

Breast Milk Expression in the Workplace: A Look at Frequency and Time

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Abstract

The objective of this article is to study a barrier for breastfeeding women working full-time outside the home: breast milk expression in the workplace. Data are from a large corporation that provides employee benefits. Mothers express breast milk about twice a day when infants are 4 months old ($\bar{x} = 2.2 \pm 0.8$) and 6 months old ($\bar{x} = 1.9 \pm 0.6$), with a significant decline in frequency ($P < .05$) comparing the 2 age groups. Most mothers spend 1 hour or less expressing breast milk when infants are 3 (82%) or 6 months old (96%), with a significant difference ($P < .05$) between the 2 age groups. Mothers of younger infants were no more likely to work fewer days per week than were mothers of older infants. Most women can express breast milk for 3- and 6-month-old infants in less than an hour, distributed in about 2 separate portions, in an employment environment supportive of breastfeeding. *J Hum Lact.* 20(2):164-169.

Keywords: breastfeeding, employment, corporate lactation program, breast milk expression

More than half of the women in the United States with children younger than 1 year of age work outside of the home.¹ In 2000, 68.4% of all US mothers left the hospital breastfeeding—a record high. Women working full-time are almost as likely to initiate breastfeeding (66.2%) as are all other women. By 6 months, the preva-

lence of any breastfeeding drops to 31.4%, and at 1 year to 17.6%. However, breastfeeding prevalence for mothers working full-time is substantially lower at both 6 (22.8%) and 12 months (10.6%).²

Overall, breastfeeding initiation and duration rates rose during 1990-2000. However, employed women are not among the groups with the largest increases in breastfeeding duration.² These figures are consistent with Wright's³ observation that employment outside the home may no longer be associated with reduced rates of breastfeeding initiation but may have an adverse effect on continuing to breastfeed once women return to work. This decline may be attributed to the complex relationship between maternal participation in the workforce, child care, and breastfeeding. The degree of control that a woman has over her job and the flexibility that a woman has in determining her maternity leave and hours of employment affect her relationship with her child and breastfeeding duration.⁴⁻⁶ While research and case studies demonstrate that breastfeeding while working in the labor force is possible, obstacles to continue breastfeeding in the workplace include the structure of the workday, the work environment, short maternity leaves, and working full-time.⁶⁻⁸ Some of the most common problems experienced by employed breastfeeding mothers include increased fatigue, lack of time and a

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place at work to express breast milk, lack of support from employers, lack of refrigeration for milk storage, and difficulty maintaining an adequate milk supply.^{7,9-10} Further obstacles include lack of awareness and information regarding the benefits of breastfeeding on the part of health professionals, employers, families, and the public.¹¹

Women are able to identify the essential requirements for successful breastfeeding while working outside the home. These include efficient hand expression and/or availability of a "good" breast pump; child care by a trusted person or agency; support from significant others; time during the workday to express breast milk; provision of a safe, private, clean physical space; and clean, refrigerated storage space.^{4,10,12} Lactation programs offered by the employer can provide many of these requirements.^{13,14} Indeed, reports in the literature document the success of work-site support programs on extending the duration of breastfeeding among employed women.^{15,16} However, few employers provide lactation support programs.^{17,18}

Little is known about how often (frequency) or how long it takes (time) for mothers working full-time outside the home to express breast milk in the workplace. Furthermore, the frequency and time required for breast milk expression may vary depending on the age and nutritional needs of the child, the workplace environment available to the breastfeeding mother, or the mother's skill and comfort in breast milk expression. The goal of this article is to describe and compare the frequency and time involved in expressing breast milk at work while breastfeeding infants at 3 and 6 months of age by mothers employed by a company with a lactation support program.

Methods

The findings for this article are based on a national prospective survey of infant feeding practices conducted from November 1, 1997, through January 31, 1999, by CIGNA Corporation, a global provider of employee benefits. CIGNA Corporation conducted the survey to evaluate some of the health practices and health outcomes of female employees and their newborn dependents who were eligible for employee health and family life benefits, including a new comprehensive on-site lactation program. All of the survey participants signed a release form for CIGNA authorizing their participation in the survey. The institutional review board at UCLA approved the use of these data for our study.

Survey data were collected by CIGNA through a series of mailed self-administered questionnaires during the prenatal period and periodically throughout the infant's first year of life. This study uses data from the prenatal questionnaire, the questionnaire mothers completed as they were returning to work, and the monthly diaries completed after mothers returned to work. The prenatal questionnaire gathered demographic information such as race/ethnicity, education, age, and marital status. It also included information on health behaviors such as infant feeding ("Do you plan to breastfeed?") and, for mothers who planned to breastfeed, their level of commitment to breastfeeding (rated as *uncertain*, *somewhat committed*, *committed*, and *very committed*). Questions related to employment, including salary, length of employment at CIGNA, expected length of maternity leave, participation in the lactation program at CIGNA, and child care services, were gathered from the prenatal and return-to-work questionnaires. We derived income from salary by linking a mother's job grade to a job code and salary range. Although we had no information on the type of work or positions mothers held, women with higher job codes had higher salaries, and we collapsed the job codes into categories from low to high. The upper and lower boundary of the midpoint salary range for each category is the figure we chose as our best estimate of income and a proxy for position. For example, "salary/job grade, category \$14,400-29,000" represents the midpoint salary range for job grades under codes 1 through 8. Planned length of maternity leave includes the sum of all the sources of leave mothers planned to use including short-term disability, family leave, vacation, and other sources including unpaid vacation. The lactation support program is part of the employee benefit package at CIGNA and is available to all female employees at all CIGNA work sites across the country. The program includes breastfeeding support and services from lactation consultants during the prenatal period, immediately postpartum, during maternity leave, prior to returning to work, and up to 1 year after the birth of the infant. In addition, rooms dedicated for expression of breast milk and equipped with hospital-grade electric pumps are available at all CIGNA work sites across the country. Data on breastfeeding duration ("How are you feeding your infant now?"), frequency ("How many times did you pump at work yesterday?"), time of expression ("How much time did all of the pumping, including washing equipment and getting to the site to pump, for the day at

work take yesterday?"), and length of the workweek ("How many days are you working per week now?") come from the diaries that mothers were asked to complete each month after they returned to work until their infants reached 1 year of age. Mothers were not asked if they left their work areas to use facilities supplied by CIGNA, if they used breast pumps in their own offices, or when they expressed their breast milk during the day, (ie, during lunch, scheduled break times, or at other times during the workday).

We selected the 3 months postpartum time point to look at frequency and time of breast milk expression because 3 months of age is a time when infants are only milk feeding; therefore, maintaining an adequate breast milk supply could be a challenge, especially for mothers separated from their infants during the workday. Three months could be considered one of the times that breast milk expression would be more frequent to maintain adequate milk production. At 6 months, although most infants have started complementary feeding, milk remains the primary source of nutrition. Therefore, 6 months may be a time when demand for breast milk is similar to that of younger infants, and breast milk expression patterns at the work site, in frequency and time, might also be similar. We also looked at the number of days women work per week to see whether workdays increased over time as infants aged and/or influenced breast milk expression.

Sample

All women employed by CIGNA Corporation who were pregnant and would deliver an infant who would reach 1 year of age during the study period were eligible to participate in the survey. CIGNA sent packets of recruitment information to 1500 pregnant women, a figure consistent with the number of pregnancies in their workforce annually. Strategies used by CIGNA to increase recruitment included mail and telephone reminders. Of the 375 self-selected responders, a small number of women ($n = 19$) had already left the company, while others ($n = 12$) declined to give a reason why they did not participate or cited a language barrier ($n = 1$) for nonparticipation. The main survey enrolled 343 women, a 25% response rate, which is typical of other national employee surveys conducted by CIGNA. During the study period, an additional 32 women were lost to follow-up because a portion of the corporation was sold. The distribution of the main sample was relatively consistent with the CIGNA workforce for white

(73%) and Hispanic (8%) mothers but somewhat lower for African American mothers (11%). At the time of the study, the CIGNA Corporation workforce was 78% women, 76% white, 14% African American, 7% Hispanic, 2.5% Asian, and 5% American Indian.¹⁹

The 283 women who indicated they planned to breastfeed their infants constitute the sample for this study. When their infants were 3 months old, 103 of these mothers were back at work and continued to participate in the survey. Of these, 71 reported they were breastfeeding, 30 mothers had stopped breastfeeding, and 2 mothers did not report how they were feeding. Of the breastfeeding mothers, complete data on the 2 breast milk expression variables were available for 70 mothers, with data missing for 1 mother. Nine of the breastfeeding mothers were not expressing breast milk at work, leaving 61 mothers for our analysis at month 3. When their infants were 6 months old, 121 mothers were back at work and continued to participate in the survey. Of these, 67 reported they were breastfeeding, 51 mothers had stopped breastfeeding, and 3 mothers did not report how they were feeding. Data on breast milk expression at work were reported by all 67 breastfeeding mothers. Seven mothers did not express breast milk at work, leaving 60 mothers for analysis at 6 months.

Statistical Analysis

The sample of women who planned to breastfeed is described based on selected demographic characteristics, health behaviors, and employment factors. The mean frequency and the time spent on breast milk expression during the workday, the mean frequency of days worked per week, and differences between the patterns of work and breast milk expression for mothers of 3- and 6-month-old infants were determined. Analysis was done by *t* test or chi-square test where appropriate. SAS PC version 8.1 was used for all analyses.

Results

Most of the women who planned to breastfeed are white, married, and at least 30 years old (Table 1). Many women are college graduates, and almost one-fifth attended graduate school. Most of the women are first-time mothers, attended childbirth education class, and started prenatal care early in pregnancy. Half of the women reported that they are very committed to breastfeeding. Most of the women had worked at CIGNA for fewer than 5 years, more than one-quarter earn more

Table 1. Demographic Characteristics, Health Behaviors, and Employment Factors Describing Female Employees Who Participated in the CIGNA Infant Feeding Survey and Planned to Breastfeed (N = 283)

Variable	Planned to Breastfeed No. (%)
Ethnicity	
African American	29 (10)
Hispanic	21 (7)
White	207 (73)
Other	26 (9)
Education	
High school graduate	28 (10)
Some college	76 (27)
College graduate	124 (44)
Graduate school	55 (19)
Marital status	
Married	256 (90)
Never married	19 (7)
Divorced/separated/other	8 (3)
Salary/job grade (midpoint salary range), \$	
14,400-29,000	79 (28)
32,200-44,000	82 (29)
48,500-60,000	47 (17)
60,000	75 (26)
Age, y	
25	9 (3)
25-29	58 (20)
30-34	127 (45)
35+	89 (31)
First birth	
Yes	167 (59)
No	116 (41)
Commitment to breastfeeding	
Uncertain	14 (5)
Somewhat committed	35 (12)
Committed	90 (32)
Very committed	144 (51)
Length of employment, y	
6	163 (58)
6-10	85 (30)
11+	35 (12)
Maternity leave, wk	
1-6	62 (22)
7-12	152 (53)
13-16	39 (14)
17+	30 (11)
Received prenatal care in 1st trimester	272 (96)
Attended childbirth class	164 (58)
Participated in lactation support program	182 (64)
Type of child care	
In-home care	123 (47)
Family day care	77 (30)
Center-based care	59 (23)

than \$60,000 annually (but the job grade/salary distribution was fairly even), and most planned to return to work by the time their infants are 12 weeks old. The majority of women (64%) participated in the on-site

Table 2. Comparison of Frequency and Time of Breast Milk Expression During the Workday and Number of Days at Work per Week for Mothers Breastfeeding Infants 3 and 6 Months Old

	Infant Age	
	3 months (n = 61)	6 months (n = 60)
Mean frequency of breast milk expression per workday, $\bar{x} \pm SD$	2.2 ± 0.8	1.9 ± 0.6*
Time expressing breast milk at work, ** no. (%)		
≤ 1 h	50 (82)	57 (95)*
1 h	11 (18)	3 (5)
Number of days at work per week, $\bar{x} \pm SD$	4.5 ± 1.0	4.5 ± 0.9

* $P < .05$.

**Chi-square test.

lactation program. Most mothers arranged for child care in their own homes.

On average (Table 2), mothers (n = 61) of 3-month-old infants express breast milk at work just over twice a day ($\bar{x} = 2.2 \pm 0.8$). Less than one-fifth of mothers (18%) spend more than 1 hour per day expressing breast milk. On average, mothers work about 4½ days per week ($\bar{x} = 4.5 \pm 1.00$).

Mothers with 6-month-old infants (n = 60) express breast milk at work just under twice per day on average ($\bar{x} = 1.9 \pm 0.6$). Five percent require more than an hour during the workday to express breast milk. Mothers work, on average, just about 4½ days per week ($\bar{x} = 4.5 \pm 0.9$).

There is a significant difference in the frequency ($P < .05$) and time ($P < .05$) involved in expressing breast milk for younger infants compared to older infants. However, there is no difference in the number of days mothers work at 3 or 6 months postpartum.

To rule out the question of bias in our results, we compared differences in frequency and time of breast milk expression between 2 distinct groups of mothers from the sample at month 3: the group of mothers who continued to breastfeed through 6 months and the mothers who weaned before 6 months. In other words, did prolonged frequency or time spent expressing breast milk at 3 months lead to early weaning for some mothers and contribute to bias in the 6-month sample? Fifteen mothers who were breastfeeding at 3 months were no longer breastfeeding at 6 months. In our analysis, we found no difference between frequency or time spent in breast milk expression at 3 months between these 2 groups of mothers.

Discussion

To the best of the authors' knowledge, this is the first study to quantify the frequency and the amount of time spent expressing breast milk at a work site by breastfeeding mothers employed full-time outside the home. Furthermore, we are able to compare these figures between mothers nursing younger and older infants. This study also quantifies breast milk expression for the first time in a workplace setting supportive of breastfeeding. We acknowledge, however, the potential for bias resulting from possible underreporting of time spent expressing breast milk on the job because the study was conducted by the mothers' employer.

In our study, as in others, mothers who plan to breastfeed their infants are likely to have at least some college education, are older, white, and married.^{3,12,15,16,20-23} Typically, as in this study, mothers who breastfeed are having their first infant, seek early prenatal care, and attend childbirth classes.^{2,21}

Our findings are consistent with estimates of frequency and time set aside for breast milk expression in a breastfeeding supportive workplace described by Cohen and Mrtek.¹⁵ Based on 2 employer-based lactation programs, the authors report that mothers who were enrolled in the program and who were working an 8-hour workday were scheduled to use dedicated pump rooms at their work sites for 30 minutes 2 or 3 times per day. These estimates were made based on a home trial completed by each mother with the program staff before returning to work to establish pumping frequency.

We also compare our findings with Roe et al,²⁴ who found that the number of breastfeedings or breast milk expressions during the workday did not influence the amount of time mothers worked. Rather, in their study addressing competition between breastfeeding and employment, the authors found that mothers adapted their breast milk expression routine to the workday with the time for breastfeeding or breast milk expression decreasing as the amount of work time increased. The length of the workweek remained constant in our study, regardless of the age of the child, while the frequency of breast milk expression declined with the age of the child.

Factors other than employment, therefore, may influence the reduction in frequency and time spent expressing breast milk. These factors may include age-appropriate addition of complementary foods and subsequent replacement of milk feedings, decline of maternal or infant preference for continued breastfeeding, or

increased comfort, skill, and efficiency at breast milk expression over time. The availability of rooms dedicated to breast milk expression at the work site may reduce the time mothers spend expressing breast milk because they do not have to spend time seeking a private place. The lactation rooms in this company's program were equipped with hospital-grade, piston-driven electric pumps that can be used to express milk from both breasts simultaneously. This type of breast pump is considered optimal for long-term breast milk expression.²⁵ Finally, employees at CIGNA may have felt reduced anxiety about expressing breast milk at work because the employer explicitly supported breastfeeding as evidenced by the lactation support program. Lower maternal stress is physiologically important for breast milk expression.²⁵

This report indicates that the majority of breastfeeding and working mothers who work in an environment supportive of breastfeeding spend less than an hour per day expressing breast milk, a period of time that may be the customary allotted break time for many employed women. Furthermore, mothers may require discretion over the use of their time so that they can distribute breast milk expressions as needed during the course of the workday. Based on our study, women who work in an employment setting supportive of breastfeeding, as evidenced by an employee lactation support program, and with access to breast pumps and a private area to pump can overcome some of the workplace barriers to breast milk expression.

Conclusion

Corporate lactation programs offer a wide and varied range of services. Further comparison studies between different types of lactation programs may be able to detect the level of program necessary to support women in reaching their own goals for breastfeeding as well as the goals of employers, and they may contribute to meeting national objectives for breastfeeding. In addition, studies that are able to include a larger sample of breastfeeding women from different types of work sites and jobs should be undertaken to learn more about the level of lactation support and health promotion necessary to maintain breastfeeding for women working in different types of occupations. It would be valuable to determine the time it takes to express breast milk during a workday in a work environment that does not have a lactation room, breastfeeding support program, or other factors indicative of a supportive environment for

breastfeeding. Finally, future studies may benefit from a neutral third party conducting workplace surveys to eliminate concern that reporting nonwork activities during the workday could have negative repercussions for the employee.

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Resumen

Extracción de la leche materna en el trabajo: Una mirada a la frecuencia y el tiempo

Nuestro objetivo fue el estudio de una barrera para amamantar entre las mujeres que trabajan tiempo completo fuera de casa: extracción de leche materna en el trabajo. Estos datos son de CIGNA Corporation, un proveedor global de beneficios a empleados. Las madres extraen leche materna dos veces al día a los 4 meses ($X=2.2+0.8$) y a los 6 meses ($X=1.9+0.6$) con una disminución significativa en la frecuencia ($p<0.05$) comparando los dos grupos de edad. La mayoría de las madres usan una hora o menos extrayendo la leche materna cuando los niños tienen 3 (82%) o 6 meses (96%) con una diferencia significativa ($p<0.05$) entre los dos grupos de edad. Las madres con bebés menores no trabajaban menos días a la semana que las madres con bebés mayores. La mayoría de las mujeres pueden expresar la leche materna para bebés de 3 y 6 meses en menos de una hora distribuida en dos porciones separadas, en lugares de trabajo que apoyan la lactancia materna.