

## Breastfeeding Among Low-Income Women With and Without Peer Support

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This research examined the effect of peer support on breastfeeding duration and exclusivity (breastfeeding without supplements) in a population of low-income women during the first 3 months postpartum. Participants in the peer counselor group ( $n = 18$ ) exhibited higher rates of exclusive breastfeeding across time than those without a counselor ( $n = 18$ ), and more exclusive breastfeeding was associated with longer duration overall.

Mother's career plans had the greatest effect on duration of breastfeeding. Women who intended to return to work, attend school, or both breastfed 6 to 9 weeks less than participants who intended to stay home. Attendance at a breastfeeding class and knowing someone who had breastfed was significantly correlated with a longer duration of breastfeeding. Nutritionists from the Women, Infants and Children (WIC) Program were the primary source of breastfeeding information. Two main factors discouraged women from breastfeeding: returning to work, school, or both and the perception of a diminished milk supply. Greater emphasis should be placed on prenatal breastfeeding education for low-income women, and their mothers and grandmothers should be included.

Peer support is one important component of social support in the area of breastfeeding that community health nurses (CHNs) can utilize. CHNs are in a unique position to assist

working mothers, provide support, and develop educational programs to enhance breastfeeding success in this population.

The promotion of breastfeeding has become a high priority among health professionals because of the undisputed physiological, psychological, social, economic, immunological, and nutritional benefits to mother and baby associated with breastfeeding (American Dietetic Association, 1993). Despite the known benefits of breastfeeding, the frequency of breastfeeding has fluctuated greatly since 1955 (Martinez & Krieger, 1985; Ryan et al., 1991; Ryan, Rush, Krieger, & Lewandowski, 1991). Breastfeeding at hospital discharge increased from 54.2% in 1992 to 59.2% in 1996. In a similar trend, the percentage of mothers continuing to breastfeed their infants at 6 months of age increased from 18.9% to 21.8% from 1992 to 1996 (Ross Laboratories, 1997). One National Health Promotion Disease Prevention Objective for the Year 2000 is to increase to at least 75% the proportion of mothers who breastfeed their babies in the early postpartum period and to increase to at least 50% the proportion who continue breastfeeding until their babies are 5 to 6 months old (U.S. Department of Health & Human Services, 1991).

A number of health promotion programs have involved peers to support and educate clients. To date, little research has been done to investigate the effect of a structured peer counseling program on rates of breastfeeding.

The first breastfeeding peer counselor program was developed in Chicago in 1987, with technical training influenced by the self-esteem and empowerment philosophy of Paulo Friere (Kistin, Abramson, & Dublin, 1994). In a longitudinal study of this program, Kistin, Abramson, and Dublin examined the effect of support from trained peer counselors on breastfeeding initiation, duration, and exclusivity among 102 low-income urban women and found that women in the counselor group had significantly greater breastfeeding initiation, exclusivity, and duration than women in the control group.

To focus attention on the national goal and increase the proportion of breastfeeding mothers in the state of Florida, a statewide breastfeeding promotion initiative was launched in 1989 (Breunig & Brady, 1992). The advent of breastfeeding peer counselor programs in Florida took place in 1990, when nine counties were selected for training. Currently, breastfeeding peer counselors continue to be utilized in the state of Florida. This study was designed to determine the effectiveness of a breastfeeding peer counselor program to guide future efforts in breastfeeding promotion. The purpose of this study was to determine the relation between peer support and breastfeeding duration and exclusivity in a population of low-income women enrolled in the Women, Infants and Children (WIC) Program in Florida.

Like the Chicago study, this research explored the effect of peer counselors on breastfeeding rates in a population of low-income women, using similar time intervals for data collection, interview questions, and operational definitions. The Chicago study reported breastfeeding initiation, duration, and exclusivity rates. The additional variables

assessed in this study included mother's career plans, barriers to breastfeeding, previous breastfeeding experience, knowing others who have breastfed, and other sources of support for breastfeeding.

*Breastfeeding* was defined as the secretion of milk from a mother's breast and the suckling of the infant to secure its nutrition, one or more times per day. This also included pumping breastmilk from a mother's breast to provide for the infant. Breastfeeding *duration* was the length of time from initiation until the infant receives no breastmilk, and *exclusivity* was providing only breastmilk for infant nutrition and excluding all supplements, such as juice, formula, and solid food (exclusive breastfeeding).

## METHOD

This descriptive, longitudinal study compared infant feeding practices of women who received support from peer counselors during the first 3 months postpartum with women who did not have a counselor.

The WIC department of a County Public Health Unit, located in a medium-sized North Florida city, established a breastfeeding peer counselor program. The candidates for training as peer counselors were selected by the breastfeeding peer counselor coordinator and met the following criteria: had previously breastfed, were enthusiastic about breastfeeding, and had a desire to help other mothers from minority or low-income communities. The peer counselors involved in this study were all financially eligible for WIC services. In addition, the candidate completed a required training course and volunteered her time.

The counselors attended a 20-hr training program in breastfeeding and communication skills, developed by La Leche League International and administered by the breastfeeding peer counselor coordinator for WIC in the county. The content of the training sessions included the following: background on La Leche League International, advantages of breastfeeding, common problems and concerns, prenatal care, nutrition, family needs, cross-cultural training, and counseling techniques. *The Womanly Art of Breastfeeding*, published by La Leche League International (1991), was the required text for the course. Methods of training included group discussion, role-playing, and lecture.

A convenience sample was drawn from prenatal and postpartum clients who were enrolled in WIC in the county. The participants recruited for the study were of all races, but the great majority were African American. They were of any childbearing age, with ages ranging from 15 to 36 years old. The participants spoke either English or Spanish and planned to breastfeed or were currently breastfeeding their infant. Women were assigned to counselors based on their desire to have a counselor and the availability of counselors who had completed the counselor training program. Those mothers who were not matched with a counselor became part of the control group. A completed sample size of 36 women was obtained, 18 in the counselor group and 18 in the control (no counselor) group.

Public health nutritionists met with each prenatal client during the pregnancy and during the first 3 months after delivery. At that time, if the client met the requirements for participation in the study and desired to do so, the nutritionist solicited information on demographics, feeding intentions, career plans, and support systems.

The peer counselors contacted the mothers within a few days after delivery, and again 2 weeks, 1 month, 2 months, and 3 months after delivery. Contacts were made via telephone, letter, or in person at the WIC office.

Follow-up contact, by telephone or in person, was made by the researcher, the peer counselors, or the peer counselor coordinator for the counselor group. Follow-up for the control (no counselor) group was made by the researcher or the WIC nutritionists during subsequent postpartum appointments. Follow-up contact with the control group was at the same time intervals.

Upon each contact, information regarding infant feeding practices and perceived support was collected in a personal interview using an interval contact questionnaire. The questionnaire used in the study was developed by the researchers. It was piloted on a group of five mothers in the WIC program, and feedback was elicited from the public health nutritionists utilizing them, after which the questionnaires were revised slightly. All procedures for the protection of human participants were followed.

The study utilized a quasi-experimental design. To minimize possible confounds due to selection bias, an assessment of important extraneous variables was conducted. At entry into the study, data were collected on a number of motivational and social support variables that might influence duration and exclusivity of breastfeeding. Motivation variables to which women answered yes or no included: interest in being assisted by a peer counselor, prior breastfeeding experience, knowledge of others who had breastfed, and the perception that someone discourages them from breastfeeding. Specific support for breastfeeding by various significant others including (but not limited to) the participant's mother, grandmother, the father of the baby, and medical professional was also assessed by a checklist.

Data were coded and analyzed using the Statistical Package for Social Sciences. A hierarchical multiple regression was used to predict the duration of exclusive breastfeeding. This duration was regressed on all participant characteristics, followed by counselor effects (counselor vs. no counselor). The relation between overall duration of breastfeeding and duration of exclusive breastfeeding was examined using a Pearson's  $r$  correlation coefficient. Follow-up point biserial correlations were calculated at each of four time points to determine if exclusivity at various time points was associated with a longer duration of breastfeeding. Finally, a mixed model analysis of covariance (ANCOVA) was used to examine the effect of peer counseling and time on rates of exclusive breastfeeding. This analysis allowed for an exploration of the effects of group and time and their interaction on the rate of exclusive breastfeeding.

## SAMPLE POPULATION

The sample consisted of 36 women. An additional 10 participants were lost due to attrition during the study. Those lost to attrition were statistically similar to the participants who completed the study for education, marital status, and race but were older than the participants who completed the study ( $M = 27.0$  years old vs.  $23.3$ ,  $t = 2.22$ ,  $p = .03$ ).

The average age of participants in the sample was 23.3 years old ( $SD = 4.4$  years), and the average years of education completed was 14.4 years ( $SD = 2.1$  years), including Kindergarten. Of the mothers in the sample, 30.6% were married, 61.1% were single, 2.8% were divorced, and 5.6% were separated; 47.2% of the participants were African-American, 38.9% were White, 5.6% were Hispanic, and 8.3% were of other ethnicity. Other descriptive information available included the mother's career plans after the birth of the child and the intended feeding plans for the child. Of the participants in the sample, 30.6% intended to enter the work force after the birth of their child, 16.7% planned to attend school, 47.2% reported that they would both work and attend school, and 5.6% neither intended to return to work nor attend school. Of the participants, 55.6% initially intended to exclusively breastfeed their child, and 44.6% intended to both breastfeed and bottlefeed their child. No significant differences in demographic variables were found between the two groups. See Table 1 for separate descriptive statistics for the counselor and no counselor groups.

Possible group differences on motivation and support were also assessed. The only variable that differed across the counselor and no counselor groups was support from participant's mother. Eighty-three percent of the participants in the counselor group stated they received support from their mothers, whereas only 50% of the no counselor group received this support,  $\chi^2(1, N = 36) = 4.50$ ,  $p < .034$ . For summary data and significance testing of other extraneous variables, see Table 2.

## RESULTS

Results of the study indicate that contact with a peer counselor was associated with a longer duration of exclusive breastfeeding, and more exclusive breastfeeding was associated with longer duration overall. All of the women in the study planned to breastfeed and did so, with the exception of one woman in the no peer counselor group.

### Duration of Breastfeeding

A multiple regression was utilized to identify important predictors of overall duration of breastfeeding. The regression was conducted hierarchically with group membership

TABLE 1  
Descriptive Statistics by Group

Variable	Counselor (%)	No Counselor (%)	Statistic	p
Age (years)	23.9	22.6	$t(34) = 0.91$	.370
Education (years)	14.7	14.1	$t(34) = 0.87$	.703
Marital status			$\chi^2(3) = 1.09$	.779
Married	33.3	27.8		
Single	61.1	61.1		
Divorced	0.0	5.6		
Separated	5.6	5.6		
Race or ethnicity			$\chi^2(3) = 2.39$	.495
African American	44.4	50.0		
White	38.9	38.9		
Hispanic	11.1	0.0		
Other	5.6	11.1		
Mother's career plans after birth			$\chi^2(3) = 7.56$	.056
Go to work	27.8	33.3		
Attend school	33.3	0.0		
Both	33.3	61.1	$\chi^2(1) = 2.77$	.095
Neither	5.6	5.6		
Feeding plans			$\chi^2(3) = 0.00$	1.000
Breastfeed	55.6	55.6		
Bottlefeed	0.0	0.0		
Both	44.4	44.4		
Undecided	0.0	0.0		

Note.  $N = 36$  for all statistical tests (18 counselor and 18 no counselor).

TABLE 2  
Assessment of Group Differences on Extraneous Variables

Variable	Counselor (%)	No Counselor (%)	Statistic	p
Interested in receiving peer counselor	94	92	$\chi^2(1) = 1.42^*$	.233
Previous breastfeeding experience	28	28	$\chi^2(1) = 0.00$	1.000
Knowledge of other breastfeeders	83	67	$\chi^2(1) = 1.33$	.248
Anyone discouraging breastfeeding	5	22	$\chi^2(1) = 2.09$	.148
Received support from				
Mother	83	50	$\chi^2(1) = 4.50$	.034*
Grandmother	44	28	$\chi^2(1) = 1.08$	.298
Friend	67	44	$\chi^2(1) = 1.80$	.180
Medical professional	83	78	$\chi^2(1) = 0.18$	.674
Father of baby	83	72	$\chi^2(1) = 0.64$	.423
Other family member	61	61	$\chi^2(1) = 0.00$	1.000
Other	11	6	$\chi^2(1) = 0.36$	.543

Note.  $N = 36$  for all statistical tests (18 counselor and 18 no counselor).

\* $N = 34$  for this analysis (18 counselor and 16 no counselor).

\* $p < .05$ .

(counselor vs. no counselor) added to a model already containing all other significant predictors in order to evaluate the effect of group on duration of breastfeeding, while controlling for all other possibly confounding variables. See Table 3 for complete results from regression.

The final prediction equation for duration of breastfeeding included group, attendance at a breastfeeding class, knowing others who have breastfed, support of breastfeeding by significant others, and mother's career plans. The overall  $R^2$  of .555 for the entire model was significant,  $F(7, 27) = 4.80, p < .001$ , indicating that approximately 56% of the variance in duration of breastfeeding was accounted for by these predictors. The adjusted  $R^2$ , which accounts for the positive bias in  $R^2$ , was .439.

The predictor with the largest effect on duration was mother's career plans (i.e., participants reported whether they intended to return to work or school after the birth of their child). The overall effect of this categorical variable on duration of breastfeeding was significant; ( $\Delta R^2 = .199$ ),  $F(2, 27) = 4.02, p < .02$ . Participants who intended to return to work, as well as participants who intended to both work and attend school, breastfed for a significantly shorter duration than participants who intended to remain at home,  $t(34) = 2.28, p < .03$  and  $t(34) = 3.09, p < .01$ , respectively. Specifically, participants who intended to return to work breastfed an average of 6.75 weeks less, and participants who intended to both work and attend school breastfed an average of 9.30 weeks less than those who intended to stay home when all other variables in the model are controlled. Additionally, although not significant,  $t(34) = 1.70, p < .10$ , participants who intended to return to school breastfed an average of 5.70 weeks less than participants who intended to stay home. Support of breastfeeding by significant others had the next largest effect on duration of breastfeeding.

TABLE 3  
Variables Related to Overall Duration of Breastfeeding

<i>Variable</i>	<i>Effect Estimate</i>	<i>Standard Error</i>	$\Delta R^{2a}$
Group	2.04	1.43	.034
Breastfeeding class	3.14*	1.29	.097*
Knowing others who breastfed	3.24*	1.51	.076*
Support for breastfeeding	-1.37*	0.42	.173*
Mother's career plans			.199*
Work-neither	-6.75*	2.97	
School-neither	-5.70	3.36	
Both-neither	-9.30*	3.01	
Constant	6.40*	2.40	

*Note.* The overall  $R^2$  for the full model is .555,  $F(7, 27) = 4.80, p < .001$ . The adjusted  $R^2 = .439$ , and the standard error of estimate is 3.60.

<sup>a</sup> $\Delta R^2$  is the increase in  $R^2$  due to adding the variable to a model containing all of the other independent variables.

\*Significant at the .05 level.

Both attending a breastfeeding class and knowing others who had breastfed were significantly associated with increases in duration of breastfeeding. Specifically, attendance at a breastfeeding class was associated with an increase of 3.14 weeks,  $t(34) = 2.43$ ,  $p < .02$ , in duration of breastfeeding, and knowing others who had breastfed resulted in an increase of 3.24 weeks,  $t(34) = 2.15$ ,  $p < .04$ , when all other variables in the model were controlled.

When group membership (counselor vs. no counselor) was added to a model containing the aforementioned predictors, it was not significantly related to duration of breastfeeding,  $t(34) = 1.43$ ,  $p < .17$ . However, the direction of the effect was in the predicted direction, with participants in the counselor group breastfeeding an average of 2.04 weeks longer than participants in the no counselor group when all other variables in the model were controlled.

### Duration of Exclusive Breastfeeding

A multiple regression similar to the one reported earlier was conducted to identify significant predictors of the duration of exclusive breastfeeding (i.e., providing only breastmilk for infant nutrition and excluding supplements such as juice, formula, or solid food). The regression was again conducted hierarchically with group membership (counselor vs. no counselor) added to a model already containing all other significant predictors in order to evaluate the effect of group while controlling for all other possibly confounding variables. See Table 4 for complete results from regression.

The final prediction equation for duration of exclusive breastfeeding included group, attendance at a breastfeeding class, support of breastfeeding by significant others, and

TABLE 4  
Variables Related to Overall Duration of Exclusive Breastfeeding

<i>Variable</i>	<i>Effect Estimate</i>	<i>Standard Error</i>	$\Delta R^{2a}$
Group	2.61*	1.30	.085*
Breastfeeding class	2.55*	1.18	.097*
Support for breastfeeding	-1.08*	0.36	.186*
Future career plans			.260*
Work--neither	-4.98	2.70	
School--neither	-7.93*	3.04	
Both--neither	-8.08*	2.71	
Constant	11.20*	3.14	

*Note.* The overall  $R^2$  for the full model is .392,  $F(6, 29) = 3.12$ ,  $p < .017$ . The adjusted  $R^2 = .266$ , and the standard error of estimate is 3.30.

<sup>a</sup> $\Delta R^2$  is the increase in  $R^2$  due to adding the variable to a model containing all of the other independent variables.

\*Significant at the .05 level.



mother's career plans. The overall  $R^2$  of .392 for the entire model was significant,  $F(6, 29) = 3.12, p < .02$ , indicating that approximately 39% of the variance in duration of exclusive breastfeeding was accounted for by the predictors. The adjusted  $R^2$ , which accounts for the positive bias in  $R^2$ , was .266.

Consistent with finding for overall duration, the predictor with the largest effect on duration of exclusive breastfeeding was mother's career plans. The overall effect of this categorical variable on duration of exclusive breastfeeding was significant; ( $\Delta R^2 = .260$ ),  $F(2, 29) = 4.14, p < .01$ . Again, participants who intended to work and attend school exclusively breastfed for a significantly shorter duration (8.08 weeks less),  $t(34) = 2.6, p < .01$ , than participants who intended to remain at home. However, in contrast to the effect for overall duration, participants who intended to return to school only (rather than work only) exclusively breastfed less than those who intended to stay home. For duration of exclusive breastfeeding, the contrast of participants who intended to return to work with those who intended to stay home was not significant,  $t(34) = 1.85, p < .08$ . However, the effect was in the expected direction, with participants planning to return to work exclusively breastfeeding an average of 4.98 weeks less than those planning to remain at home.

Attending a breastfeeding class was significantly associated with increased duration of exclusive breastfeeding,  $t(34) = 2.16, p < .04$ . Specifically, attendance at a breastfeeding class was associated with an increase of 3.14 weeks in duration of exclusive breastfeeding.

When group membership (counselor vs. no counselor) was added to a model containing the aforementioned predictors, it was significantly related to duration of exclusive breastfeeding,  $t(34) = 2.01, p < .05$ . Thus, even after controlling for the effects of the other significant predictors of exclusive breastfeeding, contact with peer counselors was still associated with an increased duration of exclusive breastfeeding. Participants in the peer counselor group exclusively breastfed for an average of 2.61 weeks longer than those in the no peer counselor group.

### Exclusivity of Breastfeeding Over Time

A two-way mixed model ANCOVA was utilized to explore the effects of group (counselor vs. no counselor) and time (at 2 weeks, 1 month, 2 months, and 3 months) on the rate of exclusive breastfeeding. Overall support of breastfeeding among significant individuals in the mother's support network (e.g., mother, father of baby, friends, etc.) was included as a covariate to control for possible differences between groups on this important variable. A main effect for group was observed with participants in the counselor group indicating higher rates of exclusivity than participants in the no counselor group,  $F(1, 22) = 1.83, p < .020$  ( $n = 25$  due to missing data). Additionally, a main effect of time was noted with rates of exclusivity decreasing over time,  $F(3, 69) = 3.20, p < .029$ , a natural

and expected result. The interaction between group and time was nonsignificant,  $F(3, 69) = 1.54, p < .212$ , indicating that the group effect was stable over time. Finally, the covariate, support of breastfeeding, was significantly related to rates of exclusivity over time,  $F(1, 22) = 1.42, p < .038$ . Grand means for these measures were calculated as an average of the individual means for each measure (group or time), thus, enabling one to view the consistency of the group effect across time and the slow decline in exclusivity over time (i.e., the time effect). Mean rates of exclusive breastfeeding for the group without a peer counselor were 17% at 2 weeks, 27% at 1 month, 13% at 2 months, and 6% at 3 months. Mean rates of exclusive breastfeeding for the group with a peer counselor were 53% at 2 weeks, 40% at 1 month, 33% at 2 months, and 17% at 3 months.

### Relation Between Exclusivity and Duration of Breastfeeding

As would be predicted, there was a moderately strong positive relation between overall duration of breastfeeding and the duration of exclusive breastfeeding ( $r = .556, p < .001$ ). To test whether higher rates of exclusivity at each of the four time points was associated with longer overall duration of breastfeeding, point biserial correlation coefficients were computed. Strong positive correlations were found between duration and exclusivity at 2 weeks ( $r_{\text{biserial}} = 0.65, p < .001$ ), 1 month ( $r_{\text{biserial}} = 0.67, p < .001$ ), and 2 months ( $r_{\text{biserial}} = 0.49, p < .003$ ). Thus, greater exclusivity was significantly associated with longer overall duration of breastfeeding. Additionally, although the correlation between duration and exclusivity at 3 months was not significant ( $r_{\text{biserial}} = 0.30, p < .082$ ), it was consistent in direction with the other three correlations.

In an open-ended question, the participants were asked what factors (if any) discouraged them from breastfeeding, and a wide range of responses was given. Many answered the question to reflect why they were no longer breastfeeding. In descending order, the responses were as follows: returning to work or school ( $n = 12$ ), diminished milk supply ( $n = 7$ ) or felt baby was not getting enough milk ( $n = 5$ ), baby was sick or on medications ( $n = 4$ ), mother was sick or on medications ( $n = 2$ ), not latching on ( $n = 2$ ), baby did not like it ( $n = 1$ ), baby became used to bottle with pumped breastmilk and no longer would take breast ( $n = 1$ ), nipple soreness and bleeding ( $n = 1$ ), and another family member started baby on formula ( $n = 1$ ). Note that participants may have cited more than one factor or reason, and this is reflected in the total number for each.

In a final descriptive analysis, the participants were asked where they learned about breastfeeding and were given a list of 15 sources from which to choose. In descending order, sources of breastfeeding knowledge included: nutritionist (75%), friends (64%), books and magazines (64%), pamphlets (61%), doctor (58%), family (56%), hospital nurse (53%), videos in hospital (44%), childbirth classes (39%), peer counselor (25%), TV and radio (25%), videos at home (19%), breastfeeding support group (17%), breastfeeding class (14%), and other (11%).

## DISCUSSION

The sample was mostly African American, single, low-income women who were less likely to breastfeed and, therefore, an appropriate population for research and intervention (Grossman, Larsen-Alexander, Fitzsimmons, & Cordero, 1989; Martinez & Krieger, 1985). Both groups in the sample exhibited a low percentage (27.8%) of previous breastfeeding experience, which has also been cited as a risk factor for low rates of breastfeeding in the literature (Morse & Harrison, 1987).

Limitations to the study included use of a convenience sample and small sample size, as well as loss of participants due to attrition. The generalizability of the findings was limited due to the nature of a convenience sample and limitations previously identified. Characteristics of the study sample may not necessarily reflect the general population of low-income women, but it was assumed that they represented a group of women who intended to breastfeed.

This study found greater exclusivity in breastfeeding among the peer counselor group, that contact with a peer counselor was associated with a longer duration of exclusive breastfeeding, and more exclusive breastfeeding was associated with longer duration overall. Additionally, knowing others who had breastfed significantly lengthened the overall duration of breastfeeding.

Broad consensus exists among professionals that breastmilk is considered the most complete diet and optimal feeding method for the full-term infant during the first 6 months (American Academy of Pediatrics, 1982; Wong, 1995). In light of this, the results of this study are very meaningful. Higher rates of exclusive breastfeeding were strongly associated with longer duration. This is supported by the findings of Bevan, Mosley, Lobach, and Solimano (1984) and Hills-Bonczyk et al. (1994) that weeks of exclusive breastfeeding and infrequent use of breastmilk substitutes were associated with longer duration. Acheson and Danner (1993) asserted that supplementing with infant formula, particularly before lactation is well-established, is likely to result in breastfeeding failure. Thus, CHNs should emphasize the importance of exclusive breastfeeding in their client population.

The benefits of exclusive breastfeeding should be stressed by the community health professional. The client can be taught how to intervene early and manage any breastfeeding concerns that may arise, such as nipple soreness or diminished milk supply. Nurses can reassure their new mothers that they most likely have enough milk for their babies and can show them ways to increase their milk supply so that supplementation with formula is not necessary. The concept of supply and demand, in that the more the baby breastfeeds the more milk will be produced, is an important one for nurses to share with their clients.

Although peer support is one type of social support that is important for breastfeeding success, the overall social support from which a woman may draw has a critical impact on the decision to breastfeed, as shown in previous literature (Buckner & Matsubara,

1993; Locklin & Naber, 1993; McNatt & Freston, 1992). Most of the participants from each group acknowledged some support from family members, friends, health professionals, or all of them. It was encouraging to see that many of them had other sources of support and did not rely solely on the assistance of a peer counselor. For most of the extraneous variables, there was no significant difference between the two groups.

There was a significant difference between the two groups in terms of support they received from their mothers. A higher percentage of women in the peer support group also received support from their mothers. A greater emphasis should be placed on prenatal breastfeeding education for low-income women, and their mothers should be included. CHNs can involve the mother as much as the client desires, as a source of tremendous support. Ideas on ways to include mothers and grandmothers in breastfeeding education could include designing pamphlets about breastfeeding that target mothers and grandmothers and distributing these in prenatal clinics. Mothers and grandmothers can also be invited to participate in local breastfeeding support group meetings and classes.

The inquiry into sources of breastfeeding knowledge offered valuable insight. A link between the level of knowledge concerning infant feeding and the choice to breastfeed was found in Labbok and Simon's (1988) study. As they were reported to be vital resources for 75% of the mothers studied, the WIC nutritionists are to be commended for their influence on this population. On the contrary, the low percentage (14%) of mothers who learned about breastfeeding through a breastfeeding class may indicate that this resource was not readily available to this population. Insofar as attendance at a breastfeeding class was correlated with a longer duration of breastfeeding, this type of breastfeeding promotion might prove beneficial to this population.

Only 17% of the participants in this study reported a breastfeeding support group as an important source of breastfeeding knowledge. The benefit of support groups for breastfeeding mothers has been promoted in the literature (Dusdieker, Booth, Ekwo, & Seals, 1984). This could be an indicator of the availability and accessibility of such a group to this population. These women do not come often to the WIC office, sometimes only once or twice during the pregnancy and often only once postpartum if breastfeeding. They frequently encounter transportation difficulties that deter them from coming for additional visits. Breastfeeding education classes can be organized by CHNs to coincide with participants' schedules and regular WIC and medical appointments. Transportation can be arranged through available resources in the community, and classes can be arranged to coincide with public transportation schedules. Classes can also be conducted while women are waiting for their appointments, with pamphlets and other literature available in the waiting room (see Appendix).

There are other ways that CHNs can assist in imparting this vital breastfeeding knowledge. Breastfeeding education should be an essential component of all prepared childbirth classes. New mothers can be referred to lactation consultants in the community who can assist them. In light of the value the current society places on community service

and volunteerism, students in health-related fields from the surrounding universities and colleges can be recruited to participate in training in order to assist in this outreach effort. By offering a variety of educational programs, greater flexibility can be obtained in meeting the needs of a diverse population group, many of whom must attend school or work.

In agreement with previous research, this study showed that returning to work or school was significantly related to the duration of breastfeeding. Returning to paid employment after childbirth is strongly related to cessation of breastfeeding (Acheson & Danner, 1993). Factors that discouraged women in this study from breastfeeding centered around two main issues: a diminished milk supply (or the perception that the baby was not getting enough milk) and returning to work, school, or both. These results are similar to the findings of Quinn, Koepsell, and Haller (1997) who identified the two most common reasons women cited for discontinuing breastfeeding as the mother's perception that the infant was not getting enough milk and the mother's need to return to work, school, or both. Additionally, the research conducted by Bergman, Larsson, Lomberg, Moller, and Marild (1993) concluded that overwhelming demands, such as work and school, have been shown to contribute to a shorter duration of breastfeeding.

There are a variety of ways that the community health professional can provide support for the working mother who is breastfeeding. During the initial postpartum period, the nurse can help the mother to establish an adequate milk supply. The client can be instructed on expressing milk and the use of breastpumps prior to returning to work. The nurse or other health professional can teach creative ways to find time to manually express milk or use an electric pump at work. Other options may include having the baby's caretaker bring the baby to the workplace for feedings. Resources in the community can be made available to the client, such as WIC, lactation consultants, and breast pump suppliers.

This study has valuable implications for community health professionals. CHNs can be a critical resource to breastfeeding women in this population. Working women are often unaware that there are several ways to combine work (or school) and breastfeeding. Community health professionals can utilize their skills to provide individualized counseling to women on how they may best combine the two (Janke, 1993) as well as teach women how to manage common breastfeeding concerns such as a diminished milk supply.

Misinformation about breastfeeding abounds. The results of the study reflected a longer duration of breastfeeding in women who attended a breastfeeding class, plus a relative lack of exposure to these classes in general. These results suggest that it might be beneficial to make breastfeeding classes more accessible to this low-income population. Through education and support, CHNs can encourage longer duration and best promote breastfeeding success (Bevan et al., 1984; Janke, 1993). CHNs should develop probreastfeeding protocols for their nursing practice. Formal guidelines for this can be obtained through breastfeeding promotion consortiums at the national level, as well as state-wide programs and local breastfeeding task forces.

The effect of peer support, as one component of social support, on the rate of exclusive breastfeeding is an important primary source of support for breastfeeding women. Impacting the family system as a whole, breastfeeding benefits the baby nutritionally and immunologically. The mother gains the physiological, social, and hygienic benefits of the breastfeeding process, and the family profits economically (American Dietetic Association, 1993). The decrease in infant morbidity among breastfed infants affects health care costs for the family as well as society as a whole (Janke, 1993). Hence, breastfeeding is a multidimensional, holistic form of health promotion and disease prevention.

In summary, this study found that peer support may influence rates of exclusive breastfeeding, which in turn may impact the duration of breastfeeding in this population. Peer support is one component of social support and future research can assist in further determining the extent of this contribution. This study reinforced the need for more educational services and broadened family support for breastfeeding women. Mothers of breastfeeding women play a critical role and should be more involved from the prenatal period through the lactation period.

Our goal is to find ways to continually improve the quality and effectiveness of breastfeeding promotion. CHNs could utilize peer counselors in their efforts to encourage breastfeeding success in their client population. These health professionals are in a unique position to assist women and their families in obtaining the information, resources, and support needed to continue breastfeeding.

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## APPENDIX

### SAMPLE BREASTFEEDING EDUCATION HANDOUT

Did you know that ...

- Formula and breastmilk are not the same thing.
- Breastfed babies grow better—not too fat, not too thin.
- Breastfeeding helps the baby's brain grow. In fact, one study showed that premature babies who were breastfed were found later in life to have higher IQs than those who had no breastmilk. Statistics show that formula-fed children have more learning disabilities and do not do as well in school as breastfed children.
- Breastfeeding helps prevent cavities and crooked teeth, even if the baby does not have teeth yet. It also helps children talk better.
- Breastfed babies almost never get diarrhea or constipation. In fact, they have fewer stomach problems for the rest of their lives.

- Breastfed babies also have fewer ear infections, colds, flu, allergies, skin rashes, and other serious illnesses. They spend less time at the doctor.
- Anemia (low iron) is rare in breastfed babies.
- Breastfed babies have less sugar diabetes and less heart disease later in life compared to formula-fed babies.
- Breastfeeding saves babies' lives. Formula-fed babies die more often, especially in poor areas.
- Crib death does not happen as much among breastfed babies.
- Breastfeeding saves moms' lives, too. Moms who breastfeed have less cancer.
- Breastfeeding can protect moms against brittle bones later in life.
- Breastfeeding can help moms lose weight after birth.
- Most moms are able to breastfeed without any problems, but sometimes, they need help. They should ask their nurse, doctor, midwife, or nutritionist.



