

# Early Breast Milk Pumping Intentions Among Postpartum Women

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## Abstract

**Introduction:** Milk expression has become common, but little is known about women's intentions and motivations for pumping. Our objectives were to measure, among newly postpartum women, intentions related to breast milk feeding and pumping, reasons for intending to pump, and timing of pumping initiation.

**Methods:** We conducted a cross-sectional study at a large university hospital in 2015 using a convenience sample of 100 women before their discharge following delivery, who intended to feed their infant breast milk for at least 6 months.

**Results:** All participants planned to feed their baby at the breast. Ninety-eight percent said that they would use a breast pump to express milk for their baby, with most of this subset (69%) intending to start within weeks of delivery. Over a quarter of participants (29%) had already initiated pumping or intended to initiate within the subsequent few days. Primiparae were more likely to report having already started pumping at the time of the interview. For all women, the most common reason for pumping was to keep up their milk supply. Women who started pumping while in the hospital also noted that they pumped to increase their milk supply and overcome latch difficulties.

**Conclusions:** The common intention to use a breast pump so early after delivery indicates a need for increased lactation support to reduce concerns about having an insufficient milk supply immediately following delivery. Additionally, clinicians who help facilitate breastfeeding should be aware of how early women intend to use a breast pump.

**Keywords:** breast pump, breastfeeding, intentions, milk expression, postpartum

## Introduction

MILK EXPRESSION WITH BREAST PUMPS is common among women who provide breast milk for their infants.<sup>1</sup> Studies on the prevalence and health effects of breastfeeding often do not differentiate between infants fed directly at the breast and those who were bottle-fed pumped human milk.<sup>2,3</sup> The distinction is important as feeding patterns, as well as the outcomes related to breast milk feeding, may differ for infants who are fed expressed milk rather than fed directly at the breast.<sup>4-6</sup>

While women's intention to breastfeed is one of the strongest predictors of breastfeeding initiation and duration,<sup>7</sup> less is known regarding women's intentions for pumping and the timing of pumping initiation. Our objectives were to measure breastfeeding and pumping intentions, the reasons

for intentions to pump, and timing of pumping initiation among postpartum women.

## Materials and Methods

### Study setting and design

We conducted a cross-sectional study, as part of a preliminary study to assess feasibility of a proposed randomized control trial, using a convenience sample of 100 postpartum women at a large university hospital in Ohio during September to November 2015. To be eligible for participation, women had to be  $\geq 18$  years of age, speak English, have delivered a term, healthy, singleton infant of  $\geq 2,500$  g, plan to nurse for  $\geq 6$  months, and be a postpartum patient. The study consisted of a single questionnaire administered by a trained

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interviewer during the woman's hospital stay. To minimize the inconvenience to the postpartum women, the interviewer read the questions aloud to the participant and recorded her responses directly into a laptop computer using REDCap software, a secure, web-based application for electronic data capture. All participants provided written consent before participation. The Ohio State University institutional review board approved the study.

#### Study instrument

The questionnaire covered the following domains: socio-demographic characteristics, obstetrics and breastfeeding history (number of previous births, any breastfeeding experience, and length of previous breastfeeding), breast milk feeding, and pumping intentions (any intention, timing, and reasons for pumping). The questions regarding timing of breast milk feeding and pumping were based on Geraghty and Rasmussen's recommended questions<sup>8</sup> and from the Mom2-Moms study.<sup>9</sup> Questions regarding the reasons for pumping were adapted from the questions in the Infant Feeding Practices Study II.<sup>1</sup>

#### Data analysis

We report descriptive findings using proportions and means with standard deviations. We used the Wilcoxon rank-sum test to compare continuous variables. For the comparison of categorical variables, we used  $\chi^2$  and Fisher's exact

tests of statistical significance. We examined whether sociodemographic characteristics differed according to parity. Statistical significance was based on a  $p$ -value of  $<0.05$ . We assessed the reasons given for pumping separately for women who had already begun pumping and women who had not yet started pumping, as initiating pumping may have changed their perception. The following variables were included in our analysis: age (continuous variable), race (non-Hispanic white versus other), relationship status (married versus unmarried), education (no college versus at least some college), employment in the past year (full time versus not employed or part time), having Medicaid coverage (yes versus no), having a prior birth (yes versus no), and having breastfeeding experience after a prior pregnancy (yes versus no). Analyses were performed using STATA software (release 12; Stata, StataCorp, College Station, TX).

#### Results

We recruited 102 eligible women, 2 of whom declined to participate. We, therefore, enrolled 100 (98% of eligible) women. The mean age of participants was  $30.4 \pm 5.0$  years. Most participants were non-Hispanic white (76%), had at least some college education (82%), were married, and had  $\geq 1$  prior live birth (58%). Overall, 27% of the participants were enrolled in Medicaid. Just over half of participants were multiparous (58%), and 86% had some previous breastfeeding experience (Table 1). No difference was detected between primiparous and multiparous in terms of race or ethnicity,

TABLE 1. DEMOGRAPHIC, SOCIOECONOMIC, AND REPRODUCTIVE CHARACTERISTICS AMONG POSTPARTUM WOMEN PLANNING TO PROVIDE HUMAN MILK FOR  $\geq 6$  MONTHS ( $N=100$ )

	All women (n=100)		Primiparous (n=42)		Multiparous (n=58)		p-Value*
Age (mean $\pm$ SD)	30.4 $\pm$ 5.0		28.5 $\pm$ 4.5		31.8 $\pm$ 4.9		<b>0.001</b>
	n	%	n	%	n	%	
Race/ethnicity							0.608
Non-Hispanic white	76	76	33	79	43	74	
Other	24	24	9	21	15	26	
Relationship status							0.877
Married	73	73	31	74	42	72	
Unmarried	27	27	11	26	16	28	
Highest educational level attained							0.817
Some college or higher	82	82	34	81	48	83	
No college	18	18	8	19	10	17	
Employment in past year							0.116
Full-time	65	65	31	74	34	59	
Unemployed or part-time	35	35	11	26	24	41	
Received public assistance in past year							<b>0.002</b>
Yes	19	19	2	5	17	29	
No	81	81	40	95	41	71	
Medicaid coverage							<b>0.048</b>
Yes	27	27	7	17	20	34	
No	73	73	35	83	38	66	
Breastfeeding experience							N/A
Yes	50	50	0	0	50	86	
No	50	50	42	42	8	14	

Bold values are significant at the 0.05 level.

\*Wilcoxon rank-sum test, chi-square and Fisher's exact test as appropriate.

N/A, not applicable (Breastfeeding experience is not applicable to primiparous women).

TABLE 2. HUMAN MILK FEEDING BEHAVIORS AMONG POSTPARTUM WOMEN PLANNING TO PROVIDE HUMAN MILK FOR  $\geq 6$  MONTHS ( $N=100$ )

	<i>All women</i> ( $n=100$ )		<i>Primiparous</i> ( $n=42$ )		<i>Multiparous</i> ( $n=58$ )	
	n	%	n	%	n	%
Intend to feed at the breast						
Yes	100	100	42	100	58	100
No	0	0	0	0	0	0
Intend to use a breast pump						
Yes	98	98	42	100	56	97
No	2	2	0	0	2	3
Intended timing of initiation of breast pump use <sup>a</sup>						
Already started	15	15	13	31	2	4
Within next few days	13	13	4	10	9	16
Between next few days and 6 weeks	40	41	14	33	26	46
After 6 weeks	29	30	11	26	18	32

<sup>a</sup>Among women who intended to use breast pump ( $n=98$ ).

marital status, education, and employment. Multiparae were older, and more likely to receive public assistance and have Medicaid coverage compared with primiparae.

All participants planned to feed directly at the breast and an overwhelming 98% of participants said they would use a breast pump to express breast milk (Table 2). Seventy-four percent of primiparous and 66% of multiparous women said they would pump before 6 weeks postpartum (Table 2) and almost one-third of the primiparous women had already started pumping while in the maternity hospital (Table 2).

Among women who had already started pumping, the two most commonly cited reasons for using a breast pump currently or in the future were to keep up milk supply when away from baby (73%) and to increase milk supply (67%) (Table 3). Over a quarter of women who had already started pumping (27%) mentioned baby having trouble latching as a reason for using a breast pump. All of these women were primiparae, whereas none of the multiparae cited this as a reason for using a breast pump.

Among women who had not yet started pumping, the most commonly cited reason for planning to use a breast pump was to keep up milk supply when away from the baby (94%) (Table 3). The next most frequently cited rationale was to build up a supply in the freezer for when she returned to work

(29%). Frequency of reporting these reasons appeared similar between primiparous and multiparous women.

## Discussion

All of the newly postpartum participants in our study planned to feed directly at the breast, and nearly all planned to use a breast pump to express milk for their baby. Nearly a third of the primiparae had already initiated pumping by the time of the interview. The most commonly cited reason for using a breast pump, in both women who had already started pumping and those who had not yet started pumping, was to keep up milk supply when away from the baby. However, women who had already begun pumping also reported increasing milk supply and having problems with latching as reasons for using a breast pump.

Pumping is common in the Infant Feeding Practices Study II, 85% of breastfeeding mothers of healthy, singleton infants aged 1.5–4.5 months expressed their milk.<sup>1</sup> The majority of both primiparous and multiparous women in our study intended to pump by 6 weeks postpartum, which often is before women are separated for substantial amounts of time from their infants. Little is known about the intentions and practices of pumping immediately postpartum. A 2016 study from Australia found that 51% of women had expressed milk

TABLE 3. REASONS FOR INTENDING TO PUMP AMONG POSTPARTUM WOMEN PLANNING TO PROVIDE HUMAN MILK FOR  $\geq 6$  MONTHS AND PLANNING TO USE BREAST PUMP ( $N=98$ )

	<i>Already started pumping</i> ( $n=15$ )		<i>Not yet started pumping</i> ( $n=83$ )	
	n	%	n	%
Reasons for using a breast pump <sup>a</sup>				
To keep up milk supply when away from baby	11	73	78	94
To increase my milk supply	10	67	9	11
Baby has trouble latching	4	27	2	2
To build up a supply in the freezer for when I go back to work	4	27	24	29
To allow others to feed baby	0		11	13
For me to feed the baby when I don't want to feed at the breast	0		5	6

<sup>a</sup>Total >100%—because women could provide more than one response.

before hospital discharge.<sup>10</sup> To our knowledge, this is the first study in the U.S. to assess the extent of pumping during the postpartum hospital stay, or the intention to initiate pumping immediately thereafter.

Perhaps the most curious finding of our study, however, was that two-thirds of the women pumping while in the maternity hospital were doing so to increase their milk supply. The Academy of Breastfeeding Medicine Model Hospital Policy recommends that infants get 8–12 feedings *at the breast* every 24 hours.<sup>11</sup> While these recommendations do not specifically indicate an appropriate timeframe for initiating pumping, they certainly do not encourage pumping within the first few days of delivery. Women appear to be concerned with having inadequate milk supply in the days following delivery, even though only about a teaspoon of colostrum is produced every few hours as the baby begins to suckle.<sup>12</sup> Delayed onset lactogenesis II (DLII) is defined as lactogenesis II onset more than 72 hours postpartum.<sup>13</sup> Because participants in the present study were interviewed within 72 hours of delivery, none could have been diagnosed with delayed lactogenesis at the time of the interview. It is unclear whether the perceived “low volumes” of milk led healthcare providers to encourage women to pump or whether it stemmed from a feeling of anxiety, particularly among primiparous women that they lacked sufficient milk. Nonetheless, all women concerned about their supply in the immediate postpartum period should be given accurate and comprehensive information as to what to expect with breastfeeding.

Clear guidelines are lacking for the appropriate timeframe to begin pumping or even the reasons to begin pumping. The American Academy of Pediatrics on breastfeeding management for healthy term infants state that feeding at the breast is preferred, but also recommend that expressed mother’s milk can be provided.<sup>11</sup> Outcomes for women pumping and infants being fed pumped milk are under study,<sup>4,6,14</sup> but the evidence is not yet available to support the prevalence of the practice.

The most common reason cited by women in the present study for planning to use a breast pump was to keep up their milk supply when they were away from their baby, followed by building up a supply in the freezer for when they go back to work. These reasons differ from those reported in the Infant Feeding Practices Study II,<sup>1</sup> which found the most commonly reported reasons for pumping to be for someone else to feed the baby, followed by “for an emergency supply.” Several factors could explain these differences. Timing of interviews immediately postpartum in the present study may have affected the reasons that women reported for potentially using a breast pump in the future. In addition, the question was open-ended, allowing women to provide the most important reasons why they would use a breast pump, whereas in the earlier study, respondents read and selected from a list of possible responses. Finally, the IFPS was conducted nearly 10 years ago and breast pumps are more readily available now due to the Affordable Care Act.<sup>15</sup>

The timing of our postpartum interview varied slightly between participants. While all participants were interviewed during the postpartum hospital stay, some were interviewed several hours after delivery, whereas others were interviewed just before their discharge. Women’s reasoning for using a breast pump may have been different depending on the timing of the interview. Women interviewed close to the time of delivery would be less likely to have problems

leading them to start using a breast pump. To minimize the effect this may have had on our findings, we assessed the reasons for using a breast pump separately for women who had already started using a breast pump and for women who had not yet started using a breast pump.

Small sample size is the main limitation in interpreting our study findings; low study power may have prevented the identification of important correlates of early pumping initiation. In addition, our findings may not be generalizable as study participants were relatively highly educated and were recruited from a single urban hospital. Finally, we do not have follow-up information regarding the subsequent duration of breast milk feeding. The strength of the study was its focus on postpartum women who intended to provide breast milk who were interviewed before their hospital discharge; the timing of the interview offers a unique assessment of women’s intentions to use a breast pump immediately following delivery. Future research is necessary to determine whether women’s intentions to use a breast pump predict subsequent use, and whether early use of breast pumps affects the duration of feeding at the breast.

## Conclusion

The common intention to use a breast pump so early after delivery indicates a need for increased lactation support to reduce concerns about having an insufficient milk supply immediately following delivery. In addition, it is important for clinicians who help facilitate breastfeeding to be aware how early women use or intend to use a breast pump.

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## Disclosure Statement

No competing financial interests exist.

## References

1. Labiner-Wolfe J, Fein SB, Shealy KR, et al. Prevalence of breast milk expression and associated factors. *Pediatrics* 2008;122(Supplement 2):S63–S68.
2. Grummer-Strawn LM, Li R. US national surveillance of breastfeeding behavior. *J Hum Lact* 2000;16:283–290.
3. Harder T. Duration of breastfeeding and risk of overweight: A meta-analysis. *Am J Epidemiol* 2005;162:397–403.
4. Bartok CJ. Babies fed breastmilk by breast versus by bottle: A pilot study evaluating early growth patterns. *Breastfeed Med* 2011;6:117–124.
5. Boone KM, Geraghty SR, Keim SA. Feeding at the breast and expressed milk feeding: Associations with otitis media and diarrhea in infants. *J Pediatr* 2016;174:118–125.
6. Li R, Fein SB, Grummer-Strawn LM. Do infants fed from bottles lack self-regulation of milk intake compared with directly breastfed infants? *Pediatrics* 2010;125:e1386–e1393.
7. Meedya S, Fahy K, Kable A. Factors that positively influence breastfeeding duration to 6 months: A literature review. *Women Birth* 2010;23:135–145.

8. Geraghty SR, Rasmussen KM. Redefining “Breastfeeding” initiation and duration in the age of breastmilk pumping. *Breastfeed Med* 2010;5:135–137.
9. Keim SA, McNamara KA, Dillon CE, et al. Breastmilk sharing: Awareness and participation among women in the Moms2Moms study. *Breastfeed Med* 2014;9:398–406.
10. Johns HM, Amir LH, McLachlan HL, et al. Breast pump use amongst mothers of healthy term infants in Melbourne, Australia: A prospective cohort study. *Midwifery* 2016; 33:82–89.
11. Eidelman AI, Schanler RJ, Johnston M, et al. Breastfeeding and the use of human milk. *Pediatrics* 2012;129:e827–841.
12. Santoro Jr. W, Martinez FE, Ricco RG, et al. Colostrum ingested during the first day of life by exclusively breastfed healthy newborn infants. *J Pediatr* 2010;156:29–32.
13. Brownell E, Howard CR, Lawrence RA, et al. Delayed onset lactogenesis II predicts the cessation of any or exclusive breastfeeding. *J Pediatr* 2012;161:608–614.
14. Li R, Magadia J, Fein SB, et al. Risk of bottle-feeding for rapid weight gain during the first year of life. *Arch Pediatr Adolesc Med* 2012;166:431–436.
15. Patient Protection and Affordable Care Act 42 U.S.C § 18001 et Seq., 2010. [www.hhs.gov/sites/default/files/patient-protection.pdf](http://www.hhs.gov/sites/default/files/patient-protection.pdf)

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