Salber, 1969, 1023). It may be that prolonged lactation as practiced in other countries may reduce the risk (Wynder, 1960, 599). However, a study in Lebanon did not find evidence of any protective factors (Abou-Daoud, 1971, 784). Recently the question has been raised as to whether mothers who have a family history of breast cancer should be encouraged to breast feed. Certain viral like particles have been found in milk from women with breast cancer. It is known that viral types B and C have an oncological effect in mice. Whether the breast milk particles would have the same effect in humans is not known (Dmochowski, 1972, 79).

Consideration of the preparation aspect of infant feeding indicates that breast feeding has certain advantages. The milk is constantly available without preparation and at an even temperature. Breast milk is sterile while the possibility of contamination is a constant factor in formula preparation (Fitzpatrick, 1971, 378).

There are no studies to validate the theory that breast feeding is psychologically healthier for infant or mother. Breast feeding mothers tend to have more interaction with their infants, possibly because the breast fed infant cries more often. This crying is probably due to the more rapid emptying of the stomach contents (Bernal, 1970,

249). Not only is the breast used to satisfy hunger but as a comfort measure (Newton, 1971, 998). In a study of bottle fed babies, it was found that mothers that were given more contact with their infants during the initial post partum period tended to have increased interaction with their babies later (Klaus, 1972, 463).

Economics. Economically, breast feeding is superior. Breast milk alone is sufficient nutrition for the infant for the first four months of life (Jackson, 1964, 645). It requires an extra 600 KCal in the mother's daily diet to support lactation (Thomson, 1970, 565). The cost of this supplementation is lower than the minimum cost of artificial feedings (McKigney, 1971, 1011). At the poverty level, it may be difficult economically to maintain infant artificial feedings of the same composition in sufficient quantity. A breast fed infant would rarely lack this (Newton, 1971, 998). Even when the nursing mother may not receive proper supplementation of her diet the breast milk is generally satisfactory, although at the expense of the mother's tissue stores. Alan Berg has translated the loss of breast milk from non-nursing mothers into economic terminology. During the first six months of life, an infant would consume approximately 396 quarts of breast milk. Estimation of the world cost of replacing this breast milk with bottle milk for urban areas of developing nations alone is approximately $780 million (Berg, 1973, 31).

Conclusion. Artificial feedings do not appear to be superior to breast milk in any aspect. Those mothers desiring to breast feed their infants should be encouraged to do so, particularly among the lower income population.

Factors Influencing Success

The process of lactation. During gestation, placental lactogen, estrogen and progesterone influence the hypothalamus to produce a factor which inhibits prolactin excretion from the anterior pituitary gland. Expulsion of the placenta removes this inhibition. Sucking stimulates the nerve endings of the nipple and areola to transmit impulses by way of the vagus nerve to the anterior pituitary gland where prolactin is secreted into the bloodstream causing milk secretion by the alveoli (Jelliffe, 1971, 62). Sucking also stimulates the posterior pituitary gland to release oxytocin into the circulation. This substance causes the myoepithelial cells of the alveoli to contract and propel the milk into terminal lacteals. This action, which is termed "milk-ejection" or "let-down" reflex, is adversely affected by emotional stress (Newton and Newton, 1962, 48).

Needs of breast feeding mothers. Evans and her associates have classified the needs of breast feeding mothers into three categories: 1) informational, 2) physical and 3) psycho-social. Primiparas have more informational needs about mothering skills, infant characteristics, guidance in development, feeding and information about themselves physically and emotionally. The needs of multiparas are more in the psycho-social area where problems with coping with other children, visitors, nervousness and critical attitudes became apparent. The greatest number of needs in both groups was information about breast care, relief of discomfort, rest and diet but the primipara evidenced this earlier than the multipara (Evans, 1969, 31). In a survey of 756 women who attempted breast feeding, Ladas found that lack of information

was related to all the reasons mothers gave for discontinuing lactation (Ladas, 1970, 703).

Common lactating problems. Applebaum considers engorgement to be the primary problem of lactation (Applebaum, 1970, 517). When the breast is not completely emptied, venous and lymphatic stasis occurs with increased intraductal pressure. If this persists, atrophy of the secretory and myoepithelial cells occurs with decreased milk output. This can lead to a further complication of mastitis.

Thirty-one percent of the mothers who stopped breast feeding in Ladas' study gave insufficient milk, sore nipples or breast abcess as the reason (Ladas, 1970, 703). Engorgement compounds the problem of tender nipples. The full breast makes it difficult for the infant to insert the whole nipple in his mouth in order to compress the sinuses beneath the areola. The result is a frustrated baby who chews on the nipple and fights to breathe in his attempt to position his mouth around an unyielding object. This results in a weakened sucking mechanism and decreased "let-down" reflex and, consequently, decreased milk production (Applebaum, 1970, 219).

Motivation. Newson and Newson in a study of 700 mothers in England also found insufficient milk to be a primary cause of discontinuing nursing. However, 55% of these mothers wanted to stop anyway because they did not enjoy breast feeding (Newson and Newson, 1962, 1744).

Motivation of the mother is a very influential factor in the success of breast feeding. When Newton and Newton surveyed attitudes toward breast feeding among mothers who had attempted to breast feed,

they found that 74% of those with a positive attitude were successful while 35% of those with doubtful attitudes and only 26% of those with negative attitudes were successful (Newton and Newton, 1950, 870). While it is important to encourage positive feelings, it is questionable whether this would significantly alter a woman's true attitude because this may be related to her concept of herself as a female and her attitude toward children. Emotional factors play a significant role in the selection of infant feeding method (Brown, 1960, 428). Failure to breast feed successfully with the first child is apt to lead to a refusal to try again (Newton and Newton, 1962, 49).

Method of instruction. Childbirth education classes are available in many cities but are generally geared to the middle class using formal teaching sessions. A survey of mothers attending such classes in New York revealed that the majority were from the middle or upper socioeconomic classes (Donny, 1960, 561). This type of education may represent a failing situation to those with less education (Whitley, 1972, 11).

The lower socioeconomic classes are characterized by a sense of powerlessness, lack of self-esteem, lack of future goals and a lack of value of education (Robertson, 1969, 44).

Instructing a mother with such characteristics on the possible future advantages of breast feeding such as immunity, emotional security, or prevention of obesity would not be effective (Woody, 1966, 345). Her goals are more immediate.

Because a mother with less education usually has poor reading skills and vocabulary, communicating knowledge may be difficult. She

understands action better than words (Cahill, 1964, 5). For this reason using audiovisual aids such as film strips or movies is more effective as these aids do not rely totally on verbal communication (Gardner, 1972, 24).

Attitudes of medical attendants. Medical attendants have a profound effect upon the success of many breast feeding mothers. In Ladas' study, 20% of the mothers stopped nursing due to what they considered interference by the medical personnel (Ladas, 1970, 703). Mothers in a study by Brown considered physicians to be predominantly negative while only 55% considered their nurses to have a cooperative attitude (Brown, 1960, 425). Physicians have lacked sufficient training in the art of breast feeding to be helpful to mothers. Nurses tend to reflect the attitude of the physician for whom they work (Kimball, 1968, 62-0). Schmitt reviewed nursing literature and concluded that nurses generally favor breast feeding (Schmitt, 1970, 1491). Care needs to be taken that mothers do not feel pressured to nurse their infants as this is apt to produce guilt feelings when she fails (Wolff, 1953, 148).

Summary

Breast feeding is a declining art influenced greatly by psychosocial factors. The higher socioeconomic classes, which include those with higher education, are beginning to demonstrate a possible reversal in this trend. The lower socioeconomic population persists in the rejection of breast feeding.

Successful breast feeding is dependent on a positive attitude of the mother coupled with proper information and support. The review

of the literature indicates that there may be subtle advantages to breast feeding and, generally, those mothers desiring to do so should be given the assistance needed.

CHAPTER II

METHODOLOGY

This was an emperical, experimental study directed toward determining if prenatal instruction of lower socioeconomic mothers desiring to breast feed their infants would positively influence their success in breast feeding as determined at five weeks post partum.

THE CONDITIONS OF RESEARCH

Setting of the Study

Prenatal clinics of two hospitals providing care to lower socioeconomic mothers were selected as sites for this study. Riverside General Hospital is located in Riverside County with a population of 450,000. During 1973 approximately 80% of the patients admitted to this hospital were receiving some type of state financial aid. The majority of patients in the prenatal clinic are in the lower socioeconomic class. Loma Linda University Medical Center is located in San Bernardino County with a populace of 705,090. The prenatal clinic at this hospital serves patients with lower incomes, a minority of which are from the lower socioeconomic class.

Selection of Sample

Fourteen mothers who stated that they planned to breast feed their babies and who met all the criteria were selected from the prenatal clinics to participate in this study. Three mothers attended the clinic at Loma Linda University Medical Center and eleven visited

the Riverside General Hospital's prenatal clinic. The mothers were assigned to either the study or control group according to age and marital status in order to match the groups.

Information pertaining to the name, address, delivery date, marital status, parity and age was obtained from the hospital record. Information regarding prior breast feeding experiences, educational levels of the mother and father, attendance at prenatal classes, occupation of the father and ethnic origin was obtained from a questionnaire completed by the mothers (Appendix A). The infant's birth weight and length was obtained from the hospital record. The head circumference of each infant was measured by the researcher during the infant's hospitalization.

The mothers were contacted at the prenatal clinic where the purpose of the study was explained and written permission to participate was obtained (Appendix B).

Criteria for Selection of Mothers

The following criteria were used in selecting mothers to participate in this study:

1. Mothers stating that they planned to breast feed their baby who were at least 36 weeks gestation when contacted.

2. Mothers whose charts indicated probable vaginal delivery and no known maternal complications such as pre-eclampsia, eclampsia, chronic hypertensive vascular disease, placenta praevia, Rh or ABO hemolytic incompatability, etc.

3. Mothers who subsequently delivered full term infants weighing between five and one-half and nine pounds who did not have

any known infant complication or major deformity such as respiratory distress syndrome, cleft palate, spina bifida, etc.

4. Mothers who received their primary school education in the United States to insure that each mother comprehended the English language.

5. Mothers who had completed no less than eight and no more than twelve grades of education.

6. Mothers considered to be in the lower socioeconomic class as defined below.

7. Mothers whose parity was three or less.

8. Mothers who had not previously attempted breast feeding as such attempts would tend to bias their current success or failure.

9. Mothers between the ages of 17 and 40 as the incidence of complications is higher above and below this range.

10. Mothers who had not attended childbirth preparation classes where instruction in breast feeding may have been given.

11. Mothers who were not taking oral contraceptives or other medication that might interfere with the lactation process.

Hypothesis

The hypothesis of this study was that a mother desiring to breast feed given antenatal information about how to nurse her infant, how to prevent complications and how to cope with common problems of breast feeding will:

1. Have an adequate milk supply to meet the nutritional needs of her infant without regular supplementary or complementary feedings.

2. Indicate less severe complications of lactation.

3. Express a higher degree of satisfaction with the breast feeding experience.

Definition of Terminology

For the purpose of this study the following definitions of terminology were used.

1. Successful breast feeding.

A. Infant's nutritional needs are met as evidenced by:

1. Weight gain equaling minimum requirement of five to seven ounces per week (Blake, 1970, 111).

2. Increased head circumference of 2 cm. during first five weeks (Illingsworth, 1957, 94).

3. Increased linear growth of one and one-half inches during first five weeks (Brenneman, 1959, 20).

4. Regular supplementary or complementary formula, defined as any artificial feeding of a milk formula, was not given more than one time daily.

B. Mothers indicating less severe complications of lactation (Appendix C).

C. Mothers expressing a high degree of satisfaction with breast feeding experience (Appendix F).

2. Lower socioeconomic status.

Occupation and educational level of the father of the child were used as a basis for evaluation. Occupations of the lower socioeconomic class were considered to be skilled, semi-skilled, and unskilled types, such as auto mechanics, store salesmen, assembly line workers, carpenters, truckers, manual laborers, farm workers, etc. The educational level was no higher than the twelfth grade.

Variables

The independent variables are the instruction and support given by the researcher to the study group.

The dependent variable is the success of breast feeding as determined by 1) an adequate milk supply by the mother as evidenced by an adequate weight gain of the infant without regular supplementary or complementary feedings, 2) severity of complications of lactation, and 3) the degree of satisfaction with the breast feeding experience as expressed by the mother.

The co-variables are 1) age of the mother, 2) ethnic group of the mothers, 3) emotional support in the home setting, 4) level of education of the mothers, and 5) parity.

Limitations

The following limitations were recognized in this study:

1. Selection of the samples were from mothers of the lower socioeconomic class.

2. The teaching of the mothers was done during the last four weeks of pregnancy.

3. The study was terminated at five weeks postpartum.

4. Each mother was individually influenced by her previous life experiences and personal system of values.

Assumptions

The following assumptions were made:

1. That breast feeding is desirable for mother and child.

2. That knowledge about breast feeding of the study and the control group prior to this study would be similar.

3. That any information received postpartally by either group would be similar.

4. That the mothers would accurately recall the length of breast feeding period, any supplementation and extent of complications.

5. That the mothers would correctly express their feelings about the breast feeding experience.

6. That the commonly accepted weight gain chart is valid.

7. That the infant's state of nutrition can be evaluated by weight gain, linear growth and head circumference.

TEACHING DESIGN

The key areas emphasized in teaching were considered to be how to position the infant to obtain the proper grasp of the nipple, care of the nipples, manual expression to relieve and prevent engorgement,

the process of the "let-down" reflex, and nutritional demands of the infant in relation to growth.

A Train-Aide patient teaching cassette (T1507 Breast Feeding) was shown to each mother in the study group individually followed by a discussion period of the key areas mentioned above. A booklet reviewing these areas was given to each mother in the study group for future reference (Appendix D). For practical purposes in a clinic situation, the teaching was concentrated in one session.

The Study Group

Seven mothers reviewed the breast feeding film strip and participated in a discussion period during one of their prenatal visits to the clinic. Only this group received the information booklet. Permission was obtained to participate in the study and for home visits during the first five weeks post partum.

The Control Group

Seven mothers selected for the control group were visited at the prenatal clinic where permission was obtained to participate in the study and for home visits during the following five weeks. These mothers were not given any breast feeding instruction by the researcher. All inquiries regarding breast feeding were referred to the hospital staff.

Collection of Data

Mothers were visited once during their hospitalization to confirm their address and to make an appointment for the first visit. At this

time the head circumference of the infant was taken and the infant's chart was reviewed for complications. Mothers from both groups were visited at the second, third, fourth and fifth week post partum for data collection (Appendix E).

The objectives for the visits were to:

1. Determine if the mother was still breast feeding, and, if not, why she had stopped.

2. Determine if the infant was receiving supplemental or complemental feedings in excess of one per day.

3. Determine if the infant was consistently gaining five to seven ounces per week by weighing each infant at each visit.

4. Determine if the mother had any complications of breast feeding and to what extent (Appendix C).

5. Have the mother rate her breast feeding experience at the final visit. A Leikert type scale was used as the basis for a questionnaire which the mother completed (Appendix F).

6. Determine if the mother had received any emotional support from her family and acquaintances. Five questions of the questionnaire pertained to the way significant others in her environment felt toward her breast feeding (Appendix F).

7. To measure linear growth and head circumference at the final visit.

Analysis of Data

The Chi Square and the Mann-Whitney methods of analysis were used to determine statistical significance. The area of interest was to determine if education prenatally would result in:

1. A longer period of breast feeding.

2. Less severe complications of lactation.

3. The mother expressing more satisfaction with the breast feeding experience.

Length of breast feeding, satisfaction rating and severity of complications were compared by correlation coefficient.

CHAPTER III

FINDINGS AND ANALYSIS

The purpose of this study was to evaluate the effect of a prenatal instruction program on a group of mothers desiring to breast feed their infants. A chi square and a Mann-Whitney test were used to determine if mothers receiving this instruction were more successful in their breast feeding experience than mothers who did not receive instruction. The .05 level of confidence was used as a test of significance.

The sample consisted of 14 breast feeding mothers: 7 in the study group and 7 in the control group.

DESCRIPTION OF MOTHERS

The ethnic origins of the study group consisted of three Mexican Americans, one black and three Caucasians (Table 1). Three of the control group were Mexican Americans and four were Caucasians.

The mean age of the mothers in the study group was 19.85 years compared to 19.14 years in the control group. The education levels in both groups ranged from ten to twelve grades. Neither education level nor age was a significant factor in the results of this study (Table 2). The only multipara in the study group elected to breast feed because she anticipated this would be her last child and desired the experience. The two multiparas in the control group were unable to breast feed their first infants due to premature deliveries.

TABLE 1

ETHNIC ORIGIN OF MOTHERS

Ethnic Origin	Study	Control
Mexican American	3	3
Black	1	0
Caucasian	3	4
TOTAL	7	7

TABLE 2

EDUCATION LEVEL AND
AGE PARITY OF MOTHERS

Study			Control		
Age	Education	Parity	Age	Education	Parity
17	10	0	17	10	1
17	11	0	17	11	0
18	11	0	18	11	0
18	11	0	18	11	0
19	10	0	19	12	0
19	12	0	20	12	1
31	11	3	25	12	0
Mean Age 19.85 years			Mean Age 19.14 years		

Positive emotional support was received by both groups of mothers (Table 3). Four husbands in each group agreed with their wife's decision to breast feed. In each group five mothers were legally married or in common-law marriages and residing with their spouses. Two mothers in the study group were single, one residing alone and the other with her parents. In the control group, two mothers were separated from their spouses and residing with their parents. Four mothers in the control group and three in the study were residing in their parental homes either permanently or temporarily due to financial difficulties. One mother in each group had a friend or relative who attempted to discourage her from breast feeding.

DESCRIPTION OF INFANTS

All infants were delivered vaginally except for one baby in the study group who was delivered by Caeserian Section for breech presentation. This did not appear to effect the breast feeding.

Birth weights ranged from 6 lbs. 5 oz. to 8 lbs. 15 oz. All infants had regained their birthweight by two weeks. Thereafter they averaged at least five ounces per week except for one infant in the study group who averaged four ounces per week. This baby was very active when awake and slept three hours between feedings. His physician certified that he was receiving adequate nutrition. One infant in the study group lost weight during week three due to diarrhea but regained it before the fourth week (Table 4). Growth in head circumference was adequate in all infants (Table 5). Linear growth was lower than anticipated in three infants in the study group. Because these infants were very active, it is possible that the difference was due to an error in measurement (Table 6).

TABLE 3

TYPE OF INFLUENCE OF OTHERS
ON BREAST FEEDING MOTHERS

Influence	Study	Control
Positive		
Husband	4	4
Mother	1	2
Other Relative	1	1
Friend	0	1
Other	0	0
Negative		
Husband	0	0
Mother	0	0
Other Relative	0	1
Friend	1	0
Other	0	0

TABLE 4

COMPARISON OF INFANT WEIGHT GAIN
AT FINAL VISIT

STUDY GROUP

Subject	Birth Weight	Acceptable Weight Gain	Actual Weight Gain	Difference
1	6 lbs. 5 oz.	7 lbs. 8 oz.	10 lbs. 8 oz.	+3 lbs.
2	6 lbs. 7 oz.	7 lbs. 9 oz.	7 lbs. 5 oz.	- 4 oz.
3	6 lbs. 7 1/2 oz.	6 lbs. 10 1/2 oz.	7 lbs. 13 1/2 oz.	+ 13 oz.
4	7 lbs. 6 oz.	7 lbs. 14 oz.	9 lbs. 10 oz.	+1 lb. 12 oz.
5	8 lbs. 2 1/2 oz.	9 lbs. 4 1/2 oz.	10 lbs. 7 oz.	+1 lb. 2 1/2 oz.
6	8 lbs. 5 oz.	9 lbs. 7 oz.	9 lbs. 9 oz.	+ 2 oz.
7	8 lbs. 15 oz.	10 lbs. 1 oz.	11 lbs. 13 oz.	+1 lb. 12 oz.

CONTROL GROUP

Subject	Birth Weight	Acceptable Weight Gain	Actual Weight Gain	Difference
1	6 lbs. 6 oz.	7 lbs. 8 oz.	9 lbs. 13 oz.	+2 lbs. 5 oz.
2	6 lbs. 13 oz.	7 lbs. 0 oz.	7 lbs. 5 1/2 oz.	+ 5 1/2 oz.
3	7 lbs. 1 oz.	8 lbs. 3 oz.	10 lbs. 1 oz.	+1 lb. 14 oz.
4	7 lbs. 1 oz.	7 lbs. 14 oz.	8 lbs. 6 oz.	+ 8 oz.
5	8 lbs. 7 1/2 oz.	9 lbs. 4 1/2 oz.	10 lbs. 3 oz.	+ 14 1/2 oz.
6	8 lbs. 7 oz.	(At 4 days, 8 lbs. 2 oz.)		
7	8 lbs. 12 oz.	9 lbs. 4 oz.	10 lbs. 14 oz.	+1 lb. 10 oz.

TABLE 5

COMPARISON OF INFANT HEAD
CIRCUMFERENCE AT FINAL VISIT

STUDY GROUP

Subject	Head at Birth	Acceptable Growth	Actual Growth	Difference
1	33.5 cm.	35.5 cm. @35 days	38.0 cm.	+2.5 cm.
2	35.0 cm.	37.0 cm. @35 days	37.0 cm.	0.0 cm.
3	34.5 cm.	35.5 cm. @15 days	35.5 cm.	0.0 cm.
4	34.5 cm.	35.5 cm. @17 days	35.5 cm.	0.0 cm.
5	35.0 cm.	37.0 cm. @35 days	38.0 cm.	+1.0 cm.
6	35.0 cm.	37.0 cm. @35 days	37.0 cm.	0.0 cm.
7	35.75 cm.	37.75 cm. @35 days	38.0 cm.	0.25 cm.

CONTROL GROUP

Subject	Head at Birth	Acceptable Growth	Actual Growth	Difference
1	32.5 cm.	34.5 cm. @35 days	35.0 cm.	+0.5 cm.
2	35.0 cm.	35.0 cm. @ 6 days	35.0 cm.	0.0 cm.
3	34.0 cm.	36.0 cm. @32 days	37.5 cm.	+1.5 cm.
4	34.0 cm.	36.0 cm. (No final measurement, infant hospitalized)		
5	35.5 cm.	37.0 cm. @24 days	38.5 cm.	+1.5 cm.
6	35.5 cm.	35.5 cm. @ 4 days	35.5 cm.	0.0 cm.
7	36.0 cm.	37.5 cm. @21 days	37.5 cm.	0.0 cm.

TABLE 6

COMPARISON OF INFANT LINEAR
GROWTH AT FINAL VISIT

STUDY GROUP

Subject	Length at Birth	Anticipated Growth	Actual Growth	Difference
1	19 3/4 inches	21 1/4 inches	21 inches	- 1/4 inches
2	20 1/2 inches	22 inches	21 1/2 inches	- 1/2 inches
3	19 inches	19 3/4 inches	20 3/4 inches	+1 inch
4	20 inches	21 inches	22 inches	+1 inch
5	22 inches	23 1/2 inches	23 inches	- 1/2 inches
6	20 inches	21 1/2 inches	21 1/2 inches	0.0 inches
7	20 inches	21 1/2 inches	22 1/2 inches	+1 inch

CONTROL GROUP

Subject	Length at Birth	Anticipated Growth	Actual Growth	Difference
1	19 1/2 inches	21 inches	21 inches	0.0 inches
2	19 inches	19 inches	19 inches	0.0 inches
3	19 inches	20 1/2 inches	21 3/4 inches	+1 1/4 inches
4	21 inches	(No final measurement, infant hospitalized)		
5	19 inches	20 inches	21 inches	+1 inch
6	21 inches	21 inches	21 inches	0.0 inches
7	21 inches	22 inches	22 inches	0.0 inches

SUPPLEMENTAL FEEDINGS

Supplemental formulas were used by six mothers in the study group but only two used more than one per day. One mother began supplementing at five weeks because she thought her breast milk might not be sufficient. The other thought her baby cried too frequently and might be hungry. No complementary formulas were given by this group of mothers.

All but one mother in the control group used supplemental and/or complemental feedings in excess of one per day. This one mother stated that she would have supplemented more often but that her baby refused the bottle unless extremely hungry. Generally the mothers felt that formula feeding was necessary because the baby might not be receiving sufficient milk (Table 7).

A Chi square statistical comparison (p equals .05) of the number of mothers giving complementary and/or supplementary bottles in the study and control groups was statistically significant.

LENGTH OF BREAST FEEDING

Six mothers in the control and two mothers in the study group discontinued breast feeding before five weeks post partum. The duration of breast feeding ranged from 15 days to the end of the study at 35 days with 5 mothers planning to continue in the study group. The average was 29.57 for this group. The average in the control group was 21.71 days and ranged from 4 days to 35 days with one mother planning to continue (Table 8).

TABLE 7

COMPARISON OF NUMBER OF MOTHERS GIVING MORE THAN ONE ARTIFICIAL FEEDING PER DAY

Supplementary	Study	Control
Week 1	0	1
Week 2	1	2
Week 3	0	2
Week 4	0	1
Week 5	1	1
Complementary	**Study**	**Control**
Week 1	0	3
Week 2	0	2
Week 3	0	3
Week 4	0	0
Week 5	0	0

TABLE 8

COMPARISON OF DURATION OF BREAST FEEDING

Number of Days	Study	Control
	15	4
	17	6
	35	21
	35	24
	35	30
	35	32
	35	35
TOTAL	207	152
Mean	29.57	21.71

Insufficient milk was indicated as the most frequent reason for discontinuance although each infant was gaining an adequate amount of weight. It was three times more frequent in the control group (Table 9). Two mothers in the control group indicated nipple soreness was the basis for their discontinuance compared to none in the study group. In each group extraneous circumstances influenced the discontinuance of one mother. One infant in the control group developed meningitis and was hospitalized for three weeks. In the study group, one mother moved to Hawaii and felt it would be too difficult to travel and relocate while breast feeding. Using the Chi square analysis at the .05 level, the increased duration of breast feeding among the mothers who received prenatal instruction was statistically significant.

COMPLICATIONS OF LACTATION

Although each group developed equal numbers of sore nipples, a higher degree of severity was reported by the control group (Table 10). One mother in the control group developed grade 1 mastitis with grade 3 nipple soreness. Engorgement complications were minimal in both groups.

In the study group two mothers with either grade 1 nipple soreness or grade 1 engorgement during the first week had discontinued breast feeding before the end of the second week. Neither mother indicated a complication of lactation as the reason for discontinuance.

In the control group, by the end of the first week one mother with grade 2 nipple soreness and grade 1 engorgement had discontinued for lack of milk. At three weeks, a mother discontinued due to sore nipples that had persisted as grade 3 for two weeks, then improved to

TABLE 9

REASONS FOR DISCONTINUING
BREAST FEEDING

Reason	Study	Control
Insufficient Milk	1	3
Sore Nipples	0	2
Ill Infant	0	1
Moving	1	0
TOTAL	2	6

TABLE 10

COMPARISON OF COMPLICATIONS OF LACTATION

Complication	Week 0-2		Week 3		Week 4	
	Study	Control	Study	Control	Study	Control
Sore Nipple						
Grade 1	3	0	0	1	0	0
Grade 2	2	4	1	1	0	1
Grade 3	1	2	0	1	0	0
Mastitis						
Grade 1	0	1	0	1	0	0
Grade 2	0	0	0	0	0	0
Grade 3	0	0	0	0	0	0
Engorgement						
Grade 1	5	5	0	1	0	0
Grade 2	0	0	0	1	0	0
Grade 3	0	0	0	0	0	0
TOTAL POINTS	15	20	2	10	0	2
Study Total	17					
Control Total	32					

grade 2. Before the end of the fourth week another mother discontinued due to sore nipples. She had grade 3 nipple soreness, grade 1 mastitis and engorgement of three weeks. No complications were seen in the fifth week in either group.

The Mann-Whitney Test indicated a significant difference at the .05 level with the group of mothers receiving prenatal instruction developing less severe complications. There was no correlation between the severity of complications and the length of breast feeding.

SATISFACTION WITH BREAST FEEDING EXPERIENCE

Mothers in the study group expressed a higher rate of satisfaction with their breast feeding experience than mothers in the control group (Table 11). Out of a possible 224 points, mothers in the study group totaled 197 and mothers in the control group 187. This was not statistically significant. Consideration must be taken of the possibility that the mothers were influenced by a desire to please the researcher when responding to the questionnaire.

There was a significant correlation between the length of breast feeding and the satisfaction rating among the control group. No correlation was established in the study group. A comparison between the severity of complications and ratings of satisfaction was not statistically significant. Table 12 illustrates the description of each subject used for correlation purposes.

TABLE 11

COMPARISON OF RATING OF SATISFACTION OF BREAST FEEDING EXPERIENCE

	Study	Control
	19	17
	27	26
	27	27
	30	28
	31	29
	31	30
	32	30
TOTAL	197	187
Mean	28.14	26.71

TABLE 12

DESCRIPTION OF MOTHERS

Study Mothers	Length	Complication Points	Rating
1	15 days	1	27
2	17 days	1	19
3	35	3	31
4	35	1	32
5	35	6	31
6	35	3	27
7	35	2	30
TOTAL	207	17	197

Control Mothers	Length	Complication Points	Rating
1	6 days	3	26
2	30 days	4	28
3	35	2	29
4	21	7	27
5	24	13	30
6	32	3	30
7	4	0	17
TOTAL	152	32	187

CHAPTER IV

DISCUSSION AND IMPLICATIONS

The purpose of this study was to determine if mothers of the lower socioeconomic class receiving prenatal instruction in a clinic setting on the techniques of breast feeding would be more successful in their breast feeding experience at five weeks post partum than mothers not receiving this instruction.

A review of literature revealed that the incidence of breast feeding has been declining in this century in the United States, particularly among the lower socioeconomic class.

There are a number of physiological differences between human breast milk and cow's milk, none of which would indicate that artificial formulas are superior to breast milk in any aspect. A comparison of economics and ease of preparation indicate that breast feeding has certain advantages.

The process of lactation is influenced by many physiological and psychological factors. Lack of information appears to be closely correlated with lactation problems and discontinuance of breast feeding. Literature reviewed indicated that information to those with lower educational levels is best communicated by utilizing audiovisual aids.

Permission was obtained from 14 mothers attending prenatal clinics at Riverside General Hospital and Loma Linda University Medical Center who met the criteria to participate in the study. It was hypothesized that mothers of the lower socioeconomic class desiring to

breast feed their babies who received prenatal instruction in the art of breast feeding and prevention of complications would be more successful than mothers not receiving this information. The mothers in the study and control groups were matched for age and marital status.

The study group received individual instruction about breast feeding using a film strip followed by a discussion. Each mother received a booklet outlining key points for future reference. The control group did not receive any instruction other than what was normally provided by the clinic and hospital. Each mother was visited at home at two, three, four, and five weeks post partum to determine the number and severity of complications, amount of supplemental and/or complemental feedings being given, and weight of the infant. At the termination of breast feeding or at the end of the study at five weeks for those planning to continue, the linear growth and head circumference of the infant was obtained and the mother completed a questionnaire on her feeling about and satisfaction with breast feeding and the amount and type of influence received from her family and acquaintances.

The study group consisted of three Mexican-Americans, one black and three caucasians. The control group contained three Mexican-Americans and four Caucasians. Age was not a significant factor. Both groups were similarly influenced by their friends and families. All infants demonstrated adequate growth rates.

The data was analyzed by the Chi square statistical method and the Mann-Whitney Test to determine if prenatal education did

significantly increase the success of breast feeding mothers. At the .05 level of significance, the findings upheld the hypothesis.

CONCLUSIONS

Generalization to a larger population cannot be made from this study with its limited sample size. However, based on the findings of this study the following conclusions were reached.

1. Prenatal instruction on breast feeding techniques did significantly increase the success of breast feeding.

2. Breast milk alone provided sufficient nutrition to promote adequate growth of the infants during at least the first five weeks of life for mothers in the study group.

3. The most common reason given for discontinuance of breast feeding was the mother's belief that she had insufficient milk production.

4. Age and ethnic background did not seem to effect the success of breast feeding.

IMPLICATIONS

Prevention is a key word in the practice of nursing. As demonstrated in this study, many problems and complications associated with breast feeding can be prevented by prenatal patient education.

Prenatal clinics are usually very busy making it difficult to find the time for formal patient education during a mother's appointment. This teaching design required approximately 30 minutes of individual instruction. If similar results could be obtained,

teaching mothers in a group would be more efficient. The nurse frequently has the opportunity to initiate informal discussion. It has been this researcher's observation that nurses generally do not feel comfortable discussing breast feeding, probably due to a lack of knowledge.

Results of this study agree with the literature that one area in which mothers need information concerns how to determine if their babies are getting enough milk from the breast alone. Mothers from both groups looked forward to the weekly weighing sessions and appeared reassured when they found that their infant actually had gained weight. Nurses need to assure mothers that breast milk alone is usually adequate nutrition for their babies during the first few months of life.

Literature reveals that sore nipples are a common complication of breast feeding. In this study the most common complication was also sore nipples indicating that mothers should be taught preventative measures, such as slowly increasing sucking time to avoid irritation.

Ideally, nurses in the prenatal clinics would provide the basic education to mothers on breast feeding. Following the same teaching plan in order to provide consistency in care, this education would be continued by the hospital staff nurses during the mother's hospitalization and by public health nurses postpartally to ensure continuity.

This researcher felt that the mother's satisfaction with her breast feeding experience varied from day to day. If the infant appeared content and had slept well, the mother was probably more satisfied than on a day when the infant was fussy and demanding or on

a day when the mother was experiencing pain from sore nipples. A study with more frequent evaluations by the mother would perhaps validate this.

RECOMMENDATIONS

For Further Study

1. A study similar to this research be done among mothers of the middle and upper socioeconomic classes to determine if there are differences in responses between classes.

2. A study similar to this be done among lower socioeconomic mothers using methods of instruction, such as group teaching to evaluate the effect on the success of breast feeding.

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APPENDIX A

BREAST FEEDING SURVEY

Name _____ Due Date _____

Do you plan to breast feed this baby? _____

If your answer is Yes please complete the remainder of this form.

1. Have you breast fed any babies before? _____
2. Did you attend any classes for expectant parents in which breast feeding was discussed? _____
3. The last grade of school attended by you? _____
4. The last grade of school attended by your husband? _____
5. Type of work usually done by husband? _____
6. Race: Mexican-American _____
   American Indian _____
   Oriental _____
   Negro _____
   White _____

APPENDIX B

CONSENT TO PARTICIPATE IN STUDY

Your permission is needed for participation in an education program for helping mothers to breast feed their babies.

I give my free and voluntary consent to participate in this study by Anita Berry RN and I further give permission for her to visit my home during the five weeks after delivery for approximately 30 minutes each visit. It is understood that my name will not be used in any way.

_____
Signed

_____
Date

_____
Witness

CONSENT TO PARTICIPATE IN STUDY

Your permission is needed for participation in a study which will follow-up mothers who are breast feeding their babies.

I give my permission for Anita Berry RN to visit my home during the five weeks after delivery for approximately 30 minutes each visit. It is understood that my name will not be used in any way.

_____
Signed

_____
Date

_____
Witness

APPENDIX C

GRADES OF COMPLICATION

Nipples

Grade 1: Slight tenderness, stinging or biting sensation that may continue throughout breast feeding period.

Grade 2: Moderate soreness that continues throughout feedings. Slight erosion or blistering of the nipple may be present.

Grade 3: Severe pain. Nipple fissured, raw or crusty.

Mastitis

Grade 1: Temperature elevation less than 101F (oral). Inflammation around nipple. Non-suppurative.

Grade 2: Temperature elevation greater than 101F (oral). Induration and redness of portion of breast. Non-suppurative, acute pain.

Grade 3: Localization into breast abcess, temperature greater than 101F (oral), severe pain.

Engorgement

Grade 1: Breasts firm, slight discomfort, outflow free, no elevation of temperature. Disappears within 48 hours.

Grade 2: Breasts moderately edematous, skin shiny, moderately painful. Lasts longer than 48 hours.

Grade 3: Severe edema of breast with obstructed flow. Edema may extend into axillary area. Breasts hot and heavy. Infant unable to obtain milk. Mother's temperature elevated.

For analysis purposes, point values for each grade of each complication were assigned equal to that grade. For example, sore nipples of grade 2 severity equalled 2 points while grade 3 severity equalled 3 points. Total point values were then computed for both the study and control groups.

APPENDIX D

THE "HOW TO" BOOKLET ON BREAST FEEDING

How To Hold Your Baby to Nurse

Choose the position that is most comfortable for you.

Lying Down: When lying on your right side, place your right arm under the baby's head or above it. When lying on your left side, place your left arm above or under the baby's head.

Sitting Up: Sit in a comfortable chair. Use pillows to support your arm holding the baby or under the baby himself. You may be more comfortable with your feet up on a stool or coffee table.

How To Get Baby To Nurse

Bring your baby's head close so that his cheek touches your breast. He will turn his head toward the nipple and open his mouth. Be sure that he gets all of the nipple and part of the dark area into his mouth. This will prevent him from chewing on the nipple and making it sore. You may need to press down on the breast above the baby's nose to make it easier for him to breathe. If baby has trouble getting hold of the nipple, you can squeeze the dark area around the nipple which will make it easier for him to get it into his mouth. If your baby is too sleepy to nurse, sit him on your lap, support the back with one hand and hold the chin with the other hand. Bend him forward at the waist several times and he will open his eyes. You may also firmly rub his back or the bottoms of his feet. If your baby is crying too hard to nurse, talk gently to him and love him until he calms down.

How To Take Baby Off The Breast

To take your baby off the breast, put your little finger gently in the corner of his mouth between the gums. Never Pull Him Off! This will cause sore nipples.

How Long To Feed Baby

At first you should nurse your baby only five minutes on one breast and then burp him by rubbing his back gently. This will get rid of any air baby has swallowed that might cause stomach cramps later. Then put him to the other breast for another five minutes. Mark this last breast with a safety pin on your bra strap so that next time you will begin feeding from that breast first. By using both breasts at each feeding you will have more milk and the breasts will be the same size. Each day you may let your baby nurse a little longer until by the end of the first week he may suck ten minutes on the first breast and fifteen to twenty minutes on the second.

How Often To Feed

At first your baby may want to nurse every two to three hours, particularly while you are building up your milk supply. Remember that nursing your baby often is what builds up the milk supply. After the first week or so, your breasts won't feel so full all the time. This does not mean that you are losing your milk. Baby will make his own schedule and your milk supply will adjust to it. Usually babies do not need to nurse oftener than every three hours. Talk to your doctor if your baby wants to eat oftener than this.

How To Know If Baby Is Getting Enough

If your baby wets at least six diapers a day he is getting enough milk.

Sometimes baby may seem to want to eat more often. This may happen about two weeks of age and again at six weeks and three months at which time he is growing very rapidly. Go ahead and feed him more often. When his growth slows down, he won't need to nurse so frequently.

Sometimes this hunger may be because the mother is getting too tired or upset. When this happens she can't make as much milk.

To understand why this happens, let's look at how the breasts produce milk. When your baby sucks, it causes two hormones to go into your bloodstream. One hormone tells the breast to continue to make milk. The other hormone helps the milk to move down the breasts into little pools behind the nipples. This is called the "let-down" reflex. At first it may take several seconds to several minutes of sucking for the "let-down" to occur. Later, just hearing your baby cry or even just thinking about him will cause the "let-down" to occur. How will you know when it happens? You'll feel a tingling sensation in the breasts, milk may drip from the nipples, and, because the hormones also work on the womb to bring it back into shape, you may feel some cramping in your abdomen.

The "let-down" reflex is affected easily by how you feel. When you get overly tired or when you are upset about something, the hormones won't go into your bloodstream and so the milk won't "let-down" where baby can get it.

It is important that you plan your day so that you can relax when it is time to feed baby. This is a good time for you to have a drink too, such as milk or juice because you need to take extra fluid to help in the process of making milk. Try to get a good night's sleep and maybe an afternoon nap, too.

How To Care For Nipples

Wash the breasts each day with clear water, but No Soap! After each feeding, leave your bra open a few minutes so the air can dry the nipples because dampness causes the nipples to become sore and crack easily.

Keep your breast pads dry. A Kotex cut in half or a folded man's hankerchief make good pads to soak up any milk that might leak out. Do not use the plastic-backed breast pads as they tend to keep the nipples damp.

You may use pure lanolin on the nipples. It is not necessary to wash this off before feeding your baby.

If your nipples become tender, you may use a breast shield for a few days to help them heal. This device looks like a nipple for a bottle and is placed over your nipple before inserting in the baby's mouth. Your baby will still drink your milk but he cannot chew on your nipple. These may be purchased at any pharmacy.

How To Care For Sore Breasts

Sometimes a nursing mother will have swollen breasts which are painful. To make yourself more comfortable, apply heat to the breasts by using a towel wet with hot water, a hot water bottle, or by

taking a warm shower. This works well just before nursing. Let your baby nurse more often. When the breasts are too full, the milk may come out so fast it chokes the baby or it may be difficult for him to get hold of the nipple. In that case, you should remove some of the milk by hand first.

To Remove Milk By Hand

1. Wash your hands.

2. Place one hand under the breast to hold it up.

3. With the other hand, put your thumb above the dark area and your other fingers underneath.

4. Push your fingers back toward the breast and squeeze them together. Do not slide the fingers and thumb out toward the nipple.

5. Do this all the way around the nipple.

6. Milk will be expelled from the nipple. Continue to do this until the breast is soft enough for the baby to nurse.

APPENDIX E

Data Collection Sheet

Name _____ G_____ P_____ Ab_____

Address _____ Telephone _____

Directions to Home _____

Race_____ Age_____ Marital Status M_____ D_____ Sep_____ S_____

Education: Mother_____ Father_____

Occupation of Father_____

Length of Breast Feeding _____

Reason for Discontinuance:

1. Sore Nipples
2. Mastitis
3. Engorgement
4. Insufficient milk
5. Baby not gaining weight
6. Lack of emotional support
7. Other_____

Number of Supplements Per Day: Week: 1_____ 2_____ 3_____ 4_____ 5_____

Number of Complements Per Day: Week: 1_____ 2_____ 3_____ 4_____ 5_____

Complications of Lactation:	Week:	1-2	3	4	5
1. Nipples	Grade:				
2. Mastitis	Grade:				
3. Engorgement	Grade:				

Type of Emotional Support Received by Mother:

	Positive	Neutral	Negative
Husband			
Mother			
Other Relative			
Friend			
Other			

Rating of Satisfaction of Experience: _____

Infant's Birth Date _____ Birth Weight _____

Weight Gain Week: 2_____ 3_____ 4_____ 5_____

Birth Head Circumference _____ Circumference Last Visit _____

Birth Length _____ Length Last Visit _____

APPENDIX F

BREAST FEEDING QUESTIONNAIRE

Please circle the response which most closely describes how you feel.

Circle only one answer for each question.

1. I feel happy when I am breast feeding my baby.

   A. Never
   B. Sometimes
   C. Usually
   D. Always

2. I feel embarrassed when I am breast feeding my baby.

   A. Always
   B. Usually
   C. Not Often
   D. Never

3. I feel confidant that my baby is getting enough milk.

   A. Never
   B. Not Often
   C. Usually
   D. Always

4. I feel that I am being a good mother when I breast feed my baby.

   A. Never
   B. Not Often
   C. Usually
   D. Always

5. Breast feeding is too difficult.

   A. Yes, definitely
   B. Yes, usually
   C. No, not usually
   D. No, never

6. I would recommend breast feeding to my friend.

   A. Never
   B. I probably would not
   C. I probably would
   D. Yes, definitely

7. If I have another child, I will breast feed him/her.

A. Never
B. I don't think so
C. Probably
D. Definitely

8. Breast feeding upsets me.

A. Always
B. Often
C. Sometimes
D. Never

9. Who has encouraged you to breast feed your baby?

A. Husband
B. Mother
C. Other relative
D. Friend
E. Other
F. No One

10. Who has told you that breast feeding isn't good for you or the baby?

A. Husband
B. Mother
C. Other relative
D. Friend
E. Other
F. No One

11. Who hasn't tried to influence you one way or the other?

A. Husband
B. Mother
C. Other relative
D. Friend
E. Other
F. No One

12. Who has tried to get you to stop breast feeding?

A. Husband
B. Mother
C. Other relative
D. Friend
E. Other
F. No One

13. Who agrees with your decision to breast feed?

A. Husband
B. Mother
C. Other relative
D. Friend
E. Other
F. No One

For analysis purposes, points were assigned to each of the first eight responses.

A - 1 point
B - 2 points
C - 3 points
D - 4 points

Questions nine to thirteen were used to determine how the mother felt other people were reacting to her breast feeding.

APPENDIX G

December 12, 1973

Mrs. Anita Berry, R.N.
Graduate School of Nursing
Loma Linda University
Loma Linda, CA 92354

Dear Mrs. Berry:

Your research proposal "The Effect of Antenatal Instruction on Success of Breast Feeding" has been reviewed by the Advisory Committee of Human Experimentation and granted its unqualified approval.

Should you change the research project in any significant way it is understood that you will notify the committee.

Sincerely yours,

Jack W. Provonsha, M.D., Ph.D.
Chairman, Advisory Committee
on Human Experimentation

JWP:mn

January 8, 1974

Anita Berry, R. N.
11091 Perris Boulevard
Sunnymead, California 92388

Dear Miss Berry:

I see no reason why you cannot conduct your research study in the Obstetrical Department of Loma Linda University Medical Center. I would suggest that you contact Mrs. Priscilla Meyer, who is the supervisor of that area, to inform her of your plans of working with patients and what involvement there will be with the nursing staff.

I would be interested in knowing your findings after you complete your studies.

Sincerely,

(Miss) Gertrude Haussler
Director Nursing Service

December 26, 1973

Anita Berry, R.N.
11091 Perris Blvd.
Sunnymead, Calif. 92388

Dear Ms. Berry:

We are happy to grant you permission to conduct a study in our prenatal clinic.

Please contact Dr. Hugo Riffel in our department if you have any further questions.

Sincerely,

Harold F. Ziprick, M.D.
Chairman

HFZ:gg

December 26, 1973

Miss Anita Berry, R.N.
11091 Perris Blvd.
Sunnymead, Calif. 92388

Dear Miss Berry:

You have my permission to conduct your survey in our Prenatal Clinic, if I may have an abstract of your thesis when it is completed. It will not be necessary for you to see me but I want you to talk with Dr. Brown before beginning your survey.

Sincerely,

Marie E. Greene, R.N.
Director, Nursing Services

March 26, 1974

Anita Berry, R.N.
11091 Perris Blvd.
Sunnymead, California 92388

Dear Ms. Berry,

I received your recent letter regarding your requesting my permission to conduct a study in our prenatal clinics at Riverside General Hospital as to the different advantages of breast feeding.

I must apologize in misplacing your original letter explaining your exact proposal with your thesis for your masters degree through Loma Linda University. We have been in the process of moving our private practice from Riverside General Hospital to a new private office on Brockton, and this may be the reason for its misplacement.

You certainly have my permission to follow through with your proposal to study the prenatal patients in our clinic, as you outlined in your letter. I will be anxious to hear of your evaluation and would appreciate a copy of your thesis for our own personal information.

Again, I am sorry for the delay in writing you and in giving you my permission for your conduction of this study.

With personal regards.

Very truly yours,

W. W. Brown, M.D.
Palm Medical Group, Inc.
Chief, Riverside General Hospital

WWB/chb

LOMA LINDA UNIVERSITY

Graduate School

PRENATAL INSTRUCTION OF BREAST FEEDING MOTHERS

by

Anita Berry

An Abstract of a Thesis in Partial Fulfillment

of the Requirements for the Degree

Master of Science

in the Field of Nursing

September 1974

ABSTRACT

This experimental study tested the effect of prenatal instruction on the success of a group of mothers who desired to breast feed their infants. It was hypothesized that mothers receiving information on how to nurse their infants, how to prevent complications and how to cope with common problems of breast feeding would have a higher success rate than those not so instructed.

Criteria for success was that the mothers would have an adequate supply of milk to meet the nutritional demands of their infant without supplementation, would have fewer and less severe complications, and would express a higher degree of satisfaction with their breast feeding experience.

Fourteen mothers from Riverside General Hospital and Loma Linda University Medical Center participated in the study. These mothers were from the lower socioeconomic classes, had not breast fed before, and demonstrated no contraindication to breast feeding.

Mothers in the study group viewed a film strip on the art of breast feeding followed by a discussion of key points on how to prevent complications, the process of the "let-down" reflex and nutritional demands of the infant in relation to growth. Each mother was given a booklet outlining these points. The control group did not receive any instruction other than what was normally provided by the clinic and hospital.

Each mother was visited in the hospital and at home at two, three, four and five weeks post partum or until breast feeding was discontinued if it was prior to five weeks. The purpose of the hospital visit was to obtain the birth weight, length and head circumference of each infant. During each home visit, the infant was weighed and at the final visit the length and head circumference were again taken. The presence and severity of lactation complications of the mother were assessed. At the final visit, the mother completed a questionnaire pertaining to her satisfaction with the breast feeding experience.

Analysis of the data showed that mothers receiving prenatal education did breast feed their infants longer and gave fewer complementary or supplementary feedings. A Chi Square analysis was significant at the .05 level. The mother's concept of insufficient milk production was the most common reason for discontinuance of breast feeding although all infants demonstrated adequate growth in weight, length and head circumference.

The Mann-Whitney Test of the degree of complications indicated a significant difference at the .05 level with mothers in the study group perceiving that they had less severe complications. Sore nipples was the most common complication. No correlation was shown between the length of breast feeding and the number of complications.

Mothers in the study group expressed a higher rating of satisfaction with their breast feeding experience although this was not statistically significant. There was a significant correlation between the length of breast feeding and rating of satisfaction among the control group but not the study group.

Based on the analysis of the data obtained in this study, it was concluded that prenatal education did significantly influence the success of breast feeding mothers.