

Duration of Breastfeeding for Mothers of Twins

Elizabeth G. Damato, Donna A. Dowling, Elizabeth A. Madigan, and Chalida Thanattherakul

Objective: To describe the incidence and duration of breastfeeding for mothers of twins and identify factors that affected this duration.

Design: Secondary analysis of data from a larger longitudinal predictive study of maternal attachment in mothers of twins.

Setting: Paper and pencil questionnaires once during pregnancy and twice in the first 6 months postpartum.

Participants: 123 women recruited from a national support group for mothers of twins.

Main Outcome Measures: Mothers' Information Tool, Edinburgh Postnatal Depression Scale, Rosenberg Self-Esteem Scale, and the Index of Breastfeeding Status.

Results: 110 (89.4%) of the sample initiated breastfeeding or initiated a milk supply by pumping. Percentage of breast milk feedings at time 2 predicted whether or not a woman was still breastfeeding at time 3 (odds ratio = 3.63, $p < .001$).

Conclusion: A high percentage of breastfeeding initiation was found despite the increased care burden that has been described for mothers of twins. Mothers who continued to breastfeed at time 3 provided a high percentage of the twins' milk feedings as breast milk. The results suggest that mothers who are able to persist with the difficulties of establishing a milk supply for twins and feeding two infants are able to continue providing a high percentage of the infants' feedings as breast milk. *JOGNN*, 34, 201-209; 2005. DOI: 10.1177/0884217504273671

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Since 1980, the number of twin pregnancies has increased from 18.9 to 30.1 per 1000 total births. This increase is attributed to advances in and greater access to reproductive technology, as well as the increased number of women giving birth at older ages (Martin et al., 2002). A major decision for mothers of twins, as well as for all new mothers, is the choice of whether to breast- or bottle-feed. For mothers of twins, this decision is complicated by the need to adjust to caring for multiples. Additionally, there is anecdotal evidence that mothers of twins may be discouraged from breastfeeding by health care professionals and family and friends (LaLeche League, 1999; Withers, 2000). Although a great deal of research has focused on the factors that promote breastfeeding for mothers of singleton-term infants, there is scant research to support clinical guidelines that specifically address the unique problems of mothers of multiples. The purposes of this secondary data analysis were to examine the incidence and duration of breastfeeding in a national sample of 123 mothers of twins and to describe the relationship of the duration of breastfeeding to selected demographic and psychosocial variables.

Background

Although research demonstrating the immunologic and nutritional benefits of mothers breast milk (MBM) has existed since the early 1960s, the rates of initiation and duration of breastfeeding in the

United States have been disappointing, with a rate as low as 24.7% in 1971 (Ryan, Wenjun, & Acosta, 2002). However, in the last 12 years, these rates have increased and are approaching *Healthy People 2010* goals (Ryan et al., 2002). Even so, the rate of breastfeeding at 6 months of age (31.4%) remains far below the goal of 50% set by *Healthy People 2010* (U.S. Department of Health & Human Services, 2000).

Since 1955, the most frequently cited source for information concerning national breastfeeding rates has been the Mothers Survey (2003), which reported selected maternal and infant characteristics. These included maternal ethnic group, age, education, employment, WIC participation and region of the country. For infants, the only reported demographic measure was birth weight.

However, this comprehensive survey does not report information concerning breastfeeding for single versus multifetal pregnancies. Consequently, little is known concerning rates of breastfeeding initiation and duration for mothers of twins and higher order multiples, or what factors impact the initiation and duration of breastfeeding for these mothers. Given the increase in the numbers of twin and higher order multiple births in recent years (Martin et al., 2002; Russell, Petrini, Damus, Mattison, & Schwarz, 2003), as well as the high-risk nature of multifetal pregnancies (Kinzler, Ananth, & Vintzileos, 2000), this information is essential to develop interventions specific to the needs of these women.

Little is known concerning the incidence of breastfeeding for mothers of twins and what factors impact the duration of breastfeeding.

Clinical reports from the United States have described interventions to support breastfeeding of multiples (Biancuzzo, 1994; Gromada & Spangler, 1998). Reports from other countries (Czeczynska & Kowalik, 1998; Liang, Gunn, & Gunn, 1997) retrospectively described breastfeeding rates for multiples. However, the samples in these studies were primarily preterm infants who were hospitalized for lengthy periods of time.

Two early retrospective studies described breastfeeding for mothers of multiples without reporting the gestational age of the infants at birth. The first of these (Addy, 1975) used a sample of 173 mothers of twins who belonged to a state Mothers of Twins Club. The study examined factors that influenced the mothers' decision to breastfeed, the duration of breastfeeding, and the reasons for the decision to introduce supplements. A one-time

questionnaire was used, and for 38.7% of the sample, the youngest child (not necessarily the twins) was ≤ 2 years of age. Addy found that of mothers who initiated breastfeeding (23.7% of the sample, or 41 mothers), 92.7% were exclusively breastfeeding up to 6 months, with most of the mothers breastfeeding exclusively for up to 3 months. Consequently, those mothers who did breastfeed appeared to be able to provide sufficient amounts of MBM and to continue for sufficient lengths of time, although statistical analyses were not included.

A series of reports from a lay magazine for parents of multiples (Brewster, 1989a, 1989b) described responses to a questionnaire that had been published in the magazine in 1987. The responses of more than 1000 mothers of twins and triplets who had decided to breastfeed were described. Brewster reported that the primary reasons given for breastfeeding twins were (a) satisfaction with a previous breastfeeding experience; (b) the closeness between the mother and baby, and (c) the nutritional advantages for the infants. Sixty-six percent of the mothers used a breast pump at some time, and 46% gave formula in addition to breast milk, although the timing and the reasons for doing so were not described statistically. Reasons given for weaning the infants included the mother returning to work, feeling she had breastfed "long enough," and feeling physically exhausted or emotionally drained. The frequencies for these responses were not given, and it is possible that for mothers of twins, these factors, especially fatigue, may present challenges unique to mothers of multiples.

The purposes of our secondary data analysis were to describe the incidence and duration of breastfeeding for a sample of 123 mothers of twins and to identify factors that affected these findings. We asked the following research questions: *RQ 1*. What are the rate of initiation and the duration of breastfeeding for mothers of twins? *RQ 2*. What percentage of feedings was breast milk at time 2 & time 3? *RQ 3*. What factors are related to duration of breastfeeding in mothers of twins? and *RQ 4*. What factors predict the duration of breastfeeding?

Methods

Design

This was a secondary analysis of data obtained during a study conducted by the first author to describe prenatal and postnatal attachment in mothers of twins (Damato, 2000, 2004a, 2004b). A longitudinal predictive correlational design was used in the original study. Data were collected at three time points: prenatally (time point 1 or T1), at 1 month post-expected delivery date (time point 2 or T2), and at 6 months post-expected delivery date (time point 3 or T3).

Sample

The sample was recruited in the original study with the cooperation of a national support group for mothers of twins. The study was approved by the support group's research committee and by a university internal review board. Initial inclusion criteria were women pregnant with twins in all trimesters of gestation, who self-referred to a local mother of twins club, could read and write English, and agreed to participate. Surveys were sent to and distributed by club presidents to pregnant women who attended local meetings. Seven hundred twenty-seven prenatal questionnaire packets were prepared for distribution to club presidents. In addition, 107 pregnant women responded directly to advertisements in the national support group's newsletter; these women were sent a prenatal questionnaire by the researcher. Of the 834 prenatal questionnaires, 214 were received, for a return rate of approximately 26%.

Of these 214 pregnant women, 168 supplied contact information and agreed to participate in the larger longitudinal study. No compensation was offered to women for their participation. Because it would have been difficult to determine when each participant delivered in this national sample, follow-up questionnaires were sent out at 1 month (T2) and at 6 months (T3) after the expected delivery date. One hundred forty-one women returned the first questionnaire at T2. Two women indicated that one of their twins did not survive; another questionnaire was returned by the post office as undeliverable. The overall retention rate of the 168 volunteer participants for the longitudinal study was 73.2%, with 123 women completing questionnaires at all three data points. This secondary analysis reports on breastfeeding incidence and duration of these 123 mothers of twins.

Instruments

The Mothers' Information Tool (MIT) developed by Horowitz and Callaghan (1990) was revised for the original study to collect obstetric, psychosocial, and demographic information. Content validity was established on the original MIT by a panel of experts including psychiatric and maternal-child nurse clinicians, researchers, childbirth educators, and physicians. For the original study, wording was changed to reflect items pertinent to pregnant women for the T1 questionnaire and to mothers of twins. Information was updated by abbreviated versions of the MIT at T2 and T3. These revised versions of the MIT were pilot tested on a sample of four mothers of twins. The MIT included three questions related to the initiation and duration of breastfeeding at T2 and T3: "Are you currently breastfeeding your babies?" (yes/no); If yes, "What percentage of your babies' feedings are breast milk? (Twin A/Twin B)"; and "If you did breastfeed and stopped, please tell us why you stopped and how long you nursed your babies."

The 13-item Edinburgh Postnatal Depression Scale was used to measure postpartum depression at T2 (Cox, 1986). The 13-item Postnatal Depression Scale consists of statements describing symptoms of postnatal depression with four possible responses, each graded according to severity or duration. Positively worded items required reverse scoring; a total score was achieved by summing each of the item scores. Higher scores indicated a greater degree of depressive symptoms. Validity of the instrument was established by Cox (1986). Cronbach's alpha reliability was .86 in this study.

The Rosenberg Self-Esteem Scale was used to measure prenatal self-esteem at T1 (Rosenberg, 1989). Originally developed for use in adolescents, the Rosenberg Self-Esteem Scale is a 10-item scale with established validity that has been used with childbearing women in several studies (Fawcett et al., 1993; Higgins, Clough, & Wallerstedt, 1995; Troy, 1995). In this study, the Rosenberg Self-Esteem Scale items were reverse scored and summed so that higher scores indicated higher self-esteem. Cronbach's alpha coefficient in the current study was .85, consistent with previous use in childbearing women (Mercer & Ferketich, 1990).

The Index of Breastfeeding Status (IBS), a schema developed by the Interagency Group for Breastfeeding (Labbock & Krasovec, 1990), was modified to define breastfeeding status as high (100%), almost exclusive (81%-99%), medium (21%-80%), and low (<20%). These categories were used, as the women were not asked to report the infants' ingestion of water, juice, or vitamins, making it difficult to precisely follow the categories suggested by Labbock and Krasovec. The IBS is meant for use with healthy, full-term infants and assumes that the infant is feeding directly at the breast. However, it has been suggested that studies that examine breastfeeding for preterm infants should modify the instrument to reflect the unique feeding experiences of preterm infants (Meier & Brown, 1997). In this study, mothers were asked what percentage of the infants' feedings were "breast milk," making it possible to include preterm infants who frequently do not experience direct breastfeeding immediately with term infants.

Data Analysis

Descriptive analysis and logistic regression were performed to answer the research questions. The open-ended responses to "reasons for terminating breastfeeding" were examined and categorized.

Results

Of the 123 participants who completed all three data points, 13 did not initiate breastfeeding. The responses of the remaining 110 participants who did initiate breastfeeding (89.4% of our sample) were used in the data

analysis. Questionnaires were sent to participants for completion at 1 month and 6 months post-expected delivery date. However, many women delivered prior to their expected delivery date, and questionnaires were often returned late, resulting in a mean infant age of 9.4 weeks (*SD* = 4.1) at T2 and a mean infant age of 28.3 weeks (*SD* = 4.6) at T3.

Maternal Characteristics

Eligible women from 34 states and the District of Columbia completed and returned the survey instruments. The percentages of the sample from different regions of the country are depicted in Table 1. The mean maternal age of the sample was 32.7 years (*SD* = 5.0; range 21-47). The majority of the mothers were white (96.4%), 0.9% (*n* = 1) were Asian, and 1.8% (*n* = 2) were Hispanic. The mean years of education for the mothers was 16.2 years (*SD* = 2.3; range 12-22 years). Ninety-eight percent of the mothers were married; the remaining 2% were unmarried but living with their partner. Forty percent of the sample had an income > \$70,000/year, 52.7% of the sample had a yearly income between \$30,000 and \$69,999, and 4.5% of the sample had a yearly income ≤ \$29,999. By T2, 13.6% (*n* = 15) of the mothers were working outside the home or for pay; this increased by T3 to 41.8% (*n* = 46). Mean work hours at T2 was 19.4 hours/week (*SD* = 11.9); this had increased at T3 to 25.3 hours/week (*SD* = 16.2). The pregnancy was the first for 47.3% (*n* = 52) of the sample, and 48.2% (*n* = 53) had undergone infertility treatment to conceive. The majority of the women (52.7%, *n* = 58) were delivered by cesarean section for one or both twins.

Infant Characteristics

Mean gestational age at birth was 36.2 weeks (*SD* = 2.4; range 28-40 weeks). Forty-two percent of the pregnancies resulted in preterm delivery (≤ 37 weeks gestation). The mean birth weight for Twin A was 2566.9 grams (*SD* = 576.7; range 1021-3884); mean birth weight for Twin B was 2593.5 grams (*SD* = 598.9; range 1134-3997). For both Twin A and Twin B, 36.4% (*n* = 40) were classified as low birth weight (below 2500 grams).

For 40% of all deliveries, one or both infants were admitted to the neonatal intensive care unit. The mean length of neonatal intensive care unit stay for Twin A was 14.4 days (*SD* = 19.1; range 0-71 days). The mean length of neonatal intensive care unit stay for Twin B was 14.8 days (*SD* = 19.4; range 0-71 days).

RQ 1. What Are the Rate of Initiation and the Duration of Breastfeeding for Mothers of Twins?

Of the 123 mothers who returned all three questionnaires, 110 or 89.4% initiated breastfeeding or initiated a milk supply by pumping. By T2, 30 of the 110 women

TABLE 1
Geographic Location of Mothers (N = 110)

<i>Region of the U.S.</i>	<i>#</i>	<i>%</i>
Pacific	15	13.6
Mountain	13	11.8
North Central	13	11.8
Northeast Coast	48	43.6
Southeast Coast	12	10.9
South Central	9	8.2

TABLE 2
Levels of Breast Milk Feedings Provided at T2 (n = 76)^a and T3 (n = 38)^b

<i>Time</i>	<i>High (100%)</i>	<i>Almost Exclusive (99%-81%)</i>	<i>Medium (80%-21%)</i>	<i>Low (<20%)</i>
T2	38.2% (29)	23.7% (18)	32.9% (25)	5.3% (4)
T3	21.5% (8)	28.9% (11)	47.4% (18)	2.6% (1)

Note. Values enclosed in parentheses represent frequencies.

^aFour women did not supply information related to percentage of breast milk feeds at T2.

^bFive women did not supply information related to percentage of breast milk feeds at T3.

who had initiated breastfeeding had stopped; the mean duration of breastfeeding for these women was 5.4 weeks. At T2, 80 of the 110 women (72.7%) who had initiated breastfeeding were still providing breast milk for their infants by breastfeeding or pumping. At T3, 43 women (39.1%) of the 110 women who had initiated breastfeeding were still providing breast milk for their infants.

RQ 2. What Percentage of Feedings Was Breast Milk at T2 and T3?

At T2, the women reported that a mean of 80.3% of the infants' feedings were breast milk (*SD* = 26.3; range 8.3%-100%). Using the modified IBS categories of breastfeeding, 61.8% of the women were feeding their infants MBM exclusively (100%) or almost exclusively (81% to 99%) at T2. At T3, the women reported that a mean of 76.3% of the infants' feedings were MBM (*SD* = 25.5; range 12.5%-100%). At T3, using modified IBS categories, 50.0% of the women were feeding their infants MBM exclusively (100%) or almost exclusively (81% to 99%). The mean duration of breastfeeding for those that had stopped by T3 was 17.9 weeks or 4.5 months (*SD* = 2.2 months). The levels of breastfeeding for T2 and T3 are described in Table 2.

TABLE 3*Logistical Regression Analysis of Breastfeeding Duration as a Function of Selected Predictor Variables*

Variables	Odds Ratio	p	95% Confidence Intervals for Odds Ratio	
			Upper	Lower
Maternal age	1.032	.590	1.157	.920
Years education	1.022	.890	1.395	.749
Income	1.039	.865	1.614	.669
Number of supports	.820	.518	1.496	.450
Geographic region	1.262	.241	1.863	.855
Parity	.582	.359	1.851	.183
Self-Esteem	1.072	.387	1.256	.915
Postnatal depression	.941	.329	1.063	.834
Gestational age	.901	.402	1.149	.707
T2 Percentage of mother's breast milk	3.632	.000	6.154	2.143

RQ 3. What Factors Are Related to the Duration of Breastfeeding?

Point biserial correlations were computed for selected study variables to identify factors related to the duration of breastfeeding. These variables included region of the country, self-esteem, mother's age, educational level and parity, annual income, postnatal depression, infants' gestational age at birth, the number of help resources at T2, breastfeeding category at T2, and breastfeeding status at T3. Given the exploratory nature of this research, variables with significant ($p < .05$) correlation coefficients of at least .20 were examined. Depression at T2 ($r = -.21$, $p = .03$) and percentage of breast milk feeds at T2 ($r = .64$, $p < .001$) were correlated with duration of breastfeeding. In addition, there were significant but low intercorrelations between region of the country ($r = -.22$, $p = .02$) and gestational age at birth ($r = .29$, $p = .002$) with percentage of MBM feedings at T2.

RQ 4. What Factors Predict the Duration of Breastfeeding?

A logistic regression was performed to identify selected factors that were likely to predict which women would still be breastfeeding at T3. The variables of maternal age and education, total number of postpartum support persons, geographic region, parity, income, baseline prenatal self-esteem, postpartum depression score at T2, infant's gestational age at birth, and percentage of babies' feeds that were breast milk at T2 were entered together. The test of the full model with all 10 predictors was statistically reliable, $\chi^2(9, N = 103) = 54.79$, $p < .001$, indicating that the predictors, as a set, reliably distinguished between those women who were still breastfeeding at T3 and those who were not. Examination of the Cox and Snell R^2 and Nagelkerke's R^2 revealed that 41.3% to

55.8% of the variance was explained by the model. The model was more successful in predicting the group of women who would no longer be breastfeeding at T3 (87.1%) than the women who would still be breastfeeding (78.0%). Overall prediction success of the full model was 83.5%.

Table 3 shows odds ratios (ORs), p values, and 95% confidence intervals for ORs for each of the 10 predictors in the model. Only percentage of breast milk feedings at T2 reliably predicted whether or not a woman was still breastfeeding at T3 (OR = 3.63, $p < .001$, 95% CI = 2.14, 6.15). For every step increase in the modified IBS categories of percentage of MBM feedings, the odds of a woman still breastfeeding her twins at T3 increased 3.6 times. When a parsimonious model was run using the only significant variable in the full model, percentage of babies' feedings that were breast milk at T2, the chi-square and OR did not change appreciably, $\chi^2(1, N = 110) = 52.7$, $p < .001$; OR = 3.36, $p < .001$, 95% CI = 2.12, 5.22.

Discussion

The high percentage of women in this study who initiated breastfeeding of their twins (89.4%) is impressive, given that the percentage of women who initiated breastfeeding in a national survey during the time frame of data collection for this study (1997-1998) was 62.4% to 64.3% (Mothers Survey, 2003). Additionally, this statistic may be an underestimation, as only mothers who returned all three questionnaires were included in this secondary data analysis. This disparity does not change when the demographic characteristics for women in this study are compared to a similar demographic group in the Mothers Survey. However, because the Mothers Survey

was conducted and reported in a different format from the current study, these comparisons must be made with caution.

Additionally, the percentage of women still breastfeeding at T3 (mean age of infants = 28.3 weeks) in this study was higher than that reported in the Mothers Survey (2003). The Mothers Survey reported that in 2002, 33.2% of all infants were still breastfeeding at age 6 months, compared to 38.2% of the infants in this study. This finding was unexpected, given the increased care burden that has been described for mothers of twins (Bowers, 1998). This finding may be related to the low percentage of women who had returned to work by T3 in the current study, as returning to work is frequently associated with the termination of breastfeeding (Fein & Roe, 1998; Roe, Whittington, Fein, & Teisi, 1999). However, this study found no significant correlations between work status and breastfeeding duration.

The results of this study support the promotion of exclusive breast milk feedings for mothers of twins in the early postnatal period. The women who continued breastfeeding at T3 (mean age of infants = 6.7 months) were still providing breast milk for the majority of the infants' feedings, suggesting that the women who were breastfeeding exclusively or almost exclusively at T2 were continuing to provide most of their infants' milk feedings as breast milk at T3. It is possible that mothers who were able to persist with the difficulties of establishing a milk supply for twins and managing feedings for two infants were motivated to continue providing a high percentage of those feedings as breast milk. This is supported by the finding that the percentage of MBM feedings at T2 was positively correlated to breastfeeding at T3 and was the only significant predictor of mothers still breastfeeding at T3.

The variables used in this study to examine factors related to the duration of breastfeeding are characteristics that have been associated with the initiation and duration of breastfeeding in other studies (Ryan, 1997). These include maternal age, education, geographic region, and income at birth. These variables were most likely not significantly associated with breastfeeding in this study due to the homogenous demographic characteristics of the sample, with the sample consisting of white, well-educated older women, characteristics that have been consistently associated with initiation of breastfeeding (Forste, Weiss, & Lippincott, 2001; Ryan et al., 2002).

In this study, only depression had a low but statistically significant correlation with breastfeeding duration. Few studies have examined the relationship between depression and breastfeeding duration, and those that have reported mothers typically identified feeling sad or blue as a problem that complicated breastfeeding (Dennis,

Hodnett, Gallop, & Chalmers, 2002; Kearney, Cronenwett, & Barrett, 1990). However, these studies did not use standardized measurements of depression. We found a small but significant negative association between continued breastfeeding at T3 and depression as measured by the Edinburgh Postnatal Depression scale. An additional study found that 83% of the mothers reported that the depression began before breastfeeding was terminated (Misri, Sinclair, & Kuan, 1997), suggesting that depression was a cause of shortened duration of breastfeeding rather than a result. Future studies should consider the effect of depression on the ability of mothers of multiples to continue breastfeeding.

Less is known concerning factors that predict the duration of breastfeeding. As duration of breastfeeding has been demonstrated to be positively associated with the known immunologic and nutritional benefits of MBM (Heining, 2001), this knowledge is essential to develop interventions that help women successfully initiate an adequate milk supply to continue breastfeeding for durations recommended by the American Academy of Pediatrics (1997). Reasons frequently cited for early termination of breastfeeding include the perception of an inadequate milk supply, sore nipples, leaking breasts, and the need for frequent feedings (Dennis et al., 2002; Hill, 1991; Kearney et al., 1990). We found no studies that prospectively examined the specific reasons for early termination of breastfeeding for mothers of multiples. The findings of this study suggest that mothers of multiples may need more intensive individualized support during the early weeks after discharge. At T2, 27% of the women who had initiated breastfeeding had stopped after a mean duration of 5.4 weeks. This finding is consistent with other studies that found that the majority of women who terminate breastfeeding do so in the first 4 to 6 months (Dennis, 2002). For the 37 additional women who had stopped providing breast milk at T3, the mean duration was 17.9 weeks ($SD = 8.68$), suggesting that women who were still providing breast milk at T2 were able to maintain lactation for durations that come closer to meeting *Healthy People 2010* goals (U.S. Department of Health & Human Services, 2000).

Support for mothers of twins to overcome breastfeeding problems over the first 6 weeks may result in a longer duration of breastfeeding.

Although not significant, the correlation between number of help resources at T2 and duration of breastfeeding

was negative. Nurses often assume that an increase in the numbers of support persons fosters successful lactation efforts. Our finding suggests that the role of helpers for mothers of multiples in relation to establishment of breastfeeding should be investigated further. In summary, the findings reported here highlight the importance of individualized interventions for mothers of multiples until the establishment of an adequate milk supply.

Limitations

One of the limitations of this study was that mothers were not asked to differentiate whether they breastfed their infants directly or provided pumped breast milk. This distinction would have contributed to the description of the care burden experienced by mothers of twins who choose to provide breast milk for their infants.

An additional limitation of the study design was the use of a convenience sample drawn from a support group, which was not representative of all women with twins and limited external validity. Women in this sample were largely Caucasian, married, and of middle to high socioeconomic status. The rate of twinning is higher in African Americans (33.1 per 1,000 live births) versus Whites (29.2) (Martin et al., 2002). It is possible that African American women or women of different ethnic groups do not seek formal support group membership. Rather, African American women seek peer and family supports, as well as individualized supports from health care providers (Ludington-Hoe, McDonald, & Satyshur, 2002; Milligan, Pugh, Bronner, Spatz, & Brown, 2000).

Cross-sectional data collection resulted in a wide range of gestational age during pregnancy (time 1) when prenatal data were collected (i.e., self-esteem assessment) and also at time 2 and time 3. This was a default design due to the difficulty in determining when each mother had delivered her infant and the presumed lack of time mothers had to complete and return the postpartum questionnaires within the requested 2-week period.

Data on percentage of breast milk feedings relied on self-report of mothers. This lends itself to the possibility of measurement error. However, the fact that these mothers were well educated may have countered this limitation. Women were able to provide wide ranges of breast milk percentages, suggesting that these mothers of twins were able to discriminate variations in breastfeeding status.

As a secondary analysis, variables of interest related to breastfeeding intention were not part of the questionnaire. For example, knowing if and for how long the mothers intended to breastfeed may have resulted in a more detailed description of the impact of having twins on the mothers' breastfeeding goals.

Research Implications

Issues surrounding successful breastfeeding for mothers of multiples are likely to be highly individualized, and replication of this study is warranted with a more diverse sample. Future studies should gather data that enable researchers to differentiate breastfeeding versus the provision of breast milk, as these two methods differ in the amount of care burden placed on mothers, especially those with more than one infant to feed. This differentiation may provide insight into reasons for early termination of lactation and may direct interventions to decrease care burden to mothers. There is also a need to ascertain mothers' intent to breastfeed their twins prenatally in order to compare this information with the actual breastfeeding initiation and duration rate. Studies that assess nurses' knowledge base, attitudes, and opinions of mothers who wish to breastfeed their multiples should also be considered. Further research into these aspects will allow the development of interventions specific to mothers of multiples to support their breastfeeding goals, and in particular, to support exclusivity of breastfeeding.

Practice Implications

It is clear from this study that mothers of twins are capable of providing a sufficient milk supply and continuing breastfeeding for the duration recommended by the American Academy of Pediatrics (1997). It has been recognized that mothers of twins need more instrumental and emotional support in caring for more than one infant (Beck, 2002). Consequently, nurses need to determine the mother's breastfeeding goals and identify and include the mother's available supports when planning and providing breastfeeding-related education. Finally, it is imperative that nurses who provide antenatal and postnatal care to mothers of twins reinforce that breastfeeding remains the optimal feeding option for all infants, including multiples (Gromada & Spangler, 1998).

The results of this study support the promotion of exclusive breast milk feedings to mothers of twins in the early postnatal period.

Conclusion

The data from this study provide evidence that mothers of twins are very capable of providing breast milk for the duration recommended by the American Academy of Pediatrics (1997). The data also add to our knowledge of

the importance of exclusivity of provision of MBM in the early postpartum weeks. This exclusivity not only provides long-term benefits to the baby but also contributes to the duration of lactation.

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Elizabeth G. Damato, PhD, RN, is an assistant professor at the Frances Payne Bolton School of Nursing, Case Western Reserve University, Cleveland, OH.

Donna A. Dowling, PhD, RN, is an assistant professor at the Frances Payne Bolton School of Nursing, Case Western Reserve University, Cleveland, OH.

Elizabeth A. Madigan, PhD, RN, is an associate professor at the Frances Payne Bolton School of Nursing, Case Western Reserve University, Cleveland, OH.

Chalida Thanattharakul, PhD, RN, is on the Faculty of Nursing at the Department of Maternal and Child Health Nursing, Khon Kaen University, Khon Kaen, Thailand.

Address for correspondence: Elizabeth G. Damato, PhD, RN, Frances Payne Bolton School of Nursing, Case Western Reserve University, 10900 Euclid Ave, Cleveland, OH 44106-4904. E-mail: egd@case.edu.