

# Does Maternal Employment Affect Breast-Feeding?

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**Abstract:** A prospective survey of maternal employment and breast-feeding initiation and duration was conducted among 668 Black and 511 White women who delivered their first child in Washington, DC. Ninety-one percent of White women (n = 511) and 80 percent of Black women (n = 668) reported working during pregnancy. Black women who planned to return to work part time vs full time were more likely to breast-feed rather than formula-feed (adjusted odds ratio, 2.3; 95% confidence intervals (CI) = 1.4, 3.7). Using Cox regression, Black women who returned to work had a shorter duration of breast-feeding than those not returning to work (hazard ratio = 0.5 (CI = 0.3, 0.9)). Black and White women

returning to professional occupations had a longer duration of breast-feeding compared to women returning to sales or technical positions (hazard ratio for Black women = 2.4 (CI = 1.4, 4.4); hazard ratio for White women = 1.6 (CI = 1.0, 2.5)). In addition, White women in professional occupations had a longer duration of breast-feeding than women in clerical positions (hazard ratio = 1.7 (CI = 1.1, 2.6)). Until employers in the United States develop a maternity policy which does not discourage breast-feeding, the recommended six months of breast-feeding will be difficult to achieve for most employed women. (*Am J Public Health* 1989; 79:1247-1250).

## Introduction

Participation of women with infants in the labor force has risen dramatically over the last 10 years. In 1977, 32 percent of women with a child under one year of age worked outside the home<sup>1</sup> By 1982, this proportion increased to 43 percent, and today the majority (52 percent) of women with infants are in the labor force.<sup>1</sup> While employment could adversely affect the initiation and continuance of breast-feeding, there is little evidence to document this relationship.

In this analysis, we examine the relation between maternal employment and the initiation and duration of breast-feeding separately among Black and White women. We assessed whether maternal employment during pregnancy and the intention to return to work affect a woman's decision to breast-feed, whether the duration of breast-feeding differs between women who return to work and those who do not, and the employment variables (occupation, timing of return to work, or hours worked) which are associated with duration of breast-feeding.

## Methods

Healthy Black and White primiparae over 17 years of age who delivered a normal, singleton infant weighing more than 2200 grams were consecutively selected from the delivery logs at each of three metropolitan Washington, DC, hospitals. The study design and procedures have been described.<sup>2</sup> A total of 1,409 women were asked to participate in the study and 84 percent (n = 1,179) agreed. Women were interviewed in the hospital between February 1984 and March 1985. Information was obtained regarding maternal sociodemographic characteristics (age, education, marital status, and occupation during pregnancy), the timing of anticipated return to work, as well as whether this would be full-time or part-time work. Breast-feeders were defined as women who breast-fed at all regardless of formula supplementation (n = 755).

Women who breast-fed in the hospital (n = 755) were subsequently interviewed in their homes at one, three, and seven months postpartum. Any women who indicated she had stopped breast-feeding at the one-month or three-month home interview was subsequently interviewed by telephone with a shortened interview schedule. Women still breast-feeding at seven months postpartum were contacted by phone at one year to determine their infant-feeding history. Thus, we have information on duration of breast-feeding from birth to one year postpartum and information on maternal employment from birth to 7 months postpartum.

Of the 755 women choosing to breast-feed, 36 who started school were deleted because there were too few for meaningful comparisons with employment. Follow-up interviews among the 718 women (306 Black, 412 White) provided information on whether a woman was still breast-feeding, and if not, when she had stopped, when a woman returned to work, the number of hours she worked and her current occupation.

The US Census Bureau categories were used to define occupation codes.<sup>3</sup> Managers, writers, lawyers, and registered nurses were the most frequent occupations in the professional category. The clerical group was comprised mostly of secretaries and stenographers. The service professions were primarily represented by private household occupations, and occupations providing food, health, or personal services. Sales persons were largely involved in the sale of personal goods and services, and technicians were mostly in fields other than health or science.

## Analyses

Logistic regression was used to estimate the adjusted odds ratio for breast-feeding while controlling for socio-demographic and employment variables. Coefficients were estimated by the maximum likelihood method.<sup>4</sup> The Cox proportional hazards regression model<sup>4</sup> was used to determine the employment variables associated with breast-feeding duration after controlling for socioeconomic variables. Life-table analysis was used to graphically present the effect of occupation on duration of breast-feeding.<sup>4</sup>

## Results

### Initiation of Breast-feeding and Anticipated Return to Work

Eighty percent of Black women (n = 668) and 91 percent of White women (n = 511) reported working during pregnancy (Table 1). Black women worked primarily in clerical

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occupations, White women in professional occupations. Women who worked in professional or technical occupations during pregnancy were more likely to breast-feed than women in other occupations or those not employed. Breast-feeding rates did not differ between women who anticipated a return to work in the first year and those who did not, with or without adjustment for the effects of maternal education, age, and marital status in a multivariate model.

Among the 560 Black women and 371 White women who stated they intended to return to work, 71 percent of Black women and 82 percent of White women did so by the fourth postpartum month. Among White women, breast-feeding rates were significantly lower among women planning a return to work in the first two months postpartum than among those planning a later return (Table 1). This effect was present to a lesser extent among Black women. Hours of planned work was not associated with breast-feeding rates in either ethnic group. However, a greater proportion of Black women (74 percent) compared to White women (61 percent) anticipated a return to full-time work (more than 24 hours a week).

Logistic regression analysis was conducted in each ethnic group to determine which employment variables affected choice of infant feeding method in hospital. After adjusting for maternal age, education, marital status, occupation, and planned timing of return to work; the only employment variable significantly associated with breast-feeding among Black women was a planned return to part-

time vs full-time work, OR 2.3 (CI = 1.4, 3.7). In a similar analysis among White women, no maternal employment characteristic was significantly related to breast-feeding in the hospital.\*

#### Duration of Breast-feeding and Maternal Return to Work

Women returning to professional occupations had a longer mean duration of breast-feeding than women in other occupations (Table 2). Among White women only, the later the return to work the longer the mean duration of breast-feeding. Mean duration also was longer for women returning to part-time rather than full-time work.

Cox proportional hazard regression analyses in each ethnic group are presented in Table 3 and were conducted to determine if a woman's return to work and the timing of this return influenced duration of breast-feeding. After adjustment for the effects of demographic variables and formula use in the hospital, the hazard ratio (HR) of 0.5 for Black women who did not return to work compared to Black women who return between five and seven months postpartum indicates that the former were twice as likely to continue breast-feeding as the latter.

Cox proportional hazard regression analyses were also conducted to examine the effect of employment variables on duration of breast-feeding among women who returned to work (Table 4). Black women who worked in sales or technical occupations and White women who worked in clerical occupations discontinued breast-feeding sooner than women in professional occupations (Table 4). In addition, White women in sales or technical occupations had a shorter duration than professionals, HR = 1.6 (CI = 1.0, 2.5). There was a trend toward a shorter breast-feeding duration for women who returned to work full-time rather than part-time.

Life-table analysis by maternal occupation is presented in Figure 1. Duration of breast-feeding was longest among women in professional occupations; one-half of them were still breast-feeding at 38 weeks postpartum. In the other occupational groups, one-half were still breast-feeding at 14 to 22 weeks. The effect of maternal occupation on duration of breast-feeding was, for the most part, similar in both ethnic groups.

#### Discussion

A 1981 national survey found that college-educated women, who did not work outside the home, were more likely to continue breast-feeding than those who were employed.<sup>5</sup> Another survey of a selected sample of primarily White, married women<sup>6</sup> found that the timing of a woman's return to work and the number of hours she worked were important determinants of weaning while specific occupation had little effect. With the exception of these two reports, there is little empirical data regarding the effect of employment on breast-feeding.

We previously examined the effects of maternal age, education, ethnicity, hospital of delivery, family income, marital status, and attendance in childbirth classes on the incidence of breast-feeding in this sample of women.<sup>2</sup> Initiation of breast-feeding was most strongly associated with increasing maternal education.<sup>2</sup> The odds ratio for breast-feeding increased from 2.6 (CI = 1.9, 3.7) for women with 13 to 16 years of education to 5.2 (CI = 2.7, 10.2) for those with greater than 17 years of education when compared to women

TABLE 1—Incidence of Breast-Feeding in the Hospital by Maternal Anticipated Return to Employment\*

Characteristic	Black (n = 668)		White (n = 511)	
	No.	% Breast-feeding	No.	% Breast-feeding
Occupation during pregnancy				
Professional	68	82	237	92
Technical	21	76	26	96
Sales	73	41	39	77
Clerical	278	50	122	77
Service	95	37	37	78
Student	54	37	7	100
Homemaker	16	50	24	88
Unemployed	62	31	17	35
P-value		***		***
Planned to return to work within one year of delivery				
Yes	560	49	371	84
No	88	43	91	86
Don't know	20	55	49	84
P-value				
Month after delivery planned to return to work				
1 to 2 months	187	43	138	77
3 to 4 months	214	54	166	87
5 to 12 months	114	47	55	91
Don't know	44	51	12	92
P-value				*
Number of hours/week planned to work				
Full-time (>24 hrs)	413	47	207	83
Part-time	118	54	144	85
Don't know	26	65	20	90
P-value				
Maternal age (years)				
18-25	451	39	140	68
26-30	154	66	177	87
≥31	62	71	194	94
P-value		***		***

\*p < .05, \*\*\*p < .001.

\*The p values are derived from chi-square statistics comparing breast- vs formula-feeding.

\*Data available on request to author.

**TABLE 2—Mean Duration (in weeks) of Breast-Feeding by Sociodemographic and Employment Characteristics in Black and White Women\***

Characteristics	Black			White		
	No.	Mean	(SD)	No.	Mean	(SD)
<b>Occupation</b>						
Sales	25	6.3	(6.8)	22	24.6	(20.0)
Technical	8	9.0	(6.6)	21	14.1	(12.2)
Clerical	109	11.6	(12.6)	52	17.5	(17.8)
Service	26	16.5	(14.5)	30	20.8	(20.0)
Professional	42	21.0	(17.0)	159	31.7	(18.1)
<b>Actual return to work (months postpartum)</b>						
1 to 2	88	12.2	(12.8)	99	22.0	(19.0)
3 to 4	103	14.6	(14.4)	144	26.9	(18.6)
5 to 7	41	13.0	(16.2)	56	32.2	(19.1)
Did not return by 7	74	16.9	(20.6)	113	30.4	(21.4)
<b>Work hours</b>						
Full-time	198	12.6	(13.1)	193	22.6	(18.2)
Part-time	32	19.2	(18.7)	103	32.6	(18.9)
<b>Education (yrs)</b>						
≤12	115	10.8	(13.3)	57	13.2	(14.6)
13–16	156	15.4	(16.7)	186	28.2	(20.4)
17+	35	20.8	(18.0)	169	31.3	(18.7)
<b>Age (yrs)</b>						
18–25	161	12.2	(14.4)	91	19.8	(19.0)
26–30	101	14.9	(16.5)	142	25.9	(19.7)
31+	44	20.3	(18.7)	179	32.5	(19.0)
<b>Married</b>						
No	147	12.9	(16.0)	24	12.5	(13.5)
Yes	159	15.6	(15.9)	388	28.3	(19.8)
<b>Used formula in hospital</b>						
Yes	163	11.9	(15.3)	112	22.5	(20.2)
No	143	17.0	(16.3)	300	29.2	(19.4)
<b>Total</b>	<b>306</b>	<b>14.3</b>	<b>(16.0)</b>	<b>412</b>	<b>27.4</b>	<b>(19.8)</b>

\*Duration of breast-feeding for women continuing to breast-feed at 52 weeks postpartum was set to 60 weeks (n = 91).

**TABLE 3—Proportional Hazard Ratios for Stopping Breast-Feeding among Black and White Women**

Variables	Black (n = 306)		White (n = 412)	
	Ratio	95% CI	Ratio	95% CI
<b>Actual return to work (months postpartum)</b>				
5–7	1.0	—	1.0	—
≤ 2	1.0	0.7, 1.6	1.5	0.98, 2.2
3–4	1.1	0.7, 1.7	1.3	0.9, 1.9
Did not return by 7	0.5	0.3, 0.9	0.8	0.5, 1.2
Maternal education	0.9	0.86, 1.02	0.9	0.87, 0.97
<b>Formula supplements in the hospital</b>				
No	1.0	—	1.0	—
Yes	1.5	1.1, 2.0	1.4	1.1, 1.8
Maternal age	1.0	0.9, 0.99	1.0	0.9, 0.99
<b>Married</b>				
No	1.0	—	1.0	—
Yes	1.1	0.8, 1.4	0.5	0.3, 0.9

**TABLE 4—Proportional Hazard Ratios for Stopping Breast-Feeding among Black and White Women Who Returned to Work**

Variables	Black (n = 208)*		White (n = 281)*	
	Ratio	95% CI	Ratio	95% CI
<b>Occupation</b>				
Professional	1.0	—	1.0	—
Clerical	1.2	0.8, 1.9	1.7	1.1, 2.6
Service	0.7	0.4, 1.4	1.1	0.7, 2.0
Sales/Technical	2.4	1.4, 4.4	1.6	1.0, 2.5
<b>Return to work (months postpartum)</b>				
5–7	1.0	—	1.0	—
≤ 2	1.2	0.7, 2.1	1.5	0.97, 2.3
3–4	1.3	0.7, 2.2	1.4	0.9, 2.1
<b>Hours worked</b>				
Part-Time	1.0	—	1.0	—
Full-Time	1.6	0.95, 2.7	1.4	1.0, 1.9
Maternal education	0.9	0.84, 1.02	0.9	0.86, 1.02
<b>Formula supplements in the hospital</b>				
No	1.0	—	1.0	—
Yes	1.8	1.3, 2.6	1.4	1.0, 1.9
Maternal age	0.9	0.89, 0.98	1.0	0.95, 1.02
<b>Married</b>				
No	1.0	—	1.0	—
Yes	1.1	0.8, 1.6	0.5	0.3, 0.8

\*Sample size is decreased from 232 in Black and 299 in White women due to missing data.

with a high school education or less. Ethnicity was also associated with the initiation of breast-feeding (OR for White vs Black = 2.0 (CI = 1.4, 3.1)).<sup>2</sup> Duration of breast-feeding was substantially shorter among Black as compared to White women.<sup>2</sup> In both ethnic groups, the use of formula supplements in hospital was associated with a shorter duration of breast-feeding.<sup>2</sup>

In this paper we examined the effect of employment on initiation and duration of breast-feeding. Black women who anticipated a return to work within the first postpartum year and intended this return to be part-time were twice as likely to breast-feed in the hospital as those planning to work full time. Among White women, neither the planned timing of

return to work, planned hours of work, or occupation were related to breast-feeding in the hospital. The majority of Black women (63 percent) planned a return to full time work, and the breast-feeding rate was lowest in this group. The socioeconomic need to return to work in the early postpartum months on a full-time basis may be strong among Black

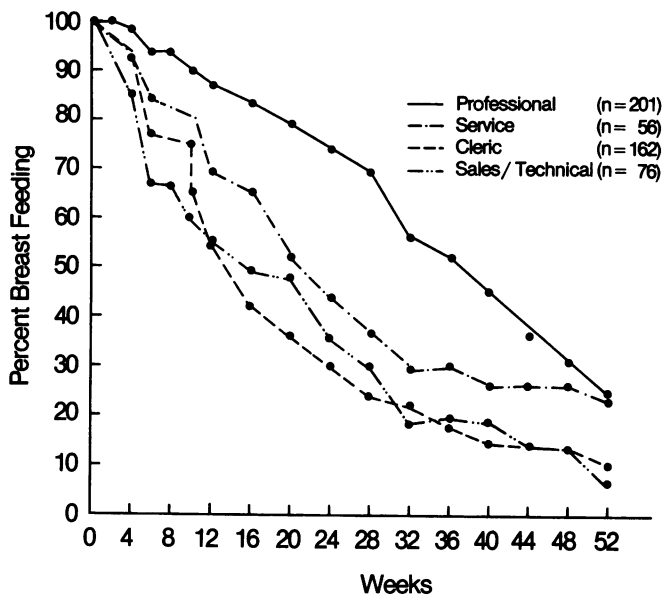


FIGURE 1—Duration of Breast-Feeding by Maternal Occupation.

women in this study who were largely single mothers. This need to return to full-time work may have had an adverse effect on the initiation of breast-feeding.

The effect of actual return to work was also different in the two ethnic groups. Black women who had not returned to work at seven months postpartum breast-fed longer than those returning to work earlier; there was, however, no difference between Black women returning to work early, e.g., at one or two months postpartum, and later, e.g., at six or seven months postpartum. Among White women, there was a positive trend between discontinuing breast-feeding and month of return to work; however, this trend was not statistically significant.

Occupation influenced duration of breast-feeding, and this association remained after adjustment for maternal sociodemographic characteristics. Women in professional occupations had a significantly longer duration of breast-

feeding than women in sales or technical occupations. White women in professional occupations breast-fed longer than those in clerical occupations.

Because employers in the United States do not follow a general maternal leave policy, many working women by necessity resume employment during a time period that conflicts with the need for considerable mother-infant contact in breast-feeding. Expressing breast milk is possible but difficult in many work situations. The findings of this study emphasize that women employed as professionals, appear to have control over their work environment and can structure a more satisfactory relationship between the demands of employment and infant feeding. On the other hand, women employed in clerical and sales occupations appear to have little freedom to accommodate the demands of employment and the needs of their infants. Breast-feeding for six months postpartum is a recommended goal<sup>7</sup> which is difficult to meet for most employed women and particularly difficult for those employed in non-professional occupations. This finding emphasizes the need for the development and implementation of a maternal leave policy, particularly for women who choose to breast-feed.

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#### REFERENCES

1. Bureau of Labor Statistics, US Department of Labor: News 87-235. Washington, DC: The Bureau, August 12, 1987.
2. Kurinij N, Shiono PH, Rhoads GG: Incidence and duration of breast feeding in Black and White Women. *Pediatrics* 1987; 81:365-371.
3. Bureau of the Census, US Department of Commerce: 1980 Census of Population: Alphabetical Index of Industries and Occupations. 1982: PHC80-R3. Washington, DC: Government Printing Office, 1982.
4. Dixon WJ: BMDP Statistical Software. Berkeley, Los Angeles, London: University of California Press, 1983; 555-575, 576-594.
5. Martinez GA, Dodd DAL: 1981 Milk feeding patterns in the United States during the first 12 months of life. *Pediatrics* 1983; 166-170.
6. Auerback DG, Guss E: Maternal employment and breast feeding. *Am J Dis Child* 1984; 138:958-960.
7. American Academy of Pediatrics: Breast feeding. *Pediatrics* 1978; 62:591-601.

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