

Association between Employer Provided and Planned Maternity Leave Duration and Breastfeeding Duration

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ABSTRACT

Background: The American Academy of Pediatrics recommends breastfeeding for at least one year. However, studies have shown that the constraints of the Family and Medical Leave Act (FMLA), which provides 12 weeks of unpaid leave, may impede this recommendation. Our objective was to evaluate whether employer provided and planned maternity leave duration was associated with breastfeeding duration.

Subjects and Method: This was a prospective cohort study wherein 480 postpartum women were recruited from Prentice Hospital between May and July of 2017. Participants completed a questionnaire immediately postpartum and at 12 to 14 weeks postpartum. Independent variables were employer provided and planned maternity duration and partner leave duration. Dependent variables were intention to breastfeed for one year and actual breastfeeding status at 12 to 14 weeks postpartum. Bivariable and multivariable analyses were performed.

Results: Of the 480 women enrolled, 226 (47.28%) intended to breastfeed for at least one year. Women who planned a longer maternity leave were significantly more likely to intend to breastfeed for at least one year (37.41% vs 35.71%, $p = 0.033$). This persisted after controlling for possible confounders (aOR = 4.08, CI 95% = 1.10 to 15.13, $p = 0.040$). However, there was no difference in intention to breastfeed for at least one year by the duration of employer allocated maternity or partner leave. There were no differences in actual breastfeeding rates at 12 weeks postpartum across various durations of intended or taken maternity or partner leave.

Conclusion: Increased planned maternity leave duration is associated with increased intention to breastfeed, however actual breastfeeding rates at 12 weeks postpartum were not associated with maternity leave duration.

Keywords: breastfeeding, Family and Medical Leave Act, maternity leave

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BACKGROUND

The American Academy of Pediatrics and the American College of Obstetrics and Gynecology both recommend breastfeeding for at least one year (Eidelman and Schan-

ler, 2012; 'ACOG committee opinion no. 756 summary', 2018). Benefits of breastfeeding include immunologic advantages to the infant such as decreased incidence of respiratory infections, otitis media, and dia-

rrheal illnesses. Breastfeeding is also associated with reduced long-term health consequences such as diabetes and childhood obesity. Additionally, maternal health benefits include earlier return to pre-pregnancy weight and decreased risk of breast and ovarian cancers (Eidelman and Schanler, 2012; 'ACOG committee opinion no. 756 summary', 2018).

The current literature suggests that the intended duration of breastfeeding affects the actual duration of breastfeeding (US Department of Health and Human Services, 2011; De Jager et al., 2014; Oakley *et al.*, 2014). Several factors impact antenatal and postnatal intent to breastfeed such as lack of awareness of the benefits of breastfeeding, lactational problems, and lack of private spaces to support breastfeeding (US Department of Health and Human Services, 2011). Re-entry into the workforce postpartum further compounds these issues (US Department of Health and Human Services, 2011; Mirkovic et al., 2014). Additional research is needed to better understand the effects of workplace support on breastfeeding intention and duration.

The United States is currently the only high-income country that lacks legislation to ensure paid maternity leave (Heymann and McNeill, 2013). The Family and Medical Leave Act (FMLA) provides 12 weeks of job-protected leave after the birth of a child. However, the benefits of FMLA do not extend to all working citizens. FMLA applies only to those working in public agencies, public and private elementary and secondary schools, and companies with at least 50 employees, making it applicable to only 60% of the working population (U.S. Wage and Hour Division, 2012; Andres *et al.*, 2016; Rubin, 2016). Furthermore, many employees who are eligible for FMLA are unable to utilize its benefits because they

cannot afford to forgo the lost wages (U.S. Wage and Hour Division, 2012; Rubin, 2016). United States census data shows that 63.8% of all postpartum women re-enter the workforce within a year after delivery (Laughlin, 2011). Therefore, understanding the implications of maternity leave benefits on breastfeeding initiation and continuation holds enormous public health implications.

Recent studies have shown that an increased duration of paid leave may be positively associated with breastfeeding rates (Rossin-Slater et al., 2011; Huang and Yang, 2015). For example, in 2002, California became the first state to mandate six weeks of partial paid leave where mothers receive up to 70% of earned wages without job protection. After implementation of this mandate, the average length of leave taken by new mothers increased from three weeks to just over seven weeks (Rossin-Slater et al., 2011). Further-more, there was a significant increase in reported rates of exclusive breastfeeding associated with this change (Huang and Yang, 2015).

However, there is limited research on the amount of maternity leave and benefits that employers provide to their employees beyond the legal mandates of FMLA. The current literature is based upon data from retrospective studies, which intrinsically introduces recall bias wherein women with challenges reaching their breastfeeding goals may differently remember their maternity leave benefits. Furthermore, retrospective data are often unable to control for potential confounders such as postpartum depressive symptoms, which may be associated with both maternity leave duration and breastfeeding. Therefore, the objective of this study was to evaluate whether the duration of employer provided and planned maternity leave is associated with the duration of breast-

feeding. Our hypothesis was that a longer duration of employer allocated and planned maternity leave would be associated with longer intent and duration of breastfeeding.

SUBJECTS AND METHOD

1. Study Design

This was a prospective cohort study where in inpatient postpartum women were recruited from Prentice Women's Hospital, a single tertiary care center between May and July of 2017.

2. Population and Sample

Postpartum women were included if they were 18 years of age or older and English speaking. Women were excluded from analyses if they had a medical contraindication to breastfeeding. A total of 480 postpartum women agreed to study participation.

3. Study Variables

The dependent variables were intended breastfeeding duration and actual breastfeeding status at 12 weeks postpartum. The independent variables included sociodemographic data (i.e. marital status, household income, type of insurance, level of education, maternal age), obstetric information (i.e. intrapartum complications, gestational age at delivery, route of delivery, birth weight, and NICU admission), occupational information (i.e. employment outside the home, plans to return to work outside the home postpartum), parental leave (both maternal and partner) benefits and leave intentions, and Patient Health Questionnaire (PHQ-9) score at 12 weeks postpartum.

4. Operational Definition of Variables

Intended duration of breastfeeding

was the number of months that the woman intended to breastfeed, differentiated into exclusive and combined breastfeeding methods, in the postpartum period.

Breastfeeding status at 12 weeks post-

partum was whether or not mothers were breastfeeding, also differentiated into exclusive and combined breastfeeding methods, at 12 weeks postpartum.

PHQ-9 score was participant score out of 10 on a postpartum depressive questionnaire scored at 12-14 weeks postpartum, with a higher score signifying a higher number of depressive symptoms.

Marital status was classified as married or not married. Household income was the combined household annual income and was categorized as either greater than or less than \$100,000. Type of insurance was the participant's health insurance plan at the time of delivery and was categorized into either public, private, or another type of health insurance plan. Level of education was categorized into college degree or higher or any level of education below a college degree. Maternal age was the age of mother at the time of birth of her baby.

Intrapartum complications were maternal and fetal conditions that complicated the delivery period and included preeclampsia, chorioamnionitis, postpartum hemorrhage, and shoulder dystocia.

Gestational age at delivery was the number of weeks and days from the woman's last menstrual period to time of delivery. Route of delivery was whether the baby was delivered via vaginal birth or Cesarean section. Vaginal births included both forceps and vacuum deliveries. Birth weight was the weight of the baby immediately after birth. NICU admission was dichotomized into whether or not the baby needed to be admitted to the neonatal intensive care unit immediately after birth.

Employment outside the home was whether or not the mother had an occupation that required her to work outside of the home prior to delivery. Plans to return to work postpartum were whether the mother intended to return to work outside the

home in the postpartum period.

Employer provided maternity leave was the number of weeks that the mother was allotted to take off by her employer after the birth of her child. Taken maternity leave was the number of weeks that the participant ultimately planned to take off of work after the birth of her child. Likewise, the partners employer provided and taken leave were defined by weeks of leave. For free text answers, when a range of values was provided, the average value was used. Parental leave duration was categorized as less than 6 weeks, 6 to 11 weeks, and greater than or equal to 12 weeks. Women who did not plan to return to work outside the home were categorized as having greater than or equal to 12 weeks of maternity leave.

5. Study Instruments

The data of this study was obtained using a set of surveys. Women received an initial paper survey at the time of study consent asking about sociodemographics, employment, and intended breastfeeding.

Obstetric information was abstracted from the medical records. Charts with missing data were re-abstracted and residual missing data points were individually excluded from analysis.

At 12-14 weeks postpartum, women received a follow-up survey via e-mail to determine their current breastfeeding status and if they had returned to work outside the home. Along with each postpartum survey women were asked to complete a PHQ-9 to screen for postpartum depressive symptoms.

6. Data analysis

Women were dichotomized by their intent to breastfeed for at least one year, assessed at the initial survey immediately postpartum. Intended duration of breastfeeding was chosen as a primary outcome as it correlates strongly with the actual duration

of breastfeeding (US Department of Health and Human Services, 2011; De Jager et al., 2014; Oakley et al., 2014). Sociodemographic characteristics and delivery information were compared between women who did and did not intend to breastfeed for one year using bivariable analyses.

Multivariable analyses were then performed to identify any independent association between planned maternity leave and intent to breastfeed for one year after controlling for potential confounders. Similarly, women were dichotomized by their self-reported breastfeeding status at 12 weeks postpartum. Bivariable analyses and multivariable analyses were performed to identify the association between maternity leave and breastfeeding status at 12 weeks postpartum.

Bivariable analyses were performed using Mann Whitney for continuous variables and either Chi squared or Fisher's exact tests for categorical variables. Analyses were performed using Stata 14.0 (Statacorp LP, College Station, TX). An alpha of 0.05 was used to define statistical significance. Anticipating approximately one-third of women would intend to take at least 12 weeks of maternity leave, this study was powered at 80% to detect an increase in intended breastfeeding for one year of 15% (25% to 40%) associated with maternity leave of at least 12 weeks.

7. Research Ethics

This study was approved by Northwestern University's Institutional Review Board prior to its initiation (STU00204996-CR0001). Research ethical issues including informed consent, anonymity, and confidentiality were addresses carefully and appropriate throughout data collection and analysis.

RESULTS

1. Sample Characteristics

From May to July of 2017, 550 women were approached, of whom 480 (87.27%) consented to study participation. Of these 480 women, two (0.42%) reported a medi-

cal contraindication to breastfeeding, leaving 478 women in the analyzable sample. Of the 478 women who met inclusion criteria, 340 (71.13%) women completed the 12 week follow up survey.

Table 1. Sociodemographic and clinical characteristics stratified by intent to breastfeed for at least one year

Characteristics	Does not intend breastfeeding for one year (n=252)		Intends breastfeeding at least one year (n=226)		p
	n	%	n	%	
Maternal age					
Advanced maternal age	92	36.5	72	31.9	0.274
Age ≤ 21	5	1.9	2	0.9	0.455
Race/ethnicity (n=430)					0.943
Non-Hispanic white	149	65.9	129	63.2	
Non-Hispanic black	21	9.3	20	9.8	
Hispanic	5	2.2	7	3.4	
Asian	19	8.4	18	8.8	
Other	32	14.2	30	14.7	
Insurance					
Public insurance	39	15.5	32	14.2	0.686
Marital status					
Married	227	90.0	203	89.8	0.926
Household income					
> \$100K (n=445)	53	22.8	60	28.3	0.179
Education					
Bachelor (n=477)	50	19.8	37	16.4	0.338
Mode of delivery					
Cesarean delivery	74	29.4	70	30.9	0.702
Intrapartum complications					
Preeclampsia	9	3.6	6	2.7	0.577
Chorioamnionitis	20	7.9	8	3.5	0.043
Postpartum hemorrhage	9	3.8	1	0.4	0.022
Shoulder dystocia	3	1.2	2	0.9	1.000
Preterm birth	15	5.9	11	4.9	0.616
Low birth weight	9	3.6	10	4.4	0.621
NICU admission	48	19.1	44	19.5	0.874

Of the 478 women included, 226 (47.28%) intended to breastfeed for at least one year. There were no differences in sociodemographics or route of delivery between women who did and did not intend to breastfeed for one year (see Table 1). Compared to women who intended to breastfeed for at least one year, women who

experienced chorioamnionitis or postpartum hemorrhage were less likely to express an intent to breastfeed for one year.

Of the 340 women who completed the follow up 12 week survey, 270 (79.41%) were breastfeeding at the time of survey completion and 57 (16.76%) were exclusively breastfeeding. Compared to women

who were not breastfeeding at all at 12 weeks postpartum, women who were breastfeeding were more likely to be married, have a higher household income,

have completed college, have scored higher on the PHQ-9, and have undergone a cesarean delivery (see Table 2).

Table 2. Sociodemographic and clinical characteristics stratified by breastfeeding at 12 weeks

Characteristics	Not breastfeeding at 12 weeks (n=201)		Breastfeeding at 12 weeks (n=139)		p
	n	%	n	%	
Maternal age					
Advanced maternal age	67	33.3	57	41.0	0.148
Age ≤ 21	0	0.0	0	0.0	1.000
Race/ethnicity (n=336)					0.091
Non-Hispanic white	148	74.4	85	62.0	
Non-Hispanic black	20	10.1	16	11.7	
Hispanic	7	3.5	6	4.4	
Asian	8	4.0	14	10.2	
Other	16	8.0	16	11.7	
Insurance					
Public insurance	10	4.9	13	9.4	0.114
Marital status					
Married	6	2.9	14	10.1	0.006
Household income					
>100K (n=324)	26	13.3	30	23.3	0.021
Education					
Bachelor	14	6.9	22	15.8	0.009
Mode of delivery					
Cesarean delivery	55	27.4	54	38.9	0.026
Intrapartum complications					
Preeclampsia	3	1.5	6	4.3	0.168
Chorioamnionitis	11	5.5	10	7.2	0.517
Postpartum hemorrhage	7	3.5	2	1.4	0.319
Shoulder dystocia	1	0.5	1	0.7	1.000
Preterm birth	10	4.9	5	3.6	0.543
Low birth weight	8	3.9	4	2.9	0.768
NICU admission	36	17.9	26	18.7	0.852
PHQ-9 score					
Score ≥ 5	9	4.5	39	28.1	0.734

2. Bivariate Analysis

In bivariable analyses on data immediately postpartum, there were no significant differ-

ences in intent to breastfeed for at least one year stratified by the duration of employer allocated maternity leave, partner

allocated leave, or planned partner leave duration (see Table 3). However, women who were taking a longer maternity leave, independent of employer allocated leave,

were significantly more likely to intend to breastfeed for at least one year ($p= 0.032$) (see Figure 1).

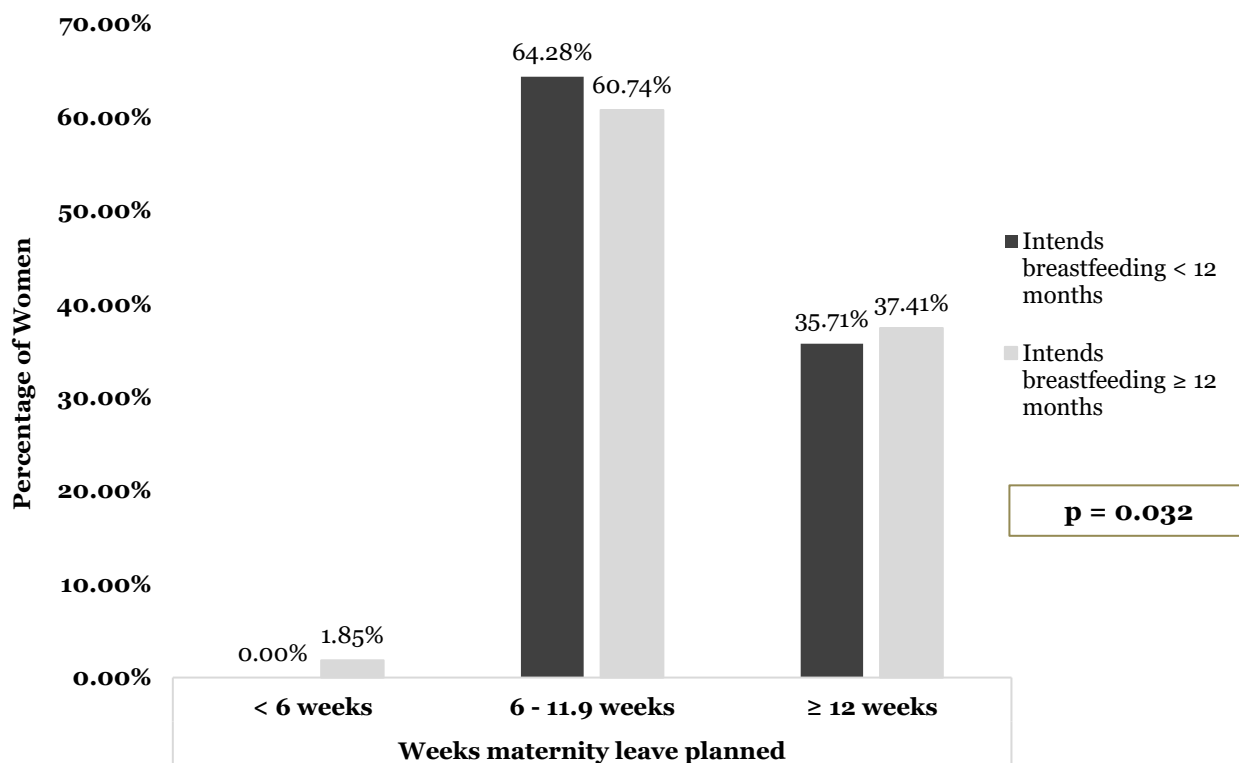


Figure 1. Bivariable analysis between planned maternity leave and intention to breastfeed for at least 12 months

In bivariable analyses performed on data at 12 weeks postpartum, there was no significant association between breastfeeding status at 12 weeks by parental leave duration, either allocated or taken (see Table 4 and 5).

3. Multivariate Analysis

In multivariable analyses on data immediately postpartum, results persisted after adjusting for potential confounders of

chorioamnionitis and postpartum hemorrhage. Women who took a longer maternity leave were significantly more likely to intend to breastfeed for at least one year (aOR = 4.08, CI 95= 1.10 to 15.13) (see Table 6). Multivariable analyses on data at 12 weeks postpartum showed no significant association between breastfeeding status at 12 weeks by parental leave duration.

Table 3. Bivariable analyses between parental leave and intention to breastfeed for at least one year

Variables	Intends breastfeeding less than one year		Intends breastfeeding at least one year		OR	95% CI	p
	n	%	n	%			
Weeks maternity leave allocated (n=394)							0.291
None	5	2.4	5	2.8	ref	ref	
< 6 weeks	15	7.1	20	10.9	1.33	0.33 - 5.45	
6-11.9 weeks	149	70.3	112	61.5	0.76	0.21 - 2.68	
≥ 12 weeks	43	20.3	45	24.7	1.05	0.28 - 3.87	
Weeks partner leave allocated (n=431)							0.596
None	98	43.4	95	46.3	ref	ref	
< 2 weeks	16	7.1	20	9.8	1.26	0.62 - 2.58	
2-5.9 weeks	72	31.9	57	27.8	0.8	0.51 - 1.25	
≥ 6 weeks	40	17.7	33	16.1	0.83	0.49 - 1.43	
Weeks partner leave planned (n=424)							0.314
None	94	41.9	89	44.5	ref	ref	
< 2 weeks	21	9.4	28	14	1.38	0.73 - 2.60	
2-5.9 weeks	91	40.6	67	33.5	0.76	0.5 - 1.17	
≥ 6 weeks	18	8.0	16	8	0.92	0.44 - 1.91	

Table 4. Bivariable analyses between parental leave and breastfeeding at 12 weeks postpartum

Variables	Not breastfeeding at one year		Breastfeeding at 12 weeks		OR	95% CI	p
	n	%	n	%			
Weeks maternity leave allocated (n=297)							0.921
None	7	3.8	3	2.7	ref	ref	
< 6 weeks	15	8.1	11	9.8	1.71	0.36 - 8.15	
6-11.9 weeks	121	65.4	73	65.2	1.41	0.35 - 5.61	
≥ 12 weeks	42	22.7	25	22.3	1.39	0.33 - 5.86	
Weeks maternity leave planned (n=340)							0.877
< 6 weeks	3	1.5	2	1.4	ref	ref	
6-11.9 weeks	126	62.7	83	59.7	0.99	0.16 - 604	
≥ 12 weeks	72	35.8	54	38.9	1.13	0.18 - 6.97	
Weeks partner leave allocated (n=312)							0.332
None	73	38.6	56	45.5	ref	ref	
< 2 weeks	14	7.4	13	10.6	1.21	0.53 - 2.78	
2-5.9 weeks	66	34.9	33	26.8	0.65	0.38 - 1.12	
≥ 6 weeks	36	19.1	21	17.1	0.76	0.4 - 1.44	
Weeks partner leave planned (n=306)							0.585
None	70	37.4	50	42.0	ref	ref	
< 2 weeks	21	11.2	17	14.3	1.13	0.54 - 2.36	
2-5.9 weeks	79	42.3	44	26.9	0.78	0.46 - 1.31	
≥ 6 weeks	17	9.1	8	6.7	0.66	0.26 - 1.64	

Table 5. Bivariable analyses between parental leave and exclusive breastfeeding at 12 weeks postpartum

Variables	Not breastfeeding at one year		Breastfeeding at 12 weeks		OR	95% CI	p
	n	%	n	%			
Weeks maternity leave allocated (n=297)							0.927
None	8	3.3	2	3.51	ref	ref	
< 6 weeks	21	8.8	5	8.77	0.95	0.15 - 5.94	
6-11.9 weeks	155	65.6	39	68.4	1.01	0.21 - 4.93	
≥ 12 weeks	56	23.3	11	19.3	0.79	0.15 - 4.21	
Weeks maternity leave planned (n=340)							0.687
< 6 weeks	5	1.9	0	0	ref	ref	
6-11.9 weeks	164	60.7	45	64.3	1.11	0.64 - 1.92	
≥ 12 weeks	101	37.4	25	35.7	---*	---*	
Weeks partner leave allocated (n=312)							0.577
None	105	41.8	24	39.3	ref	ref	
< 2 weeks	19	7.6	8	13.1	1.84	0.72 - 4.70	
2-5.9 weeks	80	31.9	19	31.2	1.04	0.53 - 2.03	
≥ 6 weeks	47	18.7	10	16.4	0.93	0.41 - 2.10	
Weeks partner leave planned (n=306)							0.705
None	101	40.6	19	33.3	ref	ref	
< 2 weeks	30	12.1	8	14.0	1.42	0.56 - 3.56	
2-5.9 weeks	97	38.9	26	45.6	1.42	0.74 - 2.74	
≥ 6 weeks	21	8.4	4	7.01	1.01	0.31 - 3.28	

*Omitted due to co-linearity

Table 6. Multivariable analysis for the outcome of intention to breastfeed for at least one year

Variables	aOR	95% CI		p
		Lower limit	Upper Limit	
Weeks maternity leave planned				
< 6 weeks	Ref.	Ref.	Ref.	Ref.
6 – 11.9 weeks	3.09	0.84	11.35	0.090
≥ 12 weeks	4.08	1.1	15.13	0.040
N observation= 480				
-2 log likelihood= -323.6				
Nagelkerke R ² = 2.5%				

DISCUSSION

Our results demonstrated that a longer planned maternity leave was associated with four-fold increased odds in intention to breastfeed for at least 12 months. However, there were no differences in actual breastfeeding rates or exclusive breastfeeding rates at 12 weeks postpartum across maternity and parental leave profiles. These results suggest that women who plan to take a longer duration of maternity leave may feel more empowered to breastfeed as reflected in their expressed intent. However, the challenges associated with sustained breastfeeding may require more than maternity leave. This hypothesis is corroborated within our data; only 43 (26.06%) women who intended to breastfeed for 12 months were still breastfeeding at all at 12 weeks postpartum.

One of the most common reasons for early cessation of breastfeeding is the perceived inability to produce adequate milk supply. Mothers often evaluate their milk supply based on infant satisfaction rather than measurement of their actual milk supply. Decreased satisfaction, gauged by infant crying and fussiness, has been associated with perceived insufficient milk. In order to cope with a perceived low milk supply, mothers often supplement with formula feeding (Wood et al., 2017; Wood and Sanders, 2018). Other barriers to

breastfeeding include lactational problems such as sore nipples, engorged breasts, mastitis, and efforts associated with pumping (Hauck et al., 2011; Odom et al., 2013; R.L. Brown et al., 2014; Sun et al., 2017). These considerations are important as they introduce opportunities for assistance with the early challenges of breastfeeding as well as anticipatory education on the importance of breastfeeding (Perrine et al., 2012; Wood et al., 2017; Wood and Sanders, 2018). However, these studies also cite return to work as a factor that influences mothers' decisions to stop breastfeeding, supporting the multifactorial nature of breastfeeding duration (Brown *et al.*, 2014; Sun *et al.*, 2017)

There are also some limitations to this cohort that should be noted. The demographics of this cohort include a majority affluent, non-Hispanic white population. Past studies show that single and non-Hispanic black women are significantly less likely to take maternity leave as compared to non-Hispanic white and married women, often due to financial constraints (Andres et al., 2016). In addition, even without a longer maternity leave, many women within this study's demographic may have support and resources, such as dedicated space and time to express breast milk, to continue breastfeeding. This may bias our results toward the null. As a result of these

study cohort limitations, generalizability may be reduced. Additionally, this study did not analyze the duration of paid or partially paid maternity leave that women received. As prior studies have shown as association between paid maternity leave and breastfeeding duration, inclusion of economic support for maternity leave is an important variable for future research (Rossin-Slater, Ruhm and Waldfogel, 2011; Huang and Yang, 2015). Finally, while the majority (71.12%) of women completed follow up surveys at 12 weeks postpartum, there may be selective attrition associated with either returning to work or continuation of breastfeeding that may have introduced bias in our results.

However, despite these limitations, this study provides advances to our current knowledge base. First, we studied a large population in a prospective, survey-based study, avoiding recall bias. This allowed us to objectively analyze breastfeeding intention and observe the discordance between intention and actual breastfeeding status at 12 weeks. This study has increased internal validity given the more homogenous study cohort. Additionally, the majority of the patients approached to participate agreed to take part in our study. Participants were passionate about this area of research, emphasizing the importance that women place on the support needed for successful breastfeeding.

An increased duration of planned maternity leave was associated with an increased intention to breastfeed for at least one year. However, these intentions did not translate to actual breastfeeding status at 12 weeks postpartum. Several factors likely contribute to continuation of breastfeeding. Further studies are required to better optimize breastfeeding support.

AUTHORS CONTRIBUTIONS

Natasha Kamat designed the research study, collected the data, and wrote the manuscript. Emily Miller analyzed and interrupted the data and revised the manuscript.

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None.

CONFLICT OF INTEREST

There were no conflicts of interest.

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