

Enhancing Breastfeeding Outcomes with the Munchkin Flow Device: A 12-Month Cohort Study of Continuation Rates and Maternal Satisfaction

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Abstract

Background: Perceived insufficient milk supply is a primary reason for premature breastfeeding cessation. Technology that provides mothers with real-time, visual feedback on milk transfer may address this common barrier by increasing maternal confidence and supporting breastfeeding continuation. This study evaluates breastfeeding duration, goal achievement, and user satisfaction over 12 months among mothers using the Munchkin Flow device, a novel milk flow visualization device.

Objective: This study evaluates the effectiveness and user satisfaction of the Flow device in supporting breastfeeding continuation and maternal confidence over 12 months postpartum.

Methods: A 12-month, prospective, single arm cohort study (MiFlow 2023-01), followed participants from Day 14 to Month 12 postpartum. The Full Analysis Per Protocol Population (FAPP; N=274) was used for the primary analysis of breastfeeding rates and user-reported outcomes, which were assessed via electronic surveys. Rates were compared to U.S. national benchmarks from the CDC (1).

Results: Any breastfeeding rates were 97.6% (95% CI: 94.9–98.8) at 3 months, 93.6% (95% CI: 89.9–96.0) at 6 months, and 87.4% (95% CI: 82.7–91.0) at 12 months, exceeding U.S. national averages (74.5%, 62.1%, and 40.8%, respectively) [1]. Exclusive breastfeeding rates were 53.1% (95% CI: 47.1–59.0) at 3 months and 27.3% (95% CI: 22.3–33.0) at 6 months. Additionally, 91.2% of mothers reported clear milk flow visibility, 74.5% confirmed feeding completion cues, and 78.7% noted increased confidence in milk supply. User satisfaction was high, with 90.5% rating the device 4 or 5 on a 5-point scale.

Conclusion: Use of the Flow device is associated with markedly higher breastfeeding continuation rates than national averages and is positively correlated with maternal confidence.

By providing clear, immediate feedback on milk transfer, the device is a promising tool to support mothers in achieving their personal breastfeeding goals and may help improve maternal-infant health outcomes.

Reference:

[1] Centers for Disease Control and Prevention. National Immunization Survey-Child, Breastfeeding Among U.S. Children Born 2022. Atlanta, GA: CDC; 2025.

Key Findings for Moms:

- **Milk Flow Visibility:** “91.2% saw milk flow clearly” to emphasize the device’s ability to address a primary maternal concern—knowing if enough milk is being produced. This is sourced from Table 7, which reports that 91.2% (242/265, 95% CI: 87.2–94.3) of BFPP participants confirmed the Flow device allowed them to see milk flow to their baby at Day 14.

Table 7: Summary of Subjects Ability to See the Flow of Milk to the Baby, Day 14 Survey

Statistic	BFPP Population N=274
Ability to see the flow of milk to the baby at Day 14	
Number of subjects who can see the flow of milk to the baby at Day 14	250
Percent of subjects who can see the flow of milk to the baby at Day 14 (95% CI) ^a	91.2 (87.2, 94.3)

N = Number of subjects in the BFPP Population.

^a Clopper-Pearson 95% confidence interval.

- **Feeding Completion Cues:** “74.5% knew when babies finished feeding” to highlight how Flow helps moms recognize feeding completion, reducing uncertainty. Table 8 shows 74.5% (197/265, 95% CI: 68.9–79.5) of BFPP participants reported the device aided in seeing when the baby was done feeding at Day 14.

Table 8: Summary of Subjects Ability to See When the baby was Done Feeding, Day 14 Survey

Statistic	BFPP Population N=274
Ability to see when the baby was done feeding at Day 14	
Number of subjects who can see when the baby was done feeding at Day 14	204
Percent of subjects who can see when the baby was done feeding at Day 14 (95% CI) ^a	74.5 (68.9, 79.5)

N = Number of subjects in the BFPP Population.

^a Clopper-Pearson 95% confidence interval.

- Confidence in Milk Supply: “78.7% felt more confident about milk supply” to underscore the psychological benefit for mothers. Table 22 indicates 78.7% (215/274, 95% CI: 73.3–83.3) of FAPP participants reported increased confidence in their milk supply after using Flow at Day 14.

Table 22: Confidence About Milk Supply After Using Flow

		How confident did you feel about your milk supply after using Flow? BFPP Population N=274									
	Flow users on the D14 Survey	1-Much less confident		2		3		4		5-Much more confident	
Survey	N	N	Row %	N	Row %	N	Row %	N	Row %	N	Row %
D14	265	2	0.8	4	1.5	50	18.9	93	35.1	116	43.8

- Breastfeeding Rates: Rates of 97.6% at 3 months, 93.6% at 6 months, and 87.4% at 12 months for any breastfeeding, and 53.1% at 3 months and 27.3% at 6 months for exclusive breastfeeding, sourced from Sensitivity Analysis 1 (Table 12), as recommended for CDC comparisons. These align with the FAPP population (N=274).

Table 12. Breastfeeding Rates, Overall: Sensitivity Analysis 1

	FAPP Population N=274					
	Complete data ¹	Exclusive breastfeeding ²		Complete data	Any breastfeeding ³	
Survey	N	% ⁴	95% CI ⁴	N	% ⁴	95% CI ⁴
D14	274	76.6	71.3 - 81.3	274	100.0	98.7 - 100.0
M01	270	66.0	60.1 - 71.4	249	99.4	97.6 - 99.8
M02	268	58.9	52.9 - 64.6	249	97.4	94.7 - 98.8
M03	267	53.1	47.1 - 59.0	247	97.6	94.9 - 98.8
M04	267	46.8	40.8 - 52.8	242	96.1	92.9 - 97.9
M05	264	38.4	32.8 - 44.4	247	94.7	91.3 - 96.8
M06	263	27.3	22.3 - 33.0	247	93.6	89.9 - 96.0
M07	260	13.1	9.6 - 17.8	239	92.7	88.8 - 95.3
M08	260	9.0	6.1 - 13.1	237	93.0	89.2 - 95.5
M09	257	5.7	3.4 - 9.2	242	92.0	88.0 - 94.7
M10	254	3.4	1.8 - 6.4	239	91.6	87.6 - 94.5
M11	248	2.7	1.3 - 5.5	234	89.4	85.0 - 92.6
M12	220	2.8	1.3 - 5.8	219	87.4	82.7 - 91.0

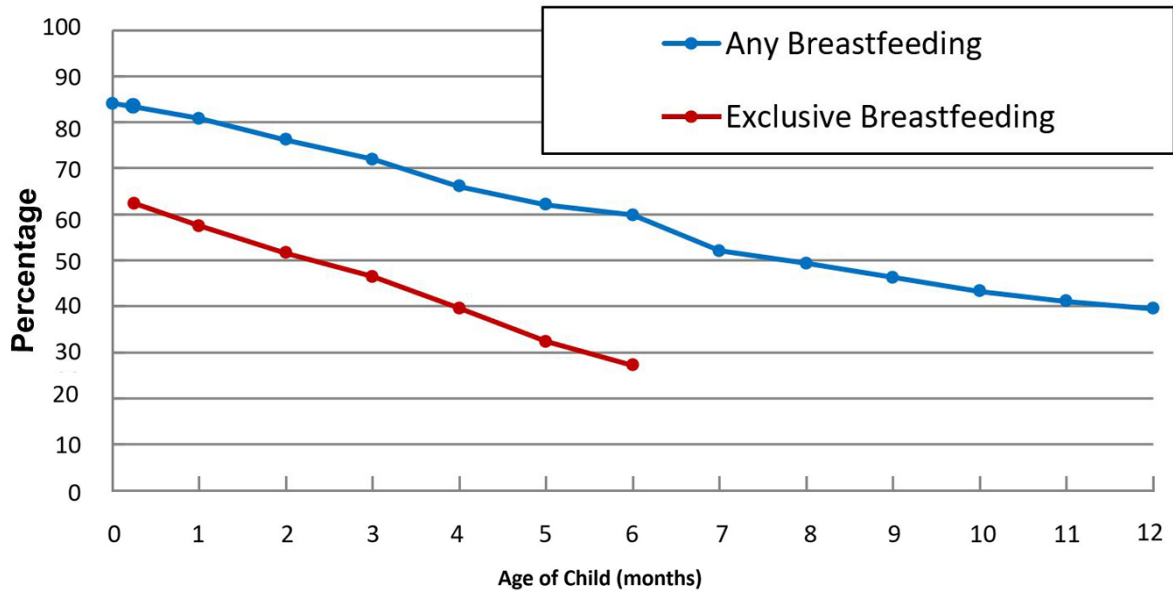
¹Complete data is the number of participants who have answered the question(s) relevant to the endpoint. Participants who have intermittent missing responses to questions relevant to this endpoint are not exclusively breastfeeding at the first survey they have a missing response through their final submitted survey. Missing responses due to dropout will be considered missing.

²Exclusively breastfed their infant or fed their infant breast milk from a bottle and did not feed their infant formula or other food/liquid.

³Breastfed their infant or fed their infant breast milk from a bottle and may have also fed their infant formula or other food/liquid.

⁴From a Generalized Estimating Equations Model.

- CDC Comparison (External Data): Comparison to CDC's 2022 birth cohort (62.1% at 6 months, 40.8% at 12 months for any breastfeeding; 47.6% at 3 months, 27.9% at 6 months for exclusive breastfeeding), ensuring accuracy against the National Immunization Survey-Child data.



Rates of any and exclusive breastfeeding by age among children born in 2022, National Immunization Survey-Child, United States.

- User Satisfaction: 90.5% satisfaction rate (248/274, 95% CI: 86.4–93.7) from Table 15, reflecting high maternal approval across the study period.

Table 15. Quality of the Overall Breastfeeding Experience with the Flow Device

Statistic	FAPP Population N=274
Flow users satisfied with the Flow device, D14 through M12	
Number of subjects who respond to the survey question on device satisfaction with a 4 or 5 on a 5-point scale on any submitted survey	248
Percent of subjects who respond to the survey question on device satisfaction with a 4 or 5 on a 5-point scale on any submitted survey (95% CI) ^a	90.5 (86.4, 93.7)

N = Number of subjects in the FAPP Population who used the Flow at least once during the study period

^a Clopper-Pearson 95% confidence interval.