

PEER-SUPPORT OF BREASTFEEDING MOTHERS

by

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"Wherefore as it is agreeing to nature so it
is also necessary and comly for the own
mother to nource the owne child. Which if it
may be done, it shall be moste comendable and
holosome."

Thomas Phaire, 1545

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PEER-SUPPORT FOR BREASTFEEDING MOTHERS

1. INTRODUCTION

Breastfeeding has been the safest and primary source of infant nutrition throughout the centuries. If a new mother could not breastfeed the only safe alternative to a nursing mother was a wet nurse. It is only in the last 80 years that bottlefeeding has become important.

In the beginning of the century bottlefeeding was practiced first by upperclass mothers, but during 1900-1960 it became more widespread in all social classes. The further decline of breastfeeding was facilitated by several developments:

- 1) Safe water supply and sewage systems
- 2) Public education in sanitation
- 3) Availability of refrigerated storage
- 4) Storage of cow's milk through evaporation, canning or pasteurization.
- 5) The production technology for manufacturing bottles and nipples
- 6) The changing role of women from domestic duties to jobs and professions requiring separation of mother and infant (Riordan and Countryman 1980)

1.1 Current Trends of Infant Feeding Methods in the U.S.

The prevalence of breastfeeding prior to 1940 can only be estimated, but there is evidence of a marked decline in the breastfeeding incidence from 1920-1960 (Yeung et al. 1981). Surveys conducted from 1955-1980 document clearly that this decline of breastfeeding reached its nadir around 1970 when only one out of four mothers chose to breastfeed her infant. This has been followed by a significant trend towards breastfeeding within the U.S. (Martinez et al. 1981) and other industrialized countries (Cole 1977; Lai et al. 1982; Sjolín et al. 1977; Plesse et al. 1980). Data from the U.S. survey indicate both an increased incidence and duration of breastfeeding, particularly among more educated middle-class women (Martinez et al. 1981). However, the same study also revealed that between the years 1977 and 1980 a larger percentage of mothers, who belonged to the lower socio-economic class decided to breastfeed as well (Martinez and Stahle 1982). In spite of these tendencies, the prevalence of breastfeeding among women enrolled in the Special Supplemental Food Program for Women, Infant, and Children (WIC) is still below that of the general U.S. population. Only 40 percent of WIC mothers, compared to 55 percent of other U.S. mothers breastfed right after discharge from hospital and 25 percent of WIC mothers, compared to 42 percent of U.S. mothers did so after two months (Martinez et al. 1982).

Full-time employment and young maternal age are most prevailing factors associated with a lower prevalence of breastfeeding (Cole 1977; Martinez et al. 1981; Martinez and Stahle 1982; Yeung et al. 1981). Participants of the WIC program frequently have these characteristics and are therefore likely to give up breastfeeding and "benefit" from the "free" formula donated in this program as soon as any problems occur.

The physiological, immunological and psychological advantages of breastfeeding have been identified in the last 30 years. Breastfed infants have fewer allergies, are better protected against infection and benefit from the close physical contact with the mother (Albers 1981; Jeliffe and Jeliffe 1978). Despite the increasing incidence of breastfeeding many mothers who start successfully within the first 6-8 weeks stop during the next few weeks (Albers 1981; Cole 1977; Houston and Howie 1981; Sjolín et al. 1977; Verronen 1982). The physiologic process of breastmilk production is controlled by hormones which are directly influenced by environmental factors. In this way illness, pain or an unsupportive environment might create a stressful situation that inhibits the milk ejection response and would lead to an unsuccessful breastfeeding experience (Gulick 1982).

Young women who are separated from their family have less contact with older female relatives who could transfer

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their knowledge and experience in nursing. Her economic situation often forces the low-income mother to work and care for the child at the same time without sufficient support and understanding from family or friends. Skillful advertisement helps the mother accept the convenience of bottlefeeding. Without encouragement she will lack knowledge of the benefits of breastfeeding (Power 1977). However, breastfeeding mothers have a number of problems they need to discuss with other experienced mothers, particularly in the first few weeks after delivery. The rapid growth of the "La Leche League" and other self-help groups has demonstrated the need of nursing mothers have for a mother-to-mother support system (Lipson 1980). Modern health services have, in general, not sufficiently supported or encouraged breastfeeding. However, the American Academy of Pediatrics recently published a list of recommendations to channel public health care activities towards the promotion of breastfeeding (Amer. Acad. of Pediatrics 1981) thereby demonstrating the increased interest of the medical profession in breastfeeding.

The purpose of this study is to determine whether peer-support from either family members, friends or other breastfeeding mothers is associated with successful breastfeeding. Furthermore, the researcher will identify the most supportive peers and other environmental factors that may lead to breastfeeding failure or success. This

study will also examine correlations between successful breastfeeding and maternal age and education, paternal support, physician's encouragement, return to work or school after delivery, and source of information after regarding breastfeeding problems. The results will help identify factors which promote breastfeeding in the Riley County WIC program and provide a basis for further activities with WIC mothers.

2. LITERATURE REVIEW

During the past decade breastfeeding has gained popularity among middle and upper class families. Most of the available literature focuses on the preparation, techniques, physiology and common problems encountered with breastfeeding. However, only a few articles depict the situation of a young low-income woman who wishes to continue nursing even after returning to work (Broome 1981; Shepherd and Yarrow 1981).

2.1 The Decision to Breastfeed or Bottlefeed

The mother's decision to breastfeed cannot be separated from all cultural, environmental and personal influences that determine breastfeeding success or failure. Recent studies suggest that almost all women determine the method of infant feeding early in pregnancy or even before conception or marriage (Beske and Garvis 1981). Several studies indicate that socio-economic factors such as education, income and age affect the choice of infant feeding less than the mother's own decision to breast- or bottlefeed (Entwisle 1981; Lyon et al. 1981; Mackey and Fried 1982; Yeung et al. 1981). Entwisle and co-workers (1981) point out a most interesting difference between mothers with a low-income background and those with a middle class background. The results of this study reveal that information obtained from prenatal classes affects the

choice between bottle- and breastfeeding for middle-class women but not for the lower-income class. These mothers chose their method of infant feeding according to their own previous decision to bottle or breastfeed (Entwisle et al 1981). Long-term breastfeeding (more than six months) was associated significantly with a successful previous breastfeeding experience. Most of the short-term breastfeeders made their decision only in late pregnancy. This group might not have had sufficient preparation and support during the classes to adequately handle all breastfeeding problems (Yeung et al. 1981).

The decision about the choice of infant feeding method, therefore, is dependent on several factors:

- 1) economic necessity of the mother to return to work
- 2) mother's knowledge of possible alternatives to return to work and to continue to breastfeed her baby simultaneously (Broome 1981; Shepherd and Yarrow 1982)
- 3) length of time the mother is exposed to the information about the advantages of breastfeeding
- 4) practical guidance from health-care personnel who promote breastfeeding and encourage the expectant mother (Beske and Garvis 1981)

- 5) recommendations by literature, physicians and friends
- 6) family background and a previous positive breastfeeding experience; mothers who were breastfed are more likely to breastfeed their babies as well (Shepherd and Yarrow 1982; Yeung et al. 1981)

The mother's choice of infant feeding will be influenced strongly by the attitude of her family, friends and health-care professionals who can support or discourage her from breastfeeding. However, this support affects even more the duration than the decision of breastfeeding (Yeung et al. 1981; see Chapter 2.2).

2.2 Factors Leading to the Early Termination of Breastfeeding

In the western culture the most frequent reason for terminating breastfeeding is the insufficient amount of milk. Even among mothers who were successfully breastfeeding over a longer period transient lactational crisis occurred, most frequently during the first weeks after delivery (Verronen 1982). Most essential to the successful management of breastfeeding is the understanding, that the milk ejection or "let-down-reflex" is a psychosomatic process, mediated by the hormones prolactin

and oxytocin. All emotional reactions such as embarrassment, stressful situations, nervousness or pain may inhibit this milk-ejection process, which is the key to breastfeeding success or failure (Beske and Garvis 1982; De Chateau et al. 1979; Myres 1982; Riordan and Countryman 1980).

Most of these studies cannot reveal precise answers to the question why the milk "dried up". The underlying causes given by the mothers include anxiety, stress, tiredness, lack of motivation and encouragement, and occupation away from home (Albers 1981; Gulick 1982; Houston and Howie 1981; Sjolín et al. 1977; Verronen 1982). The association between embarrassment, lacking support, painful breastfeeding and poor breastmilk production indicates that these interrelated phenomena represent the physiological, cognitive and emotional factors of the breastfeeding process (Gulick 1982).

Separation of mother and child because of the economic necessity to work is another major reason to stop breastfeeding. Especially in low-income families where the expectant mother tends to be younger and has less education than middle or upper class women, breastfeeding mothers will have difficulties in continuing to nurse their infant when returning to work. In most of the working environments breastfeeding is almost impossible unless she learns how to express and store her milk (Balk 1982; Shepherd and Yarrow 1982; Yeung et al. 1981). As a consequence

inconvenience is a frequently stated reason for breastfeeding mothers to switch to bottlefeeding, particularly when they return to work or to school (Yeung et al. 1981). However studies in socialist countries such as the German Democratic Republic show that the prolongation of the maternity leave alone did not increase the breastfeeding frequency and duration (Plesse et al. 1981). Only a few publications give practical advice on how to combine nursing and working outside of the home. Also the available literature tends to address middle-class women instead of referring to the situation of low-income families (Balk 1981; Broome 1981; Shepherd and Yarrow 1982). To summarize, it appears that the fear of lack of sufficient milk and lactational crises occur most frequently in the first 6-8 weeks after delivery and lead to early termination of breastfeeding (Albers 1981; Cole 1977; Power 1977; Verronen 1982; Yeung et al. 1981) while returning to work or inconvenience are associated with later termination of breastfeeding (Ellis 1981; Houston and Howie 1981; Houston and Howie 1981a; Yeung et al. 1981). Painful breastfeeding due to infant teething was another problem stated by women who terminated breastfeeding after 5-6 months (Ellis 1981).

Health problems of the nursing mother or medication may also lead to termination of breastfeeding (Yeung et al. 1981). Coles study (1978) of 472 women revealed that one of

the three most frequent reasons given for weaning was the physician's advice to stop breastfeeding (Coles 1977). Hospital related factors are rarely cited as significant influences on the duration of the nursing period. There is no evidence that an increased stay in the hospital is associated with a downward trend in breastfeeding (Palmer and Avery 1979)

2.3 Reasons for Prolonged Breastfeeding

Entwistle's theory of the infant-centered attitude of long-term breastfeeding mothers is reflected in the reasons mothers cite when still breastfeeding after 8 months. In the study of Yeung and his co-workers (1981), the main reasons for a prolonged breastfeeding period were convenience, closeness and warmth between mother and child and the baby being accustomed to breastfeeding. Difficulties associated with long-term follow-up studies of nursing women may be the reason why far more information on reasons for terminating than for prolongation of breastfeeding is available.

2.4 Profiles of Mothers Who Are the Most Likely and Least Likely to Breastfeed

Women who feel positively about all natural trends in health-care and who are well informed about the advantages of breastfeeding might see it as the most natural choice of

infant feeding. Even though it is difficult in a research study to predict distinct differences between potential bottle-and breastfeeding mothers, some studies have attempted this (Houston and Howie 1981; Yeung et al. 1981), Lyon's study (1981) on 31 women revealed clearly that women who attended prenatal preparation are more likely to breastfeed successfully than women without it. Prenatal preparation gives the expectant mother the encouragement and the practical advice she needs (Entwisle et al. 1981; Lyon et al. 1981; Myres 1982). Successful breastfeeding mothers have significantly more information about practical implications of nursing than unsuccessful breastfeeders, especially about nipple care (Albers 1981; Gulick 1982; Yeung et al. 1981; Whitley 1978;) Even women who intended to bottlefeed claim, like their breastfeeding counterparts that "Breast is best" for their babies and that it helps to create a better mother-child bonding (Lyon et al. 1981). This shows that education may lead to more knowledge among expectant mothers but not necessarily to a significant behavior modification. Entwisle and co-workers (1981) concluded that breastfeeding mothers are more child-centered while bottle-feeding mothers are characterized more by a mother-centered attitude (see chapter 2.2.1).

The following description will summarize the main features of the average American women who is most likely to breastfeed. She has successfully breastfed an infant

previously (Amer. Acad. of Pedr. 1982; Shepherd and Yarrow 1982; Whitley 1978) or, as a primipara she is open to new information (Yeung et al. 1981). Receiving support from her family and friends she strongly believes in the advantages of breastfeeding her infant and is further encouraged by health care personal who themselves promote breastfeeding. She lives in a social environment which favors breastfeeding, has an educational background beyond highschool and belongs to the middle-class. Being socio-economically advantaged she does not have to leave home to work and has an understanding husband who supports and encourages his wife to breastfeed (Albers 1981; Amer. Acad. of Pedr.1982; Beske and Garvis 1982; Cole 1977; Entwisle et al. 1982; Furman 1979; Gulick 1982; Houston and Howie 1981; Lyon et al. 1981; Mackey and Fried 1981; Power et al. 1979; Yeung et al. 1981).

In contrast, the profile of a women who is less inclined to breastfeed for a longer period is of someone who is younger, has a lower education, belongs to the lower income-class, might live on her own, and is a smoker. This kind of expectant mother is most probably working outside of her home and might have had multiple complications or an illness pre- or postnatally. With young maternal age, low-birthweight infants are more likely to occur (Palmer and Avery 1979). They are separated more frequently from their mother while still in the hospital for special treatments.

Consequently there is not enough physical contact to establish a normal breastfeeding routine in the hospital. Also small babies have weaker suckling reflexes and their mothers are more often encouraged to bottlefeed or give supplementary formula (Palmer and Avery 1979; Yeung et al. 1981). The mother who is most likely to bottlefeed is most likely to live in an environment which does not favor breastfeeding. In addition she has not enough encouragement from her husband, her family or her friends and as a result might be less confident about her decision to breastfeed. If she does not try to get enough information from prenatal preparation classes or if she is not informed sufficiently about proper nipple care and other problems which could arise during the first weeks of her nursing period this mother is inclined to switch to bottlefeeding as soon as she after she encounters problems (Albers 1981; Amer. Acad. of Pedr. 1981; Beske and Garvis 1982; Cole 1977; De Chateau et al. 1979; Entwisle et al. 1982; Furman 1979; Gulick 1982; Kemberling 1979; Lyon et al. 1981; Mackey and Fried 1981; Martinez and Stahle 1982; Palmer and Avery 1979; Plesse et al. 1981; Whitley 1978; Yeung et al. 1981). Inconvenience was stated by the mothers as an excuse to bottlefeed while mothers intending to breastfeed think that convenience is one of the major advantages of nursing (Mackey and Fried 1981).

All these factors seem to be interrelated and indicate

that attitudes towards infant feeding methods are not only determined by "what is best" (Jeliffe and Jeliffe 1979) but also include social and cultural factors (Lyon et al. 1981).

2.5 Emotional and Practical Support - Its Role for Successful Breastfeeding

Breastfeeding is not only a method to satisfy the physiological hunger of a newborn but it also includes a very special relationship which provides the infant with comfort, warmth and security. This relationship can be influenced by several factors including the mothers own concept of her role, the support or discouragement of her husband or other family members, and the individual temperament and needs of her baby (Tompson 1976). The most striking characteristic of breastfeeding trends today is the high discontinuation rate shortly after leaving the hospital. As previously reviewed the most frequently cited reason for terminating breastfeeding is insufficient milk. It is most likely that environmental influences rather than physiological factors are responsible for this (Entwisle et al. 1981; Coles 1977; Houston and Howie 1981;). Anxiety and lack of confidence of a nursing mother who receives little practical advice might lead to the early weaning because she imagines the baby does not get enough milk. This fear in turn reduces the strength of the suckling

stimulus because the inhibition of the let-down reflex may lead to an insufficient milk production (Houston and Howie 1981; Houston and Howie 1981a; Mead 1977).

There are several environments where the nursing mother can receive support or discouragement: the school, the home or the society as a social environment itself (Myres 1981). In almost all societies childbearing and nursing women have been surrounded by other women who themselves have breastfed infants. In this way the art of mothering was transferred from generation to generation. In an industrialized countries today, it is fairly possible that a young mother can be faced with the task of feeding her infant without ever having seen a baby being breastfed. In addition, the institutionalization of maternity care has removed childbearing women from their traditional support systems - family and midwives (Ellis 1981, Raphael 1977). In her study, Coles (1977) found strong evidence that the main difference between bottle- and breastfeeding mothers is access to support persons and encouragement rather than the absence of problems which arise among bottlefeeding as well as among breastfeeding mothers. These results are supported by Houston and Howie's studies (1981, 1981a) which reveals that home support for breastfeeding mothers given by nurses was the key to a longer breastfeeding period. Several other studies show that the nursing period is lengthened significantly when there is appropriate support

from health professionals (Furman 1979; Jeliffe and Jeliffe 1978; Kemberling 1979) or the family members exists (Albers 1981; Beske and Garvis 1982; Gulick 1982; Lipson 1980; Myres 1980; Sjolín et al. 1977; Thompson 1977).

The rapid growth of the "La Leche League" and other mother-support groups show the obvious need breastfeeding mothers have to share problems and support within these groups (Fleischaker et al. 1976; Thompson 1977). Much of the information an expectant or new mother needs is more of emotional rather than medical. She may feel more comfortable in calling another mother instead of a physician or a nurse and to seek help at the moment when it is needed (Thompson 1977). Only a few physicians realize this problem. In addition women stated that the physician plays only a minor role in encouraging a new mother to breastfeed (Beske and Garvis 1982; Mackey and Fried 1981; Shepherd and Yarrow 1981) and he is even cited as a source of discouragement in the study of Yeung and his co-workers (1981).

Pediatrics is still a prevailing male profession and pediatricians may feel uncomfortable discussing breastfeeding problems. Also it is evident that that controlling the infant's food intake and changing the formula when the infant gets sick are much easier for the physician when the mother is bottlefeeding (Mead 1977). In fact several surveys point out that:

- 1) patients are not adequately prepared and getting sufficient help from their physician about breastfeeding (Albers 1981; Amer.Acad. of Pedr. 1982; Beske and Garvis 1982; Furman 1979)
- 2) the period of breastfeeding is most likely to be extended if pediatricians and nurses support breastfeeding (Albers 1981 Houston and Howie 1981, 1981a).

2.5.1 The Father's Role

Fundamental deterrents to successful breastfeeding are tiredness of the mother and an unsupportive husband who is not willing to help his wife with understanding and practical help in the household (Kemberling 1979). In our society where the young couple may be separated from the extended family, the father may become involved in "mothering-the-mother" (Raphael 1979) more than any of the other family members. Several studies show a positive correlation between the father's interest in breastfeeding and the mother's success (Beske and Garvis 1982; De Chateau et al. 1977). Furthermore, the father is found to provide the most encouragement for the breastfeeding mother. Moreover husbands are cited as exerting strong influence on a women's decision to breastfeed. Family members and friends are the most frequently cited source of information after pamphlets and books (Gulick 1982). In spite of all

this relatives and the baby's father in particular may also represent a potential source of discouragement, especially if a mother is sensitive to their remarks (Whitley 1981).

Mothers frequently want their husbands to participate in the prenatal information meetings in order to understand why breastfeeding women may feel tired and weepy (Entwistle et al. 1981). Albers (1981) points out that friends, family and health professional all failed to provide the adequate emotional support desired by 60 percent of the mothers. All these results indicate the necessity of a support system for a breastfeeding mother to overcome initial complications during the the first weeks (Verronen 1982). This support can be offered in the form of friendship, an understanding attitude, or actual concrete services from health personal (Albers 1981).

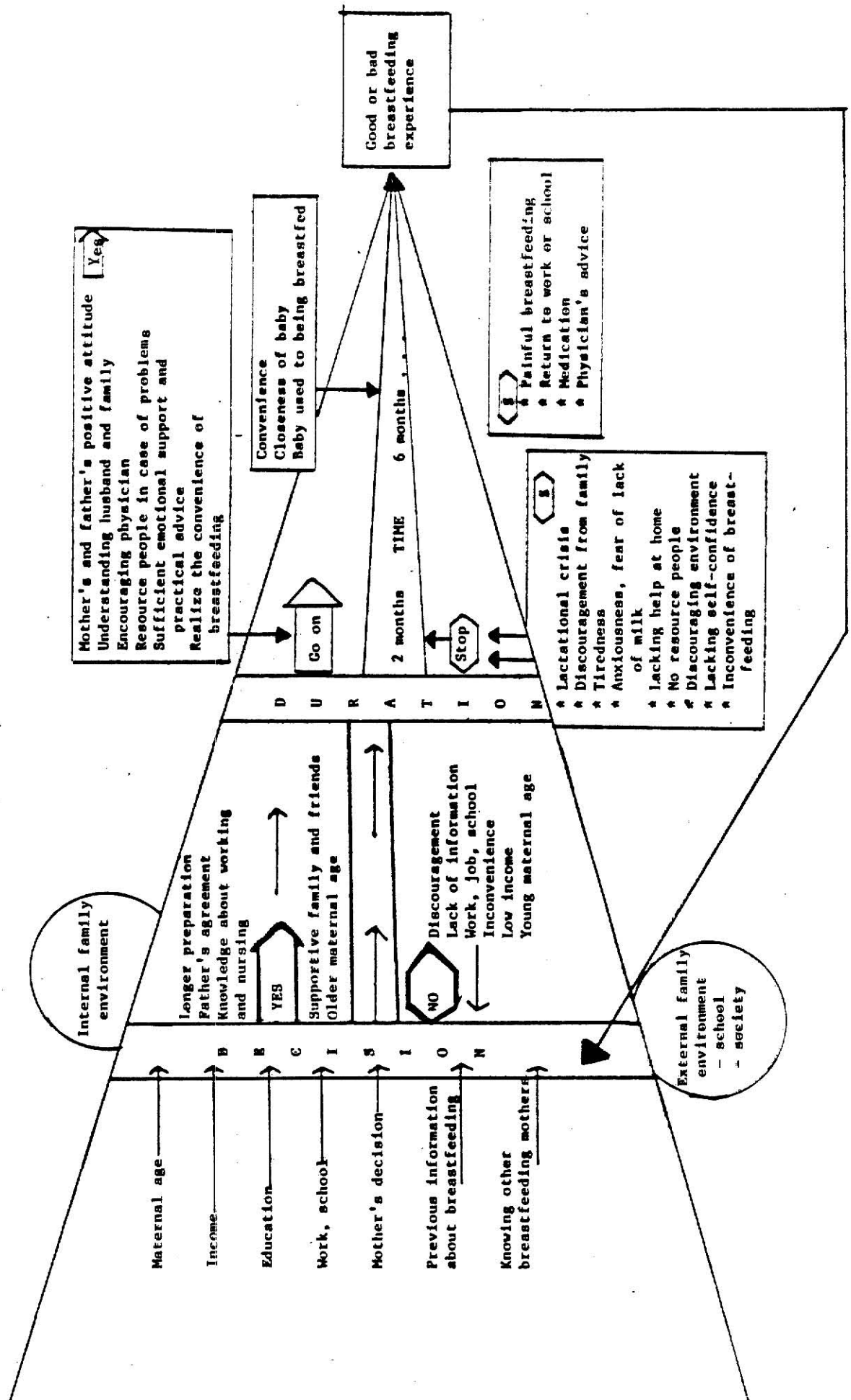
2.6 Summary

Figure 1 summarizes environmental, socio-cultural, and psychological factors which influence the decision and the duration of a breastfeeding period. The first two months are determined mainly by the emotional response of the mother towards nursing while after six months more practical reasons such as returning to work or school determine the breastfeeding behavior. A previous good or bad breastfeeding experience is the basis for a further attitude and decision towards bottle or breastfeeding.

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Fig. 1. Factors influencing breastfeeding behavior



3. METHODOLOGY

The participants of this study included were pregnant women enrolled in a WIC program who responded to a pre- and postnatal questionnaire regarding breastfeeding. Data collection took place at the WIC center, located at the Riley County Department of Health, Manhattan, Kansas, from December 1, 1982 to ending July 5, 1983.

All subjects signed an informed consent (Appendix I) which explained the study and assured that any information obtained would be confidential and protect their privacy. Furthermore, the researchers assured that there would be no risk to them or their unborn child associated with the data collection and that all participants were free to withdraw their content in the study at any time.

3.1 The Breastfeeding Class

To promote breastfeeding a preparation session was held each month for pregnant women enrolled in the WIC program who are in their last trimester of pregnancy. This class is offered during the regular voucher pick-up period at the health-department. During these sessions the pregnant women learns the advantages of breastfeeding. Moreover, she will meet with other mothers who already have had a successful breastfeeding experience. The main objectives of these sessions are listed in Appendix II.

3.2 The Questionnaires

The impact of a support-system arising either from family members, friends or the physician was measured using two questionnaires administered pre and post delivery. The first (Appendix III) was given at the time of enrollment in the WIC program or at the last trimester of pregnancy. The second questionnaire (Appendix IV) was administered when the mother applied for recertification, between two and ten weeks after delivery. Due to insufficient information the researcher was not able to foresee that only three women who did not intend to breastfeed filled out the first questionnaire correctly. This lack of a sufficiently large control group lead to the decision to include in the study only those participants who decided to breastfeed in the study. Irregular attendance of the participants at that time forced the researcher to mail the questionnaire to the women, who did not appear in time at the WIC center.

The first questionnaire included questions about the mother's intended duration of breastfeeding, whether or not she intended to go back to work or school after delivery, if they planned to supplement her breastfeeding, and if she had any support from her family, friends or physician. The second questionnaire repeats the questions regarding the mother's decision to supplement her breastfeeding, and asked if she did attend the WIC breastfeeding information session, whether she received sufficient support from her

environment, and if she had any problems with breastfeeding. Since a great proportion of the participants attended the voucher pick-up irregularly or had no phone, the actual duration of the breastfeeding period was taken from the WIC program records of the participants. Attitudinal questions towards breastfeeding, including the husband's, the family's, and friends' or the pediatrician's support were ranked from strong disagreement (1) to strong encouragement (5) (Table 1). In order to compare the change of attitude towards breastfeeding before and after delivery, mean scores from all individuals were calculated for the previously mentioned variables.

A follow-up of 20 women was conducted to assure a better estimation of the actual duration of the breastfeeding period. In addition, the maternal age and the birth date of the infant was taken directly from the WIC records. However, the mandate of the WIC program does not allow it to publish or keep any information on the marital status of the participants.

Of all participants in the WIC program, 37 pregnant women filled out the first questionnaire and 18 of them took part in the follow-up study after delivery. Two women could not fill out the first questionnaire but participated in the two months long follow-up post delivery. Data from these women are included in section 4.1. When determining the significance of the results one must consider the relatively

Table 1. Scoring the degree of support

Strength of support	Score
Strong encouragement	5
Slight encouragement	4
No encouragement or discouragement	3
Slight discouragement	2
Strong discouragement	1

high proportion of students in Manhattan, Kansas. More than 75 percent of the inhabitants have at least high school education. Therefore a large number of WIC women might be wives of American or international students with an educational level higher than in most of the other WIC programs.

3.3 Data Analysis

Frequency distributions and percentages were compiled for each variable studied (Table 2) for all participants. In addition, means, standard deviations, minimum and maximum values were computed for all those variables where correlation coefficients were calculated. Chi-square analysis was assumed to reveal tendencies of the prevalent attitude among low-income women and the most important factors associated with successful breastfeeding. These variables are also listed in Table 1. However, due to the small sample size and the number of variables to be analyzed, over 20 percent of all the cells in the Chi-square Tables had counts less than five respondents. Although the Chi-square was not a very valid test, it clearly revealed major tendencies and trends. Throughout the study significance will only be reported when all assumptions of correlation or Chi-square analysis including cell size were fulfilled. The data analysis was conducted with the SAS program at Kansas State University.

Table 2. Variables and statistical methods.

Statistical analysis: correlation coefficient

Maternal age

Planned breastfeeding period

Education

Reaction of friends and family to breastfeeding

Number of infants breastfed before

Infant age (at the time of the second questionnaire)

Times of breastfeeding per day

Length of each breastfeeding

Amount formula given

Husband's support before delivery

Husband's support after delivery

Friends' and family's support after delivery

Physician's support of breastfeeding after delivery

Duration of the breastfeeding period

Table 2. Continued

Statistical analysis: Chi-square tables of each of these variables:

Planning to supplement

Planning to work after delivery

Planning to go (back) to school after delivery

Being breastfed by the own mother

Physicians information received before delivery

Planning to attend breastfeeding class at the WIC center

Resource person before delivery

Resource person after delivery

Type of formula

Willingness to share breastfeeding concerns

Attended WIC breastfeeding preparation

Mother's concerns about breastfeeding

4. RESULTS

4.1 Profile of the Participants

Among the 37 participants who filled out the first questionnaire, 18 participated in the follow-up study determining the duration of the breastfeeding period and other factors. Two more participants filled out the second questionnaire but not the one before delivery.

The mean age of the mothers was 23.9 years, ranging from 18-29 years. Thirty-five of 37 (98%) of the participants had at least a high school education and almost half (47%) had attended college. The women lived either in the city Manhattan or Riley or Pottawatomie County. More than one third of the WIC women (37%) were primiparas, the rest had had at least one child. To be eligible for the WIC program, participants must fulfill the income requirements. Therefore, all of these women can be considered as low-income. All participants selected decided to breastfeed their child before delivery. Almost all of the women were married or lived with the baby's father. Only one of the women said that she had no husband. Regulations of the WIC program do not allow keeping any information about the marital status of the women.

The maternal age as well as the degree of education showed no significant correlation with any any of the variables. In addition to that, there was no correlation

between the number of previous infants breastfed and any other factors. More than half of the participants (23 of 37) had breastfed a child before, 7 of 37 did so with their second child but 38 percent of all mothers (14 of 37) never had had any breastfeeding experience before. The relatively low maternal age of the participants (23.9 years) is a possible explanation for this phenomena.

4.2 Planned and Actual Duration of the Breastfeeding Period

All WIC women who participated in this study intended to breastfeed their infant. However, the intended breastfeeding period varied significantly. The average was 7 months and the majority of the mothers (25 of 37) planned to breastfeed at least six months. Nineteen percent of the mothers even decided to extend the breastfeeding period to one year or longer while none of them anticipated less than three months (Table 3).

The actual duration of the mother's nursing period could not be assessed exactly because the data collection had to take place at different moments after delivery while the mothers were still breastfeeding. The follow-up of the women however included at least eight weeks after delivery. During this period only 2 of 20 women stopped breastfeeding. Three-fourths of the 20 new mothers were still breastfeeding between 14 and 25 weeks (15 of 20). Almost all mothers breastfeeding 14 weeks or longer received support from their

Table 3. Planned and actual duration of the breastfeeding period

Duration in weeks:	<8	8-16	15-24	25-36	>36
<hr/>					
Frequencies:					
planned time (N=37)	4 (11%)	4 (11%)	14 (38%)	8 (21%)	17 (19%)
actual time (N=20)	2 (10%)	9 (45%)	5 (25%)	3 (15%)	1 (5%)

physician, family or friends. Only one woman, who breastfed for at least 36 weeks, reported not having any help from her environment.

4.3 Work and School Attendance After Delivery

Planning to go back to work or school after delivery was a factor influencing the decision to breastfeed or bottlefeed the infant. In our sample out of 37 participants 18 neither intended to go to work nor school while 6 participants intended to do both. Twenty-one WIC women did not plan to return to school while 12 did. Moreover 23 did not intend to go back to work (Table 4). Of these few who planned to leave the house to work or study, only one person planned to supplement her breastfeeding. Those who intended to work or study received very strong support from their husband, their family and their physician. There was no distinctive difference between those intending to work or go back to school as to whether information about breastfeeding was given to them by the physician or not. Out of 23 who did not intend to go back to work after delivery 11 had a physician who talked to them about breastfeeding while 12 did not receive any information from him before delivery.

4.4 Peer-Support Before Delivery

In general the group of participants received strong

Table 4. Intended occupation after delivery.

N = 37	Yes	Not sure	No
<hr/>			
Do you plan to go (back) to work?	6 (16%)	8 (22%)	23 (62%)
Do you plan to go (back) to school?	12 (32%)	4 (11%)	21 (57%)

support from their peers during pregnancy. Neither the husband nor the rest of the family or friends strongly discouraged the future breastfeeders. As shown by the the answers of the WIC women 51 percent of all husbands strongly encouraged their wife's decision while only four (11%) did not discuss their method of feeding the infant with the father. Two of the women reported that they had no husband. Accordingly the data indicate a positive reaction from other family members or friends towards breastfeeding, because 64 percent of the pregnant women reported that they would be encouraged by them at least slightly (Table 5). The rate of discouragement prior to the infant's birth was very low. Only 2 of 37 expectant mother's felt that their husband would not necessarily appreciate their breastfeeding (Table 5).

4.4.1 Resource Person

The results indicate that an impartial person is most frequently reported to be considered as a resource person no matter whether the mother needs practical help, advice or emotional support during pregnancy or after delivery (Table 9). Of these 16 women planned to return to work or school and who might need the most assistance in continuing to breastfeed almost all (N=14) knew someone to contact in case of difficulties. Fifty percent of all participants who want to work were able to seek the advice of a close friend or

Table 5. Peer-support for expecting mothers planning to breastfeed.

N = 37	Friends' and Family's support	Husband's support
<hr/>		
Strong encouragement	22 (59%)	19 (51%)
Slight encouragement	2 (5%)	5 (13%)
No encouragement or discouragement	12 (32%)	8 (21%)
Slight discouragement	-	1 (2%)
Strong dicouragement	-	-
Did not discuss	1 (3%)	4 (10%)

family member while 10 of 14 who wish to return to school cite an impartial person rather than close friends or relatives as a possible source of information. The majority of the sample knew at least one friend or relative who had breastfed their own child (27 of 37).

4.5 Peer Support for Breastfeeding Mothers After Delivery

4.5.1 The Father's and Family's Support

The baby's father is one of the key persons within the family system. He was reported to encourage more than discourage after as well as before delivery (Tables 6 and 7). Only 20 percent of all women indicated a more neutral attitude of her husband towards their infants nursing. All of the mothers who were planning to return to school or work before delivery received strong support from their husband. Of those who wanted to stay at home, 50 percent felt slightly discouraged or did not discuss breastfeeding with the baby's father. All of the who did not attend the WIC breastfeeding class (15 of 20) felt at least some or even strong support from the baby's father, however one person who planned and actually attended the prenatal breastfeeding preparation indicated even slight discouragement from her husband when she breast fed her baby. The father's and mother's positive attitude towards breastfeeding is further reflected in the second questionnaire. All those mothers

who had no concerns about their breastfeeding also reported to have a supportive husband at the same time.

4.5.2 Support From Family and Friends

In general, all participants indicated that their breastfeeding was at least slightly or somewhat encouraged by their friends and family. More than half of the mothers reported receiving strong support from other family members and friends while none of the 20 felt any discouragement from these persons (Table 5). All the women who wish to work (4 of 18) or to go back to school received strong encouragement from their family or friends. Of the 13 women who received strong support from their family and friends, all except two consulted a pediatrician who strongly encouraged them to breastfeed. Further evidence for the positive attitude the mothers received from their friends is found in the significant positive correlation ($p < 0.05$) between the husband's the family and friends and the physician's encouraging behavior towards the breastfeeding mother. The degree of support was ranked from 1 to 5 and a mean of all individual scores as indicated by the answers was taken for the husband's, the family's and friends', and the pediatricians encouragement (Table 1 and 7).

The mean score for all respondents of these variables showed clearly that the strongest support came from the physician (4.35). This was slightly stronger than the

Table 6. Peer-support for breastfeeding WIC participants

N = 20	Friends' and Family's support	Husband's support	Physician's support
<hr/>			
Strong encouragement	13 (65%)	10 (50%)	15 (75%)
Slight encouragement	2 (10%)	3 (15%)	-
No encouragement or discouragement	4 (20%)	4 (20%)	4 (20%)
Slight discouragement	-	2 (10%)	-
Strong dicouragement	-	-	-
Did not discuss	1 (5%)	1 (5%)	1 (5%)

family's and friends' support (4.25) and differs clearly from the husband's support (3.9) after delivery. The husband's support increased slightly after delivery (3.8 to 3.9) while other family members and friends encouraged the mother even more strongly after the baby was born (Table 9). Since the physician before delivery might have not been the same as after delivery we did not rate the encouragement prior to birth in the same way and limited the question in the first questionnaire to information about breastfeeding the expectant mother received.

4.6 The Physician's Support

On the first questionnaire 46 percent of the expectant mothers stated that their physician (obstetrician) talked with them about breastfeeding. In contrast after delivery the pediatrician seemed to be the most supportive person. Three-fourths of the participants strongly encouraged by him/her (Table 6). The data indicated that 72 percent of the women who talked to their physician before delivery about breastfeeding (11 of 18) also received strong encouragement. However, most (70%) of the mothers who did not receive any information from an obstetrician prior to birth (7 of 18) had a pediatrician who strongly favored breastfeeding after delivery. Even though 55 percent of all fathers encouraged their wife at least slightly or would not mind her breastfeeding the baby, the pediatrician was an

Table 7. Mean scores of support before and after delivery

	Mean score	Std. dev.
<hr/>		
Husband's support:		
- before delivery	3.8	+ 1.6
- after delivery	3.9	+ 1.4
Friends' or relative's support		
- before delivery	3.2	+ 1.1
- after delivery	4.25	+ 1.3
Physician's support		
- after delivery	4.35	+ 1.3

even stronger source of encouragement than any of the family or friends (Tables 6 and 9).

4.7 Prenatal Breastfeeding Preparation

The results show that the major proportion of the expectant mothers seemed to be insufficiently informed or motivated to attend the breastfeeding preparation class offered by the WIC center. Only 14 percent of all 37 participants indicated after the completion of the first questionnaire that they wanted to attend the preparation session. The majority (60%) were not sure about this while almost a third of the women showed no interest at all in attending the class during their last three months of pregnancy. The response to the second questionnaire indicated that only 25 percent of women really attended the class (Table 8). This lack of interest or information in attending the breastfeeding preparation was consistent when related to all other variables.

In spite of this, 95 percent of the women showed deep interest in exchanging ideas and sharing information with other women about breastfeeding. Only 2 of 13 women who wish to share information really plan to attend the WIC breastfeeding class. Even if the expectant mothers did not intend to return to work or school shortly after delivery, none of them planned to come to the WIC breastfeeding preparation.

Table 8. Planned and actual attendance of the WIC
breastfeeding class.

N = 37	Yes	Not sure	No
Planned to attend WIC breastfeeding class	5 (13%)	22 (60%)	10 (27%)

N = 20			
Attended WIC breastfeeding class	5 (25%)	-	15 (75%)

4.8 Main Problems and Concerns

The majority of the WIC women were very self-confident. Only 1 of 20 participants indicated any concerns about her family and friend's reaction towards her breastfeeding. The rest of the mothers seemed to have no concerns at all. Four out of 20 participants, however, were not sure if their breastfeeding would cause any embarrassment among their family and friends.

According to comments on the second questionnaire, only 8 mothers indicated any problems with breastfeeding. Sore nipples and baby's frequent desire to nurse were the problems most frequently cited. Concerns included taking medication during lactation, appropriate diet. Insufficient milk production during the first two months or the baby getting enough milk were also reported.

A smaller proportion of mothers planned to supplement their breastfeeding (9 of 37) than those who were not sure to do so (12 of 37) but actually 8 did so after delivery (N=20). The reason to supplement most frequently stated was the convenience of having the infant fed in the case of the mother's absence (see Table 10).

4.9 Breastfeeding Patterns

Those mothers who supplemented their breastfeeding used powdered formula most frequently (7 of 11), others preferred ready-to-eat products or concentrated formula. The amount

Table 9. Resource person before and after delivery

	Closer friend or relative	Health professional	None
Before delivery N = 37	11 (30%)	22 (59%)	4 (11%)
After delivery N = 19	6 (32%)	12 (63%)	1 (5%)

given to the baby ranged between 2 and 40 ounces per day with a mean of 5.3 ounces per day. The mothers usually breastfed their baby 7-8 times a day although some did so up to 16 times during the infant's waking hours. The mean time for the baby to nurse was 18.6 minutes and ranged from 7 to 30 minutes (Appendix V). As shown in Appendix VI, the duration of breastfeeding was negatively correlated with the amount of formula given ($p < 0.05$) and positively correlated with the number of times the baby was breastfed per day ($p < 0.001$).

Table 10. Reasons stated by mothers for supplementing
breastfeeding.

N = 11	
<hr/>	
Easier when going out or if babysitter takes care of the baby	5
Baby does not seem satisfied with breastmilk alone	2
Doctor's advice to do so	2
Return to school	1
Baby can not have other food or juices	1
<hr/>	

5. SUMMARY OF THE MAIN RESULTS AND DISCUSSION

5.1 The Supporters

The results of this study confirm recent trends that breastfeeding has become more and more popular among low-income women. The data show that the selected sample of WIC mothers intending to breastfeed was highly motivated and received strong support from their family, physicians, and friends. None of the participants stated any kind of discouragement either before or after delivery. Almost all of the husbands agreed on the feeding method the mother had chosen, a tendency which can be found as well in other studies (Mackey and Fried 1981). As Entwistle and co-workers (1982) point out, husbands of middle class women may be the key source of support within the family while the mother's own decisions have a greater effect on women's breastfeeding behavior among low-income women. The results of this study seem to contradict this assumption because none of the fathers strongly disapproved of their wives' breastfeeding. However, this study was a small one and the results should be evaluated with caution. Furthermore one must question if any mother should breastfeed or could breastfeed over a longer period if her husband wants her to bottlefeed the baby. Other than friends or relatives a husband must be dealt with every day. Without his support the mother must nurse her child under very unfavorable conditions. As a

consequence, the question arises whether any health professional should intervene in the marital relationship in order to convince the father to support the mother's breastfeeding. However, his attitude may change if adequate information is provided and open communication is encouraged.

The average degree of encouragement of family and friends exceeded the husband's support when assessed by the mean score (Table 9) and was still higher after the birth of the baby. This increasing encouragement of the breastfeeding mother might be interpreted as a stronger interest of relatives and friends once the baby is born. Albers (1981) also found that the mother got more support from relatives or friends after delivery, particularly when the mother wanted to share knowledge and feelings about breastfeeding with others. However, she states at the same time that more than 50 percent of the mothers in her study had not received adequate support in their decision to breastfeed. These results contradict the results of the present study even though the cited study also included breastfeeding mothers only. Others authors, however, found that maternal grandmothers or other family members may represent a considerable source of discouragement among breastfeeding mothers (Beske and Garvis 1981; Whitely 1981). Moreover Beske and Garvis (1982) point out that the degree of discouragement increased over time and leading to

a shorter breastfeeding duration. The sample in this study obviously was surrounded by supportive husbands, relatives and friends who provided encouragement prior to and even following the baby's birth.

The physician is frequently cited as the least supportive person when breastfeeding is concerned (Albers 1981; Furman 1979; Houston and Howie 1981a; Whitley 1981). However, the present study revealed that health professionals were strong supporters of mothers who wished to breastfeed. Compared to Furman's study where 35 percent of the expectant mothers did not discuss breastfeeding with their obstetrician the percentage of the WIC women who did not get any information from their obstetrician was clearly higher (46%). Also the proportion of mothers who found their pediatrician encouraging is higher than in any other recent study. Only two mothers stated at the same time that her doctor advised them to supplement their breastfeeding. Apparently the majority of the WIC women had a very supportive pediatrician who did not respond immediately with advice to wean the baby whenever difficulties arose. A frequently cited reason in other studies for introducing solids given by mothers was that the physician recommended it (Cole 1977; Whitley 1981). All the obstetricians in Manhattan do not seem to adequately prepare expectant mothers for breastfeeding although there is strong evidence that the breastfeeding mothers of the WIC program found

strong support from their pediatricians.

WIC participants cited health professionals including the WIC center itself twice as often as close friends or relatives as potential sources of help in case an expectant or breastfeeding mothers needed advice or had any concerns. In fact the WIC mothers do call the Manhattan WIC center, but it is no known whether they also feel free to contact their pediatrician. Tibbets and Cadwell (1981) found that only a few new mothers actually made the initial telephone call even though the health professionals gave them phone numbers or pre-addressed cards. The fact that more than 60 percent of all women consider health professionals as resource persons might indicate that the participants consider breastfeeding problems primarily as medically or physiologically based. Lack of support during periods of emotional stress might not be understood as a real "problem". The fact that only 30 percent of the women would address family and friends as a resource person for breastfeeding problems substantiates the previous assumption. These peers could be very helpful in providing emotional support particularly when they breastfed infants themselves. Only 4 of 37 women had no resource person before or after delivery. This clearly contradicts other studies where inadequate support and lacking practical advice from health professional is assumed to be one major reason for the early termination of the breastfeeding.

Again it must be emphasized that the researcher had to chose a selected sample representing 5 percent of all participants of the Riley County WIC program. Our results confirm those of Cole (1977) who tried to find differences between breast- and bottlefeeding mothers. He stated that one feature of a successful breastfeeding mother is the availability of a support system rather than the absence of problems, particularly during the first two months postpartum (Verronen 1982).

5.2 Duration

At the time the data was collected the average breastfeeding period of 17.8 weeks was higher than expected. Only two of the mothers stopped breastfeeding during the follow-up study which is surprisingly different from the results reviewed in the literature. The significant drop after the first month of breastfeeding could not be confirmed in this study (Beske and Garvis 1982; Coles et al. 1978; Lai et al. 1982; Leung et al. 1979; Martinez et al. 1981; Sjolín et al. 1977; Verronen 1982; Yeung et al. 1981). This study reveals clearly that with strong support even women from the lower income-class are willing to breastfeed over a longer period. This leads to the conclusion that the social class is not necessarily a major predictor for the length of the breastfeeding duration (Martinez et al. 1981; Yeung et al. 1981) but rather

substantiates recent research indicating a greater popularity of breastfeeding among low-income women (Lyon 1981; Martinez and Stahle 1982). In addition Houston and Howie (1981, 1981a) found that the beneficial effect of nurse visits was more obvious in the lower social classes than in the middle-class. This again emphasizes the importance of "home support" (Houston and Howie 1981) for the WIC mothers under study.

Since two months are considered a longer investigation period (Lyon 1981; Sjolín 1977), 70 percent of the participants of this study could be classified as successful breastfeeders because they nurse their infant longer than 14 weeks. The planned nursing period of 17 weeks corresponded to the actual average breastfeeding period of 17.5 weeks when the data was collected, even though the postpartum sample size was much smaller. Two of the women even expressed verbally how much they enjoyed the convenience of breastfeeding. This was cited by Yeung and his co-workers (1981) as a reason for prolonged breastfeeding.

5.3 Other Factors Related to Successful Breastfeeding

Prior to delivery 40 percent of the women were not sure whether or not to supplement their breastfeeding. However, 55 percent did give a supplement with a bottle. Concerns of other investigators that women who give supplemental bottles are likely to terminate breastfeeding earlier were not

confirmed in this study.

Expectant mothers with a high educational background might be assumed to have a better understanding of the breastfeeding process itself and the advantages of nursing over a longer period. Previous literature indicates clearly that higher education is associated with a higher breastfeeding incidence and a longer duration (chapter 2.4). It is encouraging that primiparous women participating in this study are as likely as multiparous mothers to choose breastfeeding as their method of infant feeding. Lyon and his co-workers (1981) point out that multiparous women (63 percent in the present study) are strongly influenced in their decision of current feeding practice by experiences with their previous infant. It is probable that the decision to breastfeed is more likely if the mother went through a successful nursing period before.

5.3.1 Work and Employment

The separation of the mother and child is one major reason for terminating breastfeeding early. Most working mothers are restricted to maternity leaves even if they wish to nurse their infant longer (Balk 1982; Verronen 1982). Expectant WIC mothers of the present study intended to return to school or work. This could be explained by the young maternal age and the high educational background of the participants. Going back to school allows the mother

more flexibility in her schedule so that she can breastfeed over a longer time. Our results confirm those of Mackey and Fried's (1981) study where there was no correlation between the mothers choice of feeding practice and her intention to work. The data in the present study indicates that even those mothers who breastfed longer than a usual maternity leave (8-10 weeks) planned to work after having their baby . Unfortunately it was not possible to determine if they really did work after delivery. Interestingly, we found that 60 percent of all mothers intending to work or go to school postpartum received strong support from their family, friends and physician to breastfeed. Furthermore it is striking that those participants would most frequently address an impartial person in case of difficulties after delivery. Consequently it can be assumed that the pediatricians or other health professionals in this community can provide practical advice and encouragement for those mothers who intend to leave the home postpartum for occupational reasons. In contradiction to the present results Martinez and Stahle (1982) found that WIC women intending to work full-time after delivery were significantly more likely to bottlefeed than those who had no specific plans for employment. Recent trends indicating an increasing prevalence of breastfeeding mothers who want to work are corroborated by this study. Because human milk can be expressed and stored, infants can be breastfed by

working mothers when proper advice is given (Broome 1981; Shephard and Yarrow 1982). The present data show that successful breastfeeding mothers must have strong emotional support and/or practical help from their family, pediatrician, and friends if they want to work or study. Adequate diet and rest are essential to consider in order to make realistic plans for their method of infant feeding.

5.4 The Breastfeeding Preparation

Only about 8 to 10 women regularly attend the monthly WIC preparation class even though the topics are relevant for all expectant mothers (Appendix II) and particularly appropriate for working mothers. Several reasons might account for the lack of interest in this class:

- 1) The mothers might have joined other preparation sessions for breastfeeding, for example the Lamaze classes or "La Leche League" in Manhattan.
- 2) The WIC participants heard of the WIC preparation class too late in the pregnancy, usually during their third trimester.
- 3) The mothers indicate by their answers that they are highly interested in sharing information with others. Therefore the advertisement of the technical instructions of breastfeeding might appear less appealing to the expectant women

than the fact of meeting other mothers on an informal basis.

- 4) Low-income women might have little time and may be dependent on their husband's or friend's transportation to the WIC center. Also none of the husbands ever attended the class.
- 5) Even without the WIC preparation most of the expectant mothers had been encouraged to breastfeed by their family and friends.

At this point it is important to emphasize the relatively high educational background as well as the low-income situation of the participants. Entwisle and her co-workers (1981) found out that preparation is a useful predictor for the decision to breastfeed for middle-class women only and apparently has only a minor impact on their actual breastfeeding behavior. This study clearly reveals that previous intention of low-income women determines their later choice and duration of their infant feeding method. There is not any evidence in Entwisle's study that these mothers benefit from prenatal preparation. However, the author cited does not clarify the form of the breastfeeding instruction.

6. LIMITATIONS OF THE STUDY AND RESEARCH SUGGESTIONS

This study was limited to the Riley County Health Department which explains the relatively small sample size. Consequently, this lead to difficulties applying appropriate statistical methods for the data analysis.

Another problem was the time limit of the study. The first questionnaire was frequently given to the WIC participants during enrollment prior to their last trimester of pregnancy. Therefore the date of delivery fell outside of the study period and these participants had to be excluded from the postpartum follow-up. Because the WIC participants appear irregularly at the WIC center, responsibility for distribution the questionnaires was given to the WIC nutritionist or her co-workers rather than the researcher. This decreased the control over responses of the expectant or new mothers in those questionnaires.

The lack of a matching comparison group was a concern. The limitations of the study and the sample procedure did not allow randomization and careful selection of a group of exclusively bottlefeeding mothers as a control group.

However, experiences while conducting this study combined with other assigned publications in the field of infant nutrition lead to the following suggestions for future research projects involving breastfeeding women. For more detailed criticism of current research dealing with

infant feeding see E. Coles' review (Coles 1979). Since only a few mothers actually attended the WIC breastfeeding class future research should reveal sources of information for breastfeeding used by expectant mothers in this community. This may lead to a better coordination and communication among all activities promoting breastfeeding in Manhattan including health programs in schools, women's health programs, and prenatal and postnatal parent programs. The WIC program might consider redesigning the breastfeeding preparation to encourage greater participation. This could lead to the development and implementation of an effective breastfeeding promotion program for low-income women which could form a more positive attitude towards breastfeeding among a greater number of WIC participants. Tibbets and Cadwill (1981) as well as Kaplowitz and Olson (1983) indicated how breastfeeding promotion should be designed. Their research is an appropriate basis for the development of any further interventions.

Clarification and standarization of the terms breastfeeding, supplemented breastfeeding, and weaning would facilitate further research. Also methods described in the literature should be more standardized, at least when qualitative data are assessed. An example is the exact duration of the breastfeeding period which has been classified as "long-term" and "short-term" breastfeeding. With a more standardized sampling method it will be possible

to replicate a study more easily. Experimental and control groups should be as identical as possible. In the present study a control group from a WIC program outside of Manhattan might have biased the results because the university environment favors a greater proportion of women with a high educational background. However, this limitation would lead to a small sample size which would produce less reliable results; extreme values have strong effects on the mean.

Reporting events that occurred too long ago in the past are less reliable when any emotional response either from the mother or from her immediate personal contacts are observed. Retrospective behavior is best recalled from the recent past. For example, the husband's attitude of breastfeeding before delivery should not be asked after the birth of the baby because his attitude might have changed considerably since the birth. However, the limitations of this study do not restrict the importance of evaluating current educational activities of community nutrition programs and revealing further areas of improvement.

7. CONCLUSION AND RECOMMENDATIONS

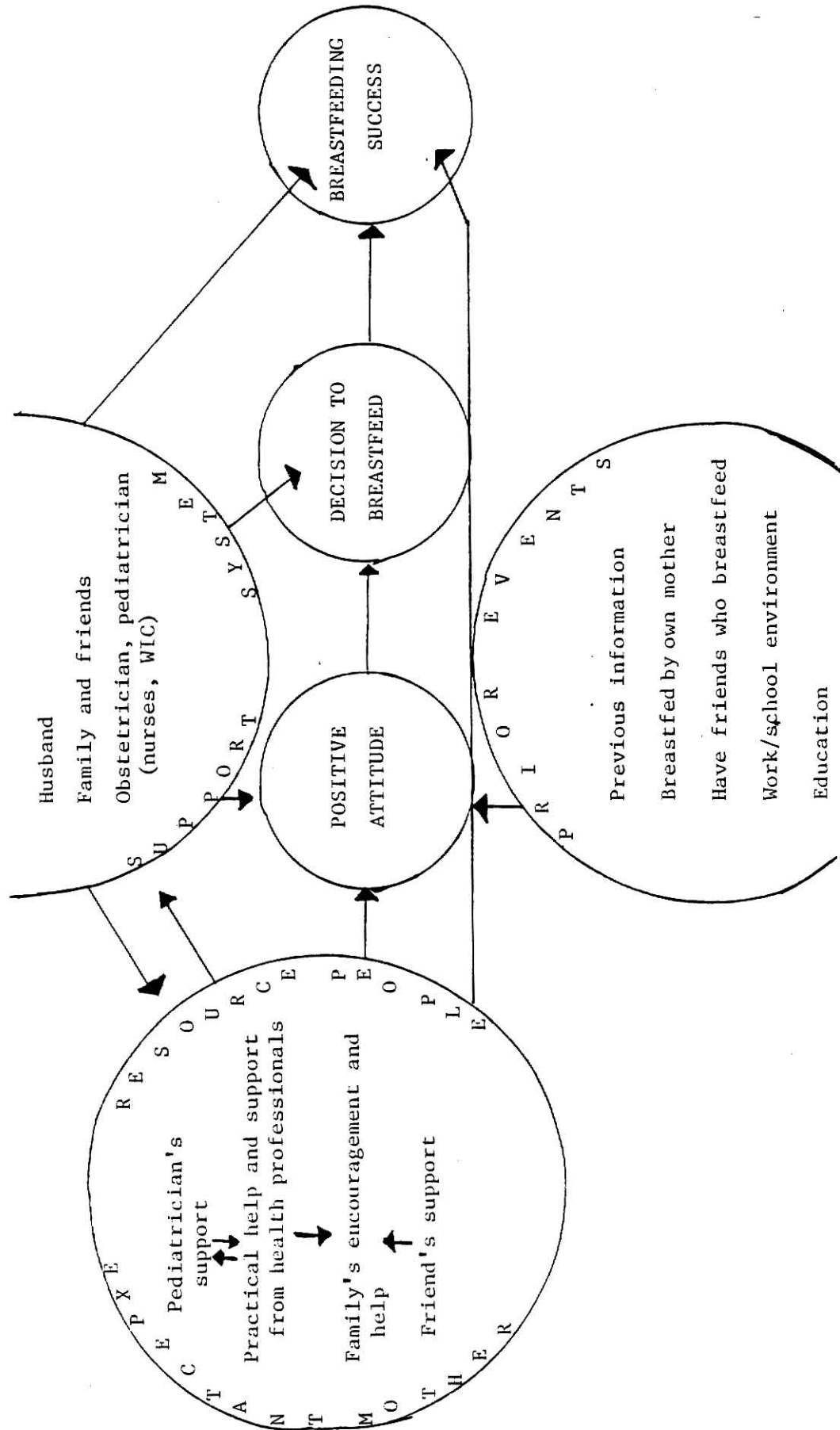
On the basis of the findings the flowcharts depicted in Fig. 2 summarizes how peer-support affects breastfeeding success. Results from the available literature indicate that a woman who receives little peer-support will be least likely to develop a favorable attitude towards breastfeeding. WIC participants who tend to be younger, belong to a low-income group, and to go back to work or school after delivery are more likely than middle-class women to be separated from their family and facing unfavorable conditions which inhibit breastfeeding. The traditional support system of older female relatives who transferred the art of breastfeeding to the younger generation appears to be at least partially replaced by supportive health professionals who encourage women to breastfeed or to breastfeed longer. The mother's decision to bottle or breastfeed her infant is dependent on her own attitude towards breastfeeding which in turn is decisive in her later choice of infant feeding. This attitude is mainly a result of her previous information, her mother's attitude, and breastfeeding behavior, the work or school environment which allows her to nurse her infant, and her immediate personal contacts who encourage or discourage the expectant mother to choose breastfeeding as a method of infant feeding. Once the women make a decision they are dependent upon strong peer-support in order to find a relaxed and

favorable environment to maintain sufficient milk production. The flowchart in Fig. 2 shows that an efficient support network includes many resource people:

- 1) The pediatrician or any other health professional who can give practical advice before and after delivery.
- 2) The baby's father's and family's emotional support, understanding and practical help to provide a home environment which makes frequent nursing possible. If the baby's father has a negative attitude towards breastfeeding the mother is likely to decide against it as well.
- 3) Friends and other breastfeeding mothers who can share common concerns particularly during the first weeks postpartum. They can provide practical advice and support to help the new mother to overcome the problems, inconvenience and embarrassment which might inhibit a successful milk production.

In combination with the first model elaborated (Fig. 1) which represents a list of variables influencing the complexity of the breastfeeding process, this research tries to identify tendencies and trends which are helpful in revealing causal relationships reorganizing the first flowchart (Fig. 1). This may lead to the development of certain hypotheses which could be tested using a large

Fig. 2. Peer-support for breastfeeding mothers



sample size and/or two independent samples. Participants received strong support from their peers and were, therefore, able to maintain at least partial breastfeeding. We still do not know where the WIC women obtained their prenatal preparation and/or breastfeeding information from since only few of them attended the class offered by the WIC program. Consequently one recommendation is to increase educational efforts in order to reach more WIC participants. Their expressed desire to share information with other mothers might indicate that interpersonal channels and personalized teaching are better suited to achieve a more favorable attitude towards breastfeeding and to increase the self-confidence of breastfeeding women rather than an impersonal approach (Kaplowitz and Olson 1983). The WIC participants under study generally had no concerns and seemed to have decided early in pregnancy and independent of the WIC preparation to breastfeed their children. In accordance with other literature on the timing of infant feeding decision we can conclude that future breastfeeding promotional efforts should target women who are still undecided about bottle- or breastfeeding. Any program developed by WIC should provide information as well as individual support, a conclusion which has already been drawn by other nutritionists (Kaplowitz and Olson 1983). After delivery, a breastfeeding woman who is less self-confident might not know what is considered as "normal"

during nursing her baby. For example, if a lactational crisis appears, if milk leaks from the breast, or if the baby wants to nurse more frequently. Small informal groups and a mother-support system by telephone communication could help particularly all those women who do not want to speak up alone but have a desire to share common concerns. Educational efforts always should try to include the husband since he is the main support person for the breastfeeding mother. Up to now support systems have been mainly accessible to more educated middle class women. Working low-income women may not have enough time and energy to join meetings or preparation classes. So their needs may not be met by any of the existing social institutions (Tompson 1977). Therefore the breastfeeding class provided by the WIC program in the Riley County Health Department is a worthwhile attempt to address low-income mothers to breastfeed their infant or to breastfeed them longer.

Even the American Academy of Pediatrics (1982) promotes breastfeeding preparation and recommends that all state-supported prenatal programs should expand their nutrition education and encourage mothers to breastfeed. However, all these programs should not evoke guilt among bottlefeeding mothers, because not all women can afford to stay away from work or school. This leads to the second main conclusion concerning women returning to work or school. They should be encouraged to maintain partial

breastfeeding and should be advised to consult those pediatricians in or around Manhattan who give good practical recommendations. A working women support-group, as suggested by Shephard and Yarrow (1982), would be ideal but these women are very limited in their free time. In this case a telephone system might be more helpful to reach nursing mothers within a support system.

Any educational approach should therefore include practical advice, nutrition education especially recommending young, prospective mothers stay away from fad diets or fasting (Hahn and Leitzmann 1982), and take into account the situation of a low-income woman to plan and maintain the best method of infant feeding. These activities promoting breastfeeding should be implemented during the early months of pregnancy and should utilize a peer-support system.

REFERENCES

- Albers R.M. Emotional support for the breastfeeding mother. Iss. in Compr. Pediatr. Nurs. 1981; 5:109-124
- American Academy of Pediatrics. Policy statement based on task force report. The promotion of breastfeeding. Pediatrics 1982; 69:654-661
- Balk S. Breastfeeding during pediatric residency. Pediatrics 1982; 70:654
- Berger A., Winter S.T. Attitudes and knowledge of secondary school girls concerning breastfeeding. Clin. Pediatrics 1980; 19:825-826
- Beske J.E., Garvis M.S. Important factors in breastfeeding success. Am. J. Matern. Child Nurs. 1982; 7:174-179
- Broome M.E. Breastfeeding and the working mother. J. Obst. Gynecol. Neonatal Nurs. 1981; 10:201-202
- Cole E. A critique of the literature. In: Breastfeeding and Food Policy in a Hungry World. Raphael D. (ed.), New York, Academic Press, pp. 137-145, 1979
- Cole J.P. Breastfeeding in the Boston suburbs in relation to personal-social factors. Clin. Pediatrics 1977; 16:352-356
- Coles E.C., Cotter S., Valman H.B. Increasing prevalence of breastfeeding. Brit. Med. J. 1978; 2:1122
- De Chateau P., Holmberg H., Jakobsson K., Winberg J. A study of factors promoting and inhibiting lactation. Developm. Med. Child Neurol. 1977; 19:577-584
- Ellis D. Breastfeeding: cultivating conducive attitudes. Can. J. Publ. Health 1981; 72:319-322
- Entwistle D.R., Doering S.G., Reilly T.W. Sociopsychological determinants of women's breastfeeding behavior. Am. J. Orthopsychiatry 1982; 52:244-260
- Fleischaker W.J., Nowak M.M., Quinly G.E. Historical background and the importance of maternal support of the Louisville Milk Program. Keeping Abbreast J. 1976; 1:192-202
- Furman S.N. Attitudes of middle class mothers to breastfeeding. South African Med. J. 1979; 56:722-723
- Gulick E.E. Informational correlates of successful breastfeeding. Am J. Matern. Child Nurs. 1982; 17:370-375

Hahn B., Leitzmann C. Fasting - metabolism and therapeutic implications with results of a juice fasting cure. *Ernaehrungsumschau* 1982; 29:111-118

Houston M.J., Howie P.W., Cook A., McNeilly A.S. Do breastfeeding mothers get the home support they need? *Health Bull.* 1981; 39:167-172

Houston M.J., Howie P.W. The importance of support for the breastfeeding mother. *Health Visitor* 1981; 54:243-244

Houston M.J., Howie P.W. Home support for the breastfeeding mother. *Midwife Health Visitor and Comm. Nurse* 1981a; 17:378-380

Jeliffe D., Jeliffe E.F. *Human Milk in the Modern World.* Oxford Univ. Press, London, pp. 346-403, 1978

Kaplowitz D., Olson C.M. The effect of an education program on the decision to breastfeed. *J. Nutr. Educ.* 1983; 15:61-65

Lai P., Garson J.Z., Hankins C. The prevalence of breastfeeding in Calgary, 1979-1980. *Can. J. Publ. Health* 1982; 73:401-403

Leung M., Yeung D.L., Hall J., Csima A. Effects of family and socio-economic factors on breastfeeding and early introduction of solids. *J. Can. Dietet. Ass.* 1979; 40:322-323

Lipson J.O. Consumer activism in two self-help groups. *West. J. Nurs. Res.* 1980; 2:393-405

Lyon M.L., Chilver G., White D.G., Wollet A. Surrent maternal attitudes to infant feeding methods. *Child: Care Health Dev.* 1981; 7:145-151

Mackey S., Fried P.A. Infant breast and bottlefeeding practices: some related factors and attitudes. *Can. J. Publ. Health* 1981; 72:312-318

Manitoba Pediatric Society Committee on Breastfeeding. Breastfeeding promotion in Manitoba. *J. Can. Med. Ass.* 1982; 126:639-642

Martinez G.A., Dodd D.A., Smartgedes J.A. Milk feeding patterns in the U.S. during the first 12 months of life. *Pediatrics* 1981; 68:863-868

Martinez G.A., Stahle D.A. The recent trend in milk feeding among WIC infants. *Am. J. Publ. Health* 1982; 72:68-71

Mead M. The family contexts of breastfeeding. Lactation Rev. 1977; 2:1,8

Myres A.W. Breastfeeding - a national priority for infant health. J. Can. Dietet. Ass. 1982; 42:131-141

Palmer S.R., Avery A. The influence of obstetric procedures and social and cultural factors on breastfeeding rates at discharge from hospital. J. Epid. Comm. Health 1979; 33:248-252

Plesse R., Krohmann S., Heinze M. Die Stillbereitschaft - ein psychosoziales Problems. Zentralblatt f. Gynaekol. 1981; 103:810-817

Power D.J., Willoghby W., De Waal R.D. Breastfeeding in Cape Town. South Afr. Med. J. 1979; 56:718-721

Tibbets E., Cadwell K. Opportunities for community health professional to support breastfeeding. J. Nutr. Educ. 1981; 13:132-133

Tompson M. The effectiveness of mother-to-mother help - research on the La Leche League international program. Birth and Family J. 1976/1977; 4:165-167

Verronen P. Breastfeeding: reason for giving up and transient lactational crisis. Acta Pediatr. Scand. 1982; 71:447-450

Whitley N. Preparation for breastfeeding. A one year follow-up of 34 nursing mothers. J. Obst. Gyneol. Neonatal Nurs. 1978; 7:44-48

Yeung D.L., Pennell D. Murray D., Leung M., Hall J. Breastfeeding: prevalence and influencing factors. Can. J. Publ. Health 1981; 72:323-329

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I dedicate this thesis to my parents, Gudrun and Conrad Hahn, without whose sufficient understanding and helpful support this study could never have been accomplished.

* * *

Ich widme diese Arbeit meinen Eltern Gudrun und Conrad Hahn, ohne deren ausreichendes Verstaendnis und hilfreiche Unterstuetzung diese Studie niemals haette zu Ende gefuehrt werden koennen.

APPENDIX I.
Informed Consent

INFORMED CONSENT

I, _____ agree to participate in a research study of women enrolled in the WIC-program. The main objective of this study is to identify experiences that will encourage women in the WIC-program to breastfeed. The benefit of this project is to identify information that will increase the number of women in the program to breastfeed.

I understand that I will be expected to fill out two questionnaires during my regular visits; one during the last three months of pregnancy and the second during the recertification visit in the WIC-program after delivery.

I understand that there is no risk to me or my unborn child and that I am free to withdraw my consent and discontinue participation in this study at any time.

If I have any questions or problems in connection with my participation in this study I should contact Mrs. Kim Liotta from the WIC- program (776-4779) or Mrs. Bettina Hahn (532-5508) or ass. Prof. Meredith Smith (532-5508).

Date

Signature of the participant

Date

Investigator

APPENDIX II.

The ABC's of Breastfeeding

YOU ARE INVITED TO
"THE ABC'S OF BREASTFEEDING"

IAT: After attending this session you will be confident about your ability to breastfeed. You will be able to:

- 1) recognize advantages of breastfeeding
- 2) do prenatal nipple preparation exercises
- 3) select a sound diet for a breastfeeding woman
- 4) learn basic techniques for successful breastfeeding
- 5) learn how to manage breast problems that may occur in the early nursing period.

For those of you who have already breastfed 1 or more of your children we would like you to share your experience with others in the group (we are also looking for support persons for first-time breastfeeding mothers!).

HERE: Riley County Health Department
417 Humboldt
Manhattan
Phone 776-4779

HEN: Mark your calendars for
Monday, October 4th
1:30-3:00 p.m.

SPECIAL NOTES: You may pick up your _____ WIC vouchers at this session.

Child care will be provided for those who need it.

We will have a "nutrition break" during the session.

Please mail the enclosed postcard by _____.

APPENDIX III.

Prenatal Questionnaire

BREASTFEEDING QUESTIONNAIRE I

NAME _____ CASE NUMBER _____ DATE _____

1. DO YOU PLAN TO BREASTFEED ?
IF NOT GO TO QUESTION 3 A. ☐ YES B. ☐ NO C. ☐ NOT SURE
2. HOW LONG DO YOU PLAN TO BREASTFEED ? A. ☐ 6 WEEKS B. ☐ 3 MONTHS C. ☐ 6 MONTHS
D. ☐ 9 MONTHS E. ☐ 1 YEAR OR LONGER
3. DO YOU PLAN TO SUPPLEMENT YOUR BREASTFEEDING WITH A BOTTLE ?
A. ☐ YES B. ☐ NO C. ☐ NOT SURE
4. DO YOU PLAN TO GO (BACK) TO WORK ? A. ☐ YES B. ☐ NO C. ☐ NOT SURE
5. DO YOU PLAN TO GO (BACK) TO SCHOOL ? A. ☐ YES B. ☐ NO C. ☐ NOT SURE
6. WERE YOU BREASTFEED BY YOUR MOTHER ? A. ☐ YES B. ☐ NO C. ☐ I DO NOT KNOW
7. HAVE ANY OF YOUR RELATIVES OR FRIENDS BREASTFED THEIR CHILDREN ?
A. ☐ ALL OF MY FRIENDS/RELATIVES
B. ☐ ALMOST ALL OF MY FRIENDS/RELATIVES
C. ☐ SOME OF MY FRIENDS/RELATIVES
D. ☐ ONLY A FEW OF MY FRIENDS/RELATIVES
E. ☐ NONE OF MY FRIENDS/RELATIVES
8. HAS YOUR PHYSICIAN TALKED TO YOU ABOUT BREASTFEEDING YOUR BABY ?
A. ☐ YES B. ☐ NO
9. DOES YOUR HUSBAND WANT YOU TO BREASTFEED ?
A. ☐ HE STRONGLY ENCOURAGES ME
B. ☐ HE SLIGHTLY ENCOURAGES ME
C. ☐ HE DOES NOT MIND
D. ☐ HE HAS SOMETIMES OBJECTIONS TO IT
E. ☐ HE DOES NOT WANT ME TO BREASTFEED
10. ARE YOU GOING TO ATTEND THE WIC BREASTFEEDING CLASS ?
A. ☐ YES B. ☐ NO C. ☐ NOT SURE
11. HOW MANY YEARS OF SCHOOL HAVE YOU COMPLETED ?
A. ☐ FINISHED HIGH SCHOOL B. ☐ SOME HIGH SCHOOL C. ☐ BEYOND HIGH SCHOOL
D. ☐ FRESHMAN E. ☐ SOPHOMORE F. ☐ JUNIOR
G. ☐ SOME COLLEGE H. ☐ COMPLETED COLLEGE I. ☐ GRADUATE STUDIES
12. HOW WILL YOUR FRIENDS OR YOUR FAMILY REACT TO YOUR BREASTFEEDING ?
A. ☐ THEY WILL STRONGLY ENCOURAGE ME
B. ☐ THEY WILL SLIGHTLY ENCOURAGE ME
C. ☐ THEY WILL NOT ENCOURAGE OR DISCOURAGE ME
D. ☐ THEY WILL SLIGHTLY DISCOURAGE ME
E. ☐ THEY WILL STRONGLY DISCOURAGE ME
13. HAVE YOU BREASTFED ANY OF YOUR CHILDREN BEFORE ?

BREASTFED ?	1ST CHILD	2ND CHILD	3RD CHILD	4TH CHILD	5TH CHILD
YES					
NO					

14. IF YOU HAD PROBLEMS WITH BREASTFEEDING WHOM WOULD YOU ASK ? _____

APPENDIX IV.

Postnatal Questionnaire

name:

BREASTFEEDING QUESTIONNAIRE 2

1. How old is your baby now? _____
2. How many times do you breastfeed in 24 hours? _____
3. How long do you breastfeed at each feeding? _____
4. How many wet diapers does your baby have in 24 hours? _____
5. a. Do you give the baby any formula or cow's milk? _____
b. If so, why did you decide to do so? _____
c. How much formula do you give your baby in 24 hours? _____
d. If using formula, what kind do you use? _____ concentrated
_____ powdered _____ ready-to-feed?
6. Would you be willing to share your knowledge and experience about breastfeeding with a mother who is having difficulties in breastfeeding? ____ yes ____ no ____ not sure
7. Did you attend the WIC-breastfeeding class before you had your baby? ____ yes ____ no
8. Do you have any concerns about your family and friends reaction to your breastfeeding ____ yes ____ no ____ not sure
9. If you have a problem with breastfeeding whom would you ask? _____

10. Does your husband want you to breastfeed?
_____ he strongly encourages me
_____ he slightly encourages me
_____ he does not mind
_____ he has sometimes objections to it
_____ he does not want me to breastfeed
11. How do your friends or relatives react to your breastfeeding?
_____ they strongly encourage me
_____ they slightly encourage me
_____ they do not encourage or discourage me
_____ they slightly discourage me
_____ they strongly discourage me
12. Did either your doctor or your baby's doctor encourage you to breastfeed?
_____ they strongly encourage me
_____ they slightly encourage me
_____ they do not encourage or discourage me
_____ they slightly discourage me
_____ they strongly discourage me

13. Do you feel that you have any problems with breastfeeding? If so, please write them below!

APPENDIX V.

Means and Standard Deviations of
Interval Variables

ILLEGIBLE DOCUMENT

**THE FOLLOWING
DOCUMENT(S) IS OF
POOR LEGIBILITY IN
THE ORIGINAL**

**THIS IS THE BEST
COPY AVAILABLE**

SAS						
VARIABLE	N	MEAN	STD. DEV	SUM	MINIMUM	MAXIMUM
MATERAGE	37	23.97297297	2.26728913	887.00000000	18.00000000	29.00000000
FRIREL3F	37	3.21621622	1.13370423	119.00000000	1.00000000	5.00000000
HUSWAN3F	37	3.81081081	1.61310325	141.00000000	0	5.00000000
EDUC	37	2.97297297	1.18992265	110.00000000	1.00000000	6.00000000
REACFRFA	37	4.16216216	1.16698837	154.00000000	0	5.00000000
INFBFBF	37	0.83793784	0.79977474	31.00000000	0	3.00000000
INFAGE	20	8.30000000	8.76656327	166.00000000	1.00000000	40.00000000
TIMESBF	20	7.50000000	3.66347549	150.00000000	0	16.00000000
LONG3F	20	18.60000000	3.44424438	372.00000000	0	30.00000000
AMNTFOR	20	5.30000000	10.99808596	106.00000000	0	40.00000000
SUPPHUSB	20	3.90000000	1.41048704	78.00000000	0	5.00000000
SUPPFRFA	20	4.25000000	1.29269201	85.00000000	0	5.00000000
SUPPDR	20	4.35000000	1.30887658	87.00000000	0	5.00000000
DURATION	20	17.80000000	10.77814553	356.00000000	1.00000000	48.00000000

APPENDIX VI.
Correlation Coefficients

	MATERAGE	FIRELBF	HUSJANBF	EDUC	REACRFA	INFBFDEF	INFAGE	TIMESBF	LONGBF	AMNIFOR	SUPPHUSB	SUPPFREFA	SUPPDR	DURATION
MATERAGE	1.00000													
	0.0000													
FIRELBF	-0.26245	1.00000												
	0.1165	0.0000												
HUSJANBF	0.21362	0.17438	1.00000											
	0.2042	0.5025	0.0000											
EDUC	0.19447	0.00445	0.17092	1.00000										
	0.2433	0.9791	0.3118	0.0000										
REACRFA	-0.10293	0.14073	0.56272	-0.11678	1.00000									
	0.5442	0.4061	0.0000	0.4913	0.0000									
INFBFDEF	3.12685	-0.07038	-0.34597	-0.15068	-0.17933	1.00000								
	0.4541	0.6739	0.7870	0.3734	0.2381	0.0000								
INFAGE	0.06393	-0.04921	0.12002	-0.09801	0.00353	-0.12150	1.00000							
	0.8010	0.7850	0.6352	0.7284	0.9732	0.6310	0.0000							
TIMESBF	0.14312	-0.14761	0.35776	0.17137	0.14426	-0.44844	-0.37364	1.00000						
	0.1631	0.5062	0.8199	0.4966	0.5679	0.0620	0.1046	0.0000						
LONGBF	0.06951	0.11301	-0.51393	-0.05473	0.53046	-0.49477	-0.22438	0.52912	1.00000					
	0.7833	0.6533	0.0213	0.8292	0.0235	0.0368	0.3416	0.0166	0.0000					
AMNIFOR	-0.20473	0.03509	-0.03730	-0.07409	0.01250	0.40970	0.02413	-0.65445	-0.46295	1.00000				
	0.4151	0.8901	0.8332	0.7702	0.9607	0.0913	0.9196	0.0017	0.0505	0.0000				
SUPPHUSB	0.11956	-0.06837	0.13409	0.12111	0.30678	-0.28999	-0.66571	0.42779	0.37649	-0.22868	1.00000			
	0.6565	0.8473	0.1621	0.6331	0.2156	0.2431	0.0014	0.0599	0.1018	0.3322	0.0000			
SUPPFREFA	-0.03609	0.05347	-0.06944	0.37339	0.01459	-0.33911	-0.71290	0.42788	-0.18304	-0.21657	0.82267	1.00000		
	0.8873	0.8331	0.7873	0.1270	0.9542	0.1686	0.0004	0.0598	0.4272	0.3591	0.0000	0.0000		
SUPPDR	0.19287	-0.01751	0.24649	0.13803	-0.08122	-0.49069	-0.58258	0.40063	0.41334	-0.18683	0.70417	0.72323	1.00000	
	0.4512	0.0450	0.3241	0.5849	0.7487	0.0387	0.0064	0.0800	0.0701	0.4303	0.0003	0.0000	0.0000	
DURATION	0.16315	-0.49590	0.66438	-0.38256	0.39241	-0.07761	-0.38947	-0.23593	-0.07090	0.32110	-0.09486	-0.34753	-0.24847	1.00000
	0.5177	0.0364	0.0522	0.1172	0.1072	0.7595	0.0896	0.3166	0.7664	0.1675	0.6908	0.1333	0.2908	0.0000

PEER-SUPPORT OF BREASTFEEDING MOTHERS

by

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AN ABSTRACT OF A MASTER'S THESIS

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Recent surveys conducted in the U.S. indicate an increased incidence and duration of breastfeeding middle class as well as among lower income class mothers. Participants of this study include pregnant women enrolled in the Riley County WIC Program (Women, Infant and Child). The existence and the impact of a support system such as the mother's family, physician or other breastfeeding mothers was assessed by using two questionnaires pre and post delivery.

The sample size before delivery (N=37) decreased during the postnatal follow-up study (N=20) eight weeks after the birth of the baby. The participants had a mean age of 23.9 years, had a low income, and were fairly well educated because 98 percent of all WIC mothers had at least some high school education. Previous data revealed that the average breastfeeding period was 17.8 weeks. This was similar to the planned nursing period, of the 20 mothers in the present study prior to delivery. Because two months are considered a long nursing period, 70 percent of the participants had experienced "successful" breastfeeding. Of the initial 37 WIC-mothers, 12 intended to return to school after delivery, 6 wanted to return to work, and 18 chose to stay home after the birth of the baby.

None of the participants stated any kind of severe discouragement from their family, friends or physician towards their breastfeeding before as well as after

delivery. When ranking the individual answers from strong discouragement to strong encouragement the average degree of support arising from family or friends exceeded the husband's support and was even higher following delivery. The mothers stated that their pediatricians were a very strong source of encouragement; 75 percent of the WIC mothers reported strong support towards their breastfeeding. Significant positive correlation between the family's, friends' and pediatrician's attitude substantiate data from previous studies. Sixty percent of all participants consider health professionals a major source of advice for problems with breastfeeding, while 30 percent would address a close friend or relatives. Only 10 percent could not name any resource person.

Fourteen percent of all participants indicated a prenatal interest in the WIC breastfeeding preparation, and only 5 of 20 participants reported actually attending the class. In spite of this, 95 percent of all breastfeeding mothers showed deep interest in sharing support and information with other mothers. Results of this study indicate that low-income mothers with a high educational background are able to breastfeed over a longer time when adequate help and encouragement exists. The data obtained also show that nonformal sharing of information and experiences may be more helpful in encouraging breastfeeding than formal information delivery systems for low income

expectant mothers. Therefore WIC education activities to promote breastfeeding should be implemented during the early months of pregnancy and should utilize a peer-support system.