Maternity Care Practices and Breastfeeding Intentions at One Month Among Low-Income Women

Jennifer L. Beauregard, PhD, MPH,[a,b,c] Jennifer M. Nelson, MD, MPH,[a,b] Ruowei Li, MD, PhD,[a] Cria G. Perrine, PhD,[a,b] Heather C. Hamner, PhD, MS, MPH[a]

abstract

BACKGROUND: Maternity care practices have been linked with higher chances of meeting breastfeeding intentions, but this relationship has not been examined using national data on US low-income women enrolled in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC).

METHODS: Using data from the WIC Infant and Toddler Feeding Practices Study-2 on 1080 women who intended to breastfeed, we estimated risk ratios for associations between (1) each of 6 maternity care practices supportive of breastfeeding (breastfeeding within 1 hour of birth, showing mothers how to breastfeed, giving only breast milk, rooming-in, breastfeeding on demand, no pacifiers), (2) each practice adjusted for all other practices, and (3) total number of practices experienced with whether women met their intention to feed only breast milk at 1 month old. Models were adjusted for demographics.

RESULTS: In adjusted models (1), breastfeeding within 1 hour of birth, giving only breast milk, and no pacifiers were associated with higher likelihood of meeting prenatal breastfeeding intentions. Adjusting for all other practices (2), initiating breastfeeding within 1 hour of birth (risk ratio: 1.3; 95% confidence interval: 1.0–1.6) and giving only breast milk (risk ratio: 4.4; 95% confidence interval: 3.4–5.7) remained associated with meeting breastfeeding intention. There was a dose-response relationship between number of steps experienced and higher likelihood of meeting prenatal breastfeeding intentions (3).

CONCLUSIONS: Women who experienced maternity care practices supportive of breastfeeding were more likely to meet their prenatal breastfeeding intentions, underscoring the importance of breastfeeding support during the birth hospitalization in enabling mothers to achieve their breastfeeding goals.

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[a]*Division of Nutrition, Physical Activity, and Obesity, National Center for Chronic Disease Prevention and Health Promotion, and* [b]*US Public Health Service Commissioned Corps, Rockville, Maryland; and* [c]*Epidemic Intelligence Service, Center for Surveillance, Epidemiology, and Laboratory Services, Centers for Disease Control and Prevention, Atlanta, Georgia*

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Address correspondence to Heather C. Hamner, PhD, MS, MPH, Centers for Disease Control and Prevention, 4770 Buford Hwy NE, MS:S107-5F, Atlanta, GA 30341-3717, hfc2@cdc.gov

WHAT'S KNOWN ON THIS SUBJECT Two national surveys in the 2000s found US women experiencing maternity care practices supportive of breastfeeding during the birth hospitalization were more likely to meet their breastfeeding intentions. Since then, implementation of these practices has improved among US birth facilities.

WHAT THIS STUDY ADDS Using more contemporary data, this study confirms the relationship between experiencing maternity care practices supportive of breastfeeding and meeting one's breastfeeding intentions and adds evidence specifically among low-income women, who are known to be at higher risk of not breastfeeding.

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Breast milk provides optimal nutrition for infants and yields health benefits for both mothers and infants.[1,2] The American Academy of Pediatrics recommends exclusive breastfeeding for about 6 months followed by complementary food introduction and continued breastfeeding through 12 months or beyond, as mutually desired by mother and infant.[3] While US breastfeeding rates have increased over the past several decades, socioeconomic and racial or ethnic disparities persist. Women with lower incomes and those receiving benefits from the US Department of Agriculture's Special Supplementary Nutrition Program for Women, Infants, and Children (WIC) have lower rates of breastfeeding initiation, duration, and exclusivity compared with higher income women.[4] Non-Hispanic Black infants have persistently lower rates of breastfeeding initiation, duration, and exclusivity compared with non-Hispanic White infants;[5] lower rates are also observed among Hispanic infants but to a lesser degree.[6] Numerous factors influence breastfeeding practices, including experiences during the birth hospitalization, access to lactation support, returning to work and support within the workplace, family and social support, and cultural norms or attitudes around breastfeeding;[7] barriers and facilitators to breastfeeding differ by race and ethnicity.[8,9]

Breastfeeding intentions are a strong predictor of whether women start breastfeeding and how long they continue to breastfeed, but even those who intend to breastfeed may not be able to achieve their goals.[10] About 60% of women in the Infant Feeding Practices Study II (IFPS II) stopped breastfeeding earlier than they desired.[11] Among WIC recipients, breastfeeding intentions were found to be similar between non-Hispanic Black and non-Hispanic White women and higher among Hispanic women. However, there were significant differences across racial and ethnic groups in whether women were able to meet their breastfeeding intentions; only 41.5% of non-Hispanic Black and 42.2% of Hispanic women met their 1-month intention compared with 55.9% of non-Hispanic White women.[12]

Women's experiences during their birth hospitalization are an important factor in their infant's feeding outcomes. In 1991, the World Health Organization and UNICEF started the Baby-Friendly Hospital Initiative (BFHI), a global effort that outlines 10 evidence-based maternity care practices that hospitals can implement to support breastfeeding (referred to as Ten Steps to Successful Breastfeeding, hereafter referred to as 'Baby-Friendly steps') (Table 1),[13] leading to improved breastfeeding initiation, duration, and exclusivity.[14] Two national US surveys in the 2000s found that experiencing Baby-Friendly steps in the hospital was associated with meeting intention to exclusively breastfeed at 1 week[15] and meeting one's own intended exclusive breastfeeding duration.[16] There was a dose-response relationship between experiencing more Baby-Friendly steps and higher likelihood of meeting exclusive breastfeeding intentions, and receiving supplemental feedings in the hospital was a key factor in not meeting exclusive breastfeeding intentions.[15,16] Since these studies were conducted, maternity care policies and practices supportive of breastfeeding have improved among US birth facilities.[17]

This study evaluated the relationship between Baby-Friendly steps and achievement of breastfeeding intentions using more contemporary data among low-income women, who are known to be at higher risk of not breastfeeding.[4] We determined whether breastfeeding-related maternity care practices were associated with whether women met their prenatal breastfeeding intentions when their infants were 1 month old using data from a longitudinal study of low-income pregnant women enrolled in WIC. Our analyses in this study were limited to examining breastfeeding at 1 month because this is the outcome likely to be most directly related to experiencing maternity care practices, whereas over the longer term there are numerous individual and contextual factors that influence whether women can continue to achieve their breastfeeding intentions.[7]

METHODS

Study Population

Data were from the WIC Infant and Toddler Feeding Practices Study-2 (ITFPS-2), a longitudinal study of feeding practices and nutrition outcomes among women and children enrolled in WIC (registered at ClinicalTrials.gov [NCT02031978]). Survey instruments are publicly available.[18] Women who were pregnant or recently gave birth to an infant were recruited in July through November 2013 using a 2-stage stratified approach;[19] their children were followed until 60 months old. Sampling occurred among WIC sites projected to enroll ≥30 participants per month; 80 WIC sites were selected across 27 states, representing 37% of WIC sites and 87% of WIC participants. Women were screened for eligibility via an in-person questionnaire. They were eligible to participate if ≥16 years of age, English- or Spanish-speaking, and were either pregnant and enrolling in WIC for the first time for this pregnancy, or their infant

TABLE 1 Baby-Friendly Ten Steps to Successful Breastfeeding (Baby-Friendly Steps) and Questions Consistent with Identified Practices in the USDA's Infant and Toddler Feeding Practices Study-2 (ITPFS-2)

Baby-Friendly Steps	Indicator Within ITFPS-2 Consistent with Baby-Friendly Steps	Timing of Assessment
1. Have a written breastfeeding policy that is routinely communicated to all health care staff.	Not assessed	—
2. Train all health care staff in the skills necessary to implement this policy.	Not assessed.	—
3. Inform all pregnant women about the benefits and management of breastfeeding.	Not assessed.	—
4. Help mothers initiate breastfeeding within 1 hour of birth.	Did you start breastfeeding in the first hour after birth or later?	1 mo interview
5. Show mothers how to breastfeed and how to maintain lactation, even if they are separated from their infants.	While you were in the hospital or birthing center, did your doctor, the nurses, or the hospital staff encourage you to breastfeed your baby? *and* Was there someone in the hospital or birthing center whose job it was to help you with breastfeeding, like a lactation consultant or another trained specialist? *and, selection of at least 1 breastfeeding hospital support service used* While you were in the hospital or birthing center, did you use any of the following support services, information, or equipment for breastfeeding?[a]	1 mo interview
6. Give infants no food or drink other than breastmilk, unless medically indicated.	What was the very first thing that [CHILD] was fed after birth? *and* When you left the hospital or birthing center, were you feeding your baby only breast milk?	1 mo interview
7. Practice rooming in — allow mothers and infants to remain together 24 h a day.	While you were in the hospital or birthing center, did [CHILD] stay in the same room with you, or in a nursery? Do not include time your child was out of your room briefly for things such as medical procedures, bathing, or weighing.	1 mo interview
8. Encourage breastfeeding on demand.	While you were in the hospital or birthing center, did you feed your baby breast milk, either from your breast or from a bottle, on a set schedule or whenever [he or she] cried or seemed hungry?	1 mo interview
9. Give no pacifiers or artificial nipples to breastfeeding infants.	When was [CHILD] given a pacifier for the first time?	3 mo interview
10. Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or birth center.	Not assessed.	—

Baby-Friendly Ten Steps to Successful Breastfeeding are based on the World Health Organization and UNICEF's Baby-friendly hospital initiative: Revised, updated, and expanded for integrated care. 2009; Available at: http://apps.who.int/iris/bitstream/10665/43593/1/9789241594967_eng.pdf. —, not applicable; USDA, United States Department of Agriculture.

[a] Examples of breastfeeding support services, information, or equipment: brochures, pamphlets, TV classes; lactation consultant; other trained specialist who helped with breastfeeding; support groups or classes; breastfeeding equipment (pumps, shields, or other equipment); counseling; hotline; name and number of hospital/birth center staff to call with questions; any other services.

was <2.5 months old. Of the 6775 women referred to the study, 987 did not complete a screener, 1299 were ineligible, and 4489 were screened and eligible to enroll. Of those screened and eligible, 4367 (97.3%) enrolled.[19] Follow-up data collection was conducted via telephone interviews in English or Spanish. Written informed consent was collected and incentives were provided for enrolling and completing each survey. This analysis uses data from the prenatal, 1-month, and 3-month interviews, with response rates among

all those enrolled (including those enrolled after the birth of the baby) ranging from 60.7% (prenatal) to 77.8% (1 month).

Our analyses were limited to women who reported prenatally that they intended to be breastfeeding their infant without using any formula or other milk when their infant was 1 month old, as defined below. Of the 4367 women who enrolled either during pregnancy or when their infant was <2.5 months old, 2649 (59%) completed at least 50% of the prenatal interview. Among these 2649 women, 2614 (99%) had data available on their 1-month breastfeeding intention; 1554 (59%) of them intended to be breastfeeding their infant without using any formula or other milk when their infant was 1 month old. We further restricted our analyses to women who completed at least 50% of the 1-month and 3-month interviews ($n = 1226$). Women were excluded if they did not deliver in a hospital ($n = 4$) or if their infant was admitted to the NICU ($n = 142$), because our research question focused on experiences with maternity care practices in hospitals, which may differ for infants who are admitted to the NICU. Although the study outcome was ascertained using data from the 1-month interview, participants who completed the prenatal and 1-month interviews but not the 3-month interview ($n = 83$) were not eligible for our analyses because 1 maternity care practice (pacifier use in the hospital) was ascertained at the 3-month time point. In a sensitivity analysis that included these 83 women but did not include the variable on pacifier use in the hospital, results were not meaningfully changed (data not shown).

Measures

The outcome, selected a priori, was whether women met their intention to breastfeed their infant without using any formula or other milk when their infant was 1 month old. In the 1-month interview, women were asked whether they were currently feeding their baby only breast milk, only formula, both breast milk and formula, or neither breast milk nor formula. They were classified as meeting their intention if they reported that their infant was receiving only breast milk. Those who reported that their infants were receiving only formula or both breast milk and formula were classified as not meeting their intention; no women reported that their infant was receiving neither. This measurement did not account for whether infants were receiving any drink other than breast milk or formula, or whether they were consuming any complementary foods; therefore, our measurement of breastfeeding at 1 month cannot be interpreted as exclusive breastfeeding. About 4% of women reported in the 1-month interview that they had fed their infant any food or drink besides breast milk and formula, most frequently plain water (67%), other drinks or liquids (eg, teas or broths; 22%), and 100% fruit juice (3%) (data not shown).

The exposures were factors consistent with the 6 Baby-Friendly steps that were assessed in the ITFPS-2 survey: mothers initiating breastfeeding within 1 hour of birth (step 4), showing mothers how to breastfeed and maintain lactation even if separated (step 5), the hospital giving no food or drink other than breast milk unless medically indicated (step 6), rooming-in (step 7), breastfeeding on demand (step 8), and giving no pacifiers (step 9). The 4 additional steps were not assessed in the ITFPS-2 survey. Women self-reported their experiences of these steps in the 1-month interview except for first pacifier use in the hospital, which was measured in the 3-month interview. We created binary variables for each step as well as a composite score for total steps experienced (0–2, 3, 4, 5, and 6). Women who experienced 0–2 steps were grouped into 1 reference category because only 2% of women in our sample experienced 0 or 1 of the steps. The Baby-Friendly Ten Steps to Successful Breastfeeding were revised in 2018, however, this analysis is based on the original steps in place at the time when women enrolled in ITFPS-2 gave birth.[20]

Covariates were maternal race and ethnicity (non-Hispanic White, non-Hispanic Black or African American, Hispanic, or Other), maternal age at birth (16–19 years, 20–25 years or ≥26 years), maternal education (≤high school or >high school), any versus no breastfeeding history, vaginal or cesarean delivery, preterm birth (born >3 weeks before their due date), whether the father of the baby was living with the mother, household poverty level (≤75%, 76% to 130%, and >130% of the 2013 poverty guidelines), and whether the women were receiving WIC benefits for the first time (yes or no).[21]

Statistical Analyses

Univariate frequencies and percentages were computed to describe the distribution of demographics and maternity care practice experiences in our sample. We estimated risk ratios (RR) for associations between maternity care practices and meeting breastfeeding intentions at month 1 using Poisson models, accounting for overdispersion via quasi-likelihood estimation. We estimated 3 sets of models varying how we treated the exposure variables. First, we included each step in a separate model. Second, we included all steps in a single model. Third, the exposure was the composite score

for total steps experienced. For each set of models, we estimated both unadjusted and adjusted models; adjusted models controlled for all covariates of interest. We tested for trend by treating composite score as an ordinal variable and assessing its statistical significance. Finally, recognizing persistent racial or ethnic inequities in breastfeeding rates, including among women enrolled in WIC, we assessed whether associations differed by race or ethnicity. We added interaction terms between maternity care practices and race or ethnicity to each adjusted model and computed Rao-Scott likelihood ratio tests comparing interaction versus base models.

Analyses were conducted using SAS version 9.4 (SAS Institute, Inc., Cary, NC) and R (R Foundation for Statistical Computing, Vienna, Austria). Analyses were weighted using a previously calculated core weight, which adjusts for differential probability of selection and nonresponse to both the 1-month and 3-month interviews. Analyses are representative of the WIC population enrolled in WIC sites with ≥30 participants per month.

RESULTS

There were 1080 women eligible for our analyses (Table 2). About half (47%) met their intention to only breastfeed their infant without using any formula or other milk when their infant was 1 month old. Experiences with Baby-Friendly steps ranged from 56% for providing no food or drinks other than breast milk to 89% for rooming-in. About 15% of women experienced all 6 Baby-Friendly steps assessed in this analysis, 26% experienced 5 steps, 30% experienced 4 steps, 18% experienced 3 steps, and 10% experienced 0–2 steps. The majority of women in the sample were from racial or ethnic minority groups, ≥20 years old, had completed high school or less, had a household income ≤75% of poverty guideline, and lived in a household with the father of their baby. Nearly 70% had a vaginal delivery and 5% of infants were born preterm (all ≥33 weeks). Roughly half had breastfed another baby before this pregnancy (56%) and were receiving WIC benefits for the first time (56%).

In adjusted analyses, 3 of the 6 Baby-Friendly steps were associated with higher likelihood of meeting breastfeeding intentions: initiating breastfeeding within 1 hour of birth (RR: 2.1; 95% CI: 1.6–2.6), providing no foods or drinks other than breast milk (RR: 5.3; 95% CI: 4.2–6.8), and not providing pacifiers (RR: 1.4; 95% CI: 1.2–1.7) (Table 3). Including all steps together in a single model, steps that remained significantly associated with higher likelihood of meeting breastfeeding intentions were initiating breastfeeding within 1 hour of birth (RR: 1.3; 95% CI: 1.0–1.6) and providing no foods or drinks other than breast milk (RR: 4.4; 95% CI: 3.4–5.7). In this model, showing mothers how to breastfeed and maintain lactation even if separated, rooming-in, breastfeeding on demand, and not providing pacifiers were not independently associated with meeting breastfeeding intentions.

Experiencing more Baby-Friendly steps was associated with increasing likelihood of meeting breastfeeding intentions (trend test P value <.0001) (Table 4). The percentage of women meeting their breastfeeding intention ranged from 16% of women who experienced 0 to 2 steps to 76% of women who experienced 6 steps. In adjusted analyses, all women who experienced more than 2 steps were significantly more likely to meet their breastfeeding intention compared with women who experienced 0 to 2 steps (3 vs 0–2 steps, RR: 1.7; 95% CI: 1.1–2.7; 4 vs 0–2 steps, RR: 3.0; 95% CI: 2.1–4.4; 5 vs 0–2 steps, RR: 4.1; 95% CI: 2.8–6.0; 6 vs 0–2 steps, RR: 4.7; 95% CI: 3.1–7.0). Observed associations between Baby-Friendly steps and meeting breastfeeding intentions did not significantly differ by race or ethnicity.

DISCUSSION

This is the first study to examine the impact of maternity care practices on meeting prenatal breastfeeding intentions among a sample of low-income US women enrolled in WIC. Despite prenatal intention being a known predictor of breastfeeding outcomes among WIC participants,[22,23] fewer than half (47%) of women who prenatally intended to breastfeed their infants without use of formula or other milk at 1 month achieved their goal. Women who experienced maternity care practices supportive of breastfeeding were more likely to meet their prenatal intention. Two practices examined, initiating breastfeeding within 1 hour of birth (step 4) and providing no foods or drinks other than breast milk (step 6), were significantly associated with meeting breastfeeding intentions even after adjusting for sociodemographic factors and other maternity care practices. Further, the more practices a woman experienced, the more likely she was to meet her prenatal breastfeeding intention.

Over the past decade, marked improvements in US breastfeeding-related maternity care practices have been observed,[17] including an increase in the number of births occurring in Baby-Friendly-designated hospitals from <3% in 2007 to 28% in 2020.[24] This national shift has impacted the

TABLE 2 Characteristics of Women and Their Infants Who are Enrolled in WIC and Intended to Only Breastfeed and Not Provide Formula or Other Milks at 1 Month Old, USDA's Infant and Toddler Feeding Practices Study-2

Characteristic	*n*	Weighted %
Total	1080	—
Met breastfeeding intention at month 1[a]		
Yes	505	47
No	575	53
Missing	0	0
Baby-Friendly Ten Steps to Successful Breastfeeding[b,c]		
Step 4: Initiated breastfeeding within 1 h of birth		
Yes	661	62
No	410	38
Missing	9	—
Step 5: Show mothers how to breastfeed and maintain lactation even if separated		
Yes	686	63
No	378	37
Missing	16	—
Step 6: No food or drinks other than breast milk		
Yes	604	56
No	468	44
Missing	8	—
Step 7: Rooming-in		
Yes	960	89
No	119	11
Missing	1	—
Step 8: Breastfeeding on demand		
Yes	679	72
No	305	28
Missing	96	—
Step 9: No pacifiers given		
Yes	583	58
No	495	42
Missing	2	—
Total number of steps experienced consistent with Baby-Friendly Ten Steps to Successful Breastfeeding		
0–2	102	10
3	180	18
4	289	30
5	256	26
6	129	15
Missing	124	—
Maternal race and ethnicity		
Non-Hispanic White	312	25
Non-Hispanic Black or African American	169	12
Hispanic	533	57
Other	66	6
Missing	0	0
Maternal age at birth, y		
16–19	111	11
20–25	440	39
26 and older	529	51
Missing	0	0
Maternal education		
High school or less	621	60
More than high school	453	40
Missing	6	—
Breastfeeding history		
No breastfeeding history	499	44
Any breastfeeding history	581	56
Missing	0	0
Type of delivery		
Vaginal	750	69
Cesarean	330	31

TABLE 2 Continued

Characteristic	*n*	Weighted %
Missing	0	0
Preterm		
Preterm, <37 wk	60	5
Not preterm, 37 wk or later	1020	95
Missing	0	0
Household structure		
Father of baby living with mother	655	62
Father of baby not living with mother	425	38
Missing	0	0
Household poverty level[d]		
≤75% of poverty guideline	652	60
76% to 130% of poverty guideline	302	28
>130% of poverty guideline	126	13
Missing	0	0
Receiving WIC benefits for the first time		
Yes	490	56
No	590	44
Missing	0	0

—, no percentage presented; USDA, United States Department of Agriculture.

[a] Meeting breastfeeding intention at month 1 is defined as providing only breast milk for baby at the 1 mo survey.

[b] Baby-Friendly Ten Steps to Successful Breastfeeding are based on the World Health Organization and UNICEF's Baby-friendly hospital initiative: Revised, updated, and expanded for integrated care. 2009; Available at: http://apps.who.int/iris/bitstream/10665/43593/1/9789241594967_eng.pdf. Accessed September 3, 2019.

[c] Steps consistent with Baby-Friendly Ten Steps to Successful Breastfeeding are defined as follows, step 4: reporting breastfeeding started in the first hour after birth; step 5: showing mothers how to breastfeed or maintain lactation even if separated; step 6: reporting that breast milk was the very first thing fed to the baby after birth and only feeding breast milk at the time they left the hospital or birthing center; step 7: reporting that the baby stayed in the room with the mother while they were in the hospital or birthing center; step 8: reporting feeding the baby breast milk, either from the breast or from a bottle, whenever [he or she] cried or seemed hungry while in the hospital or birthing center; step 9: reporting that the baby was not provided a pacifier for the first time in the hospital after [he or she] was born.

[d] Poverty guideline is defined as the 2013 poverty guidelines [Reference: US Health and Human Services. Annual update of the HHS Poverty Guidelines. Fed Regist. 2013;78(16):5182–5183].

practices experienced by many mothers, including those enrolled in WIC.[22] Two studies among Los Angeles County WIC participants found that infants born in Baby-Friendly designated hospitals[23] and those who were exclusively breastfed in the hospital[22] had higher exclusive breastfeeding rates at 1 month. Many women enrolled in WIC face substantial barriers to successful breastfeeding, including lack of support both inside and outside the hospital.[25] It is important to ensure women eligible for WIC services are enrolled and supported to receive benefits known to improve breastfeeding outcomes[22,23] and peer support.[2]

Similar to DeClercq et al[15] and Perrine et al,[16] we found that the maternity care practice most strongly associated with meeting breastfeeding intentions at 1 month was providing no food or drinks other than breast milk to breastfeeding infants (step 6); adhering to this practice includes avoiding in-hospital formula supplementation. Women experiencing this practice were >4 times as likely to achieve their prenatal intention than those whose infants received other foods or drinks in the hospital. In-hospital formula supplementation, a common practice in the United States,[26] has been linked with earlier breastfeeding cessation among women who intended to exclusively breastfeed.[27] In our sample, 44% of women indicated that their infants had been fed something other than breast milk while in the hospital. According to national[3] and international[20] recommendations, breastfed infants should only be supplemented if medically necessary or at parental request after appropriate counseling. It is important to understand the drivers behind in-hospital formula or other supplementation to better support mothers to meet their breastfeeding intentions.

Women who experienced a greater number of Baby-Friendly steps were more likely to meet their breastfeeding intentions. Adjusting for sociodemographic factors, women who experienced all 6 steps were >4 times as likely to meet their intention compared with those who experienced 0–2 steps. Similar to previous findings,[16] much of this dose-response relationship appeared to be driven by the strong influence of in-hospital formula or other supplementation. When we redefined the composite score without formula or other supplementation (ie, how many out of the remaining 5 steps did women experience), a dose-response relationship remained

TABLE 3 Associations Between Experiencing Practices Consistent with Baby-Friendly Ten Steps to Successful Breastfeeding and Meeting Intention to Breastfeed and Not Provide Formula or Other Milks at 1 Month Old, USDA's Infant and Toddler Feeding Practices Study-2

			Model 1[a]			Model 2[b]		
Indicator consistent with Baby-Friendly Ten Steps to Successful Breastfeeding	*n*	% Met Intention	Risk Ratio	95% CI	*P*	Risk Ratio	95% CI	*P*
Step 4: Initiated breastfeeding within 1 h of birth								
Yes	661	59	2.1	(1.6–2.6)	<.0001	1.3	(1.0–1.6)	.03
No	410	27	1.0	(Reference)	—	1.0	(Reference)	—
Step 5: Show mothers how to breastfeed or maintain lactation even if separated								
Yes	686	49	1.1	(1.0–1.3)	.21	1.0	(0.9–1.1)	.76
No	378	43	1.0	(Reference)	—	1.0	(Reference)	—
Step 6: No food or drinks other than breast milk								
Yes	604	73	5.3	(4.2–6.8)	<.0001	4.4	(3.4–5.7)	<.0001
No	468	14	1.0	(Reference)	—	1.0	(Reference)	—
Step 7: Rooming-in								
Yes	960	48	1.3	(0.9–1.9)	.21	1.1	(0.8–1.5)	.56
No	119	37	1.0	(Reference)	—	1.0	(Reference)	—
Step 8: Breastfeeding on demand								
Yes	679	51	1.0	(0.9–1.2)	.73	1.0	(0.8–1.1)	.62
No	305	48	1.0	(Reference)	—	1.0	(Reference)	—
Step 9: No pacifiers given								
Yes	583	53	1.4	(1.2–1.7)	<.01	1.1	(1.0–.3)	.09
No	495	39	1.0	(Reference)	—	1.0	(Reference)	—

Baby-Friendly Ten Steps to Successful Breastfeeding are based on the World Health Organization and UNICEF's Baby-friendly hospital initiative: Revised, updated, and expanded for integrated care. 2009; Available from: http://apps.who.int/iris/bitstream/10665/43593/1/9789241594967_eng.pdf. CI, confidence intervals; USDA, United States Department of Agriculture. —, *P* value not presented for referent categories.

[a] Model 1 adjusts for maternal race and ethnicity, maternal age at birth, maternal education, any versus no breastfeeding history, vaginal or cesarean delivery, preterm birth (born <37 wk gestation), whether the father of the baby was living with the mother, household poverty level, and whether the mother was receiving WIC benefits for the first time.

[b] Model 2 adjusts for the same sociodemographic factors as Model 1, as well as all the other maternity care practices.

but risk ratios were attenuated (data not shown). This finding reiterates the importance of limiting in-hospital formula or other supplementation of breastfed infants to only those with medical necessity.

We did not find racial or ethnic differences in associations between maternity care practices and meeting breastfeeding intentions. This is in contrast to a recent systematic review of breastfeeding interventions that suggested "that

TABLE 4 Association Between Number of Practices Experienced Consistent with Baby-Friendly Ten Steps to Successful Breastfeeding and Meeting Intention to Breastfeed and Not Provide Formula or Other Milks at 1 Month Old, USDA's Infant and Toddler Feeding Practices Study-2

			Unadjusted			Adjusted[a]		
Total Number of Steps Experienced Consistent with Baby-Friendly Ten Steps to Successful Breastfeeding	*n*	% Met Intention	Risk Ratio	95% CI	*P*	Risk Ratio	95% CI	*P*
0–2	102	16	1.0	(Reference)		1.0	(Reference)	
3	180	27	1.7	(1.1–2.7)	.02	1.7	(1.1–2.7)	.02
4	289	49	3.1	(2.1–4.6)	<.0001	3.0	(2.1–4.4)	<.0001
5	256	65	4.1	(2.7–6.3)	<.0001	4.1	(2.8–6.0)	<.0001
6	129	76	4.9	(3.1–7.6)	<.0001	4.7	(3.1–7.0)	<.0001

Baby-Friendly Ten Steps to Successful Breastfeeding are based on the World Health Organization and UNICEF's Baby-friendly hospital initiative: Revised, updated, and expanded for integrated care. 2009; Available from: http://apps.who.int/iris/bitstream/10665/43593/1/9789241594967_eng.pdf. CI, confidence intervals; USDA, United States Department of Agriculture.

[a] Adjusted model controls for maternal race and ethnicity, maternal age at birth, maternal education, any versus no breastfeeding history, vaginal or cesarean delivery, preterm birth (born <37 wk gestation), whether the father of the baby was living with the mother, household poverty level, and whether the mother was receiving WIC benefits for the first time.

maternity care practices based on The Ten Steps, were positively associated with breastfeeding outcomes, and positively impacted minority populations by decreasing disparities."[28] Of note, however, our ability to assess interaction by race or ethnicity was limited by the racial or ethnic distribution of the study sample, with relatively few non-Hispanic Black women represented. This limits our ability to make any generalizations about the experience of maternity care practices differing by racial or ethnic groups in our sample. Nonetheless, breastfeeding disparities exist, and cultural differences regarding beliefs and practices about breastfeeding are present.[6,9,29,30] Maternity care practices that account for these factors may have a larger impact on reducing disparities in breastfeeding outcomes for some racial or ethnic groups as has been seen with the implementation of Communities and Hospitals Advancing Maternity Practices (CHAMPS) in the southeastern United States.[31]

Several limitations of our study must be acknowledged. First, ITFPS-2 did not directly assess women's experiences of Baby-Friendly steps; survey questions about maternity care practices yielded data that were reflective of, but not explicitly aligned with, the steps. Further, not all Baby-Friendly steps were addressed in ITFPS-2 survey questions; this analysis is limited to assessing the potential role of 6 of the 10 steps in meeting one's breastfeeding intentions. Second, recall bias is possible; women were asked to retrospectively report their hospital experiences during the 1-month interview for most maternity care practices, but not until the 3-month interview for pacifier use in the hospital. Third, although we controlled for multiple potential covariates, residual confounding might still remain. Lastly, data were collected in 2013 and maternity care practices have improved,[17,32] which could positively impact a woman's ability to meet her breastfeeding intentions. Future studies could determine if the experience of Baby-Friendly steps continue to be associated with meeting longer breastfeeding intention outcomes (ie, 3 months or longer) or if meeting breastfeeding intentions mediates the association between the experience of Baby-Friendly maternity care practices and longer breastfeeding outcomes.

CONCLUSION

In this sample of low-income US women enrolled in WIC, experiencing evidence-based maternity care practices supportive of breastfeeding was positively associated with meeting one's intention to be only breastfeeding their infant at 1 month old. The more Baby-Friendly steps women experienced, the more likely they were to achieve their intention. Not providing in-hospital supplementation was a key factor associated with meeting one's intentions. Improving implementation of and access to evidence-based maternity care practices could help to improve women's ability to meet their breastfeeding intentions, improving breastfeeding outcomes among this low-income population.

ABBREVIATIONS

BFHI: Baby-Friendly Hospital Initiative
IFPS II: Infant Feeding Practices Study II
ITFPS-2: Infant and Toddler Feeding Practices Study-2
RR: risk ratio
WIC: special supplemental nutrition program for women, infants, and children

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