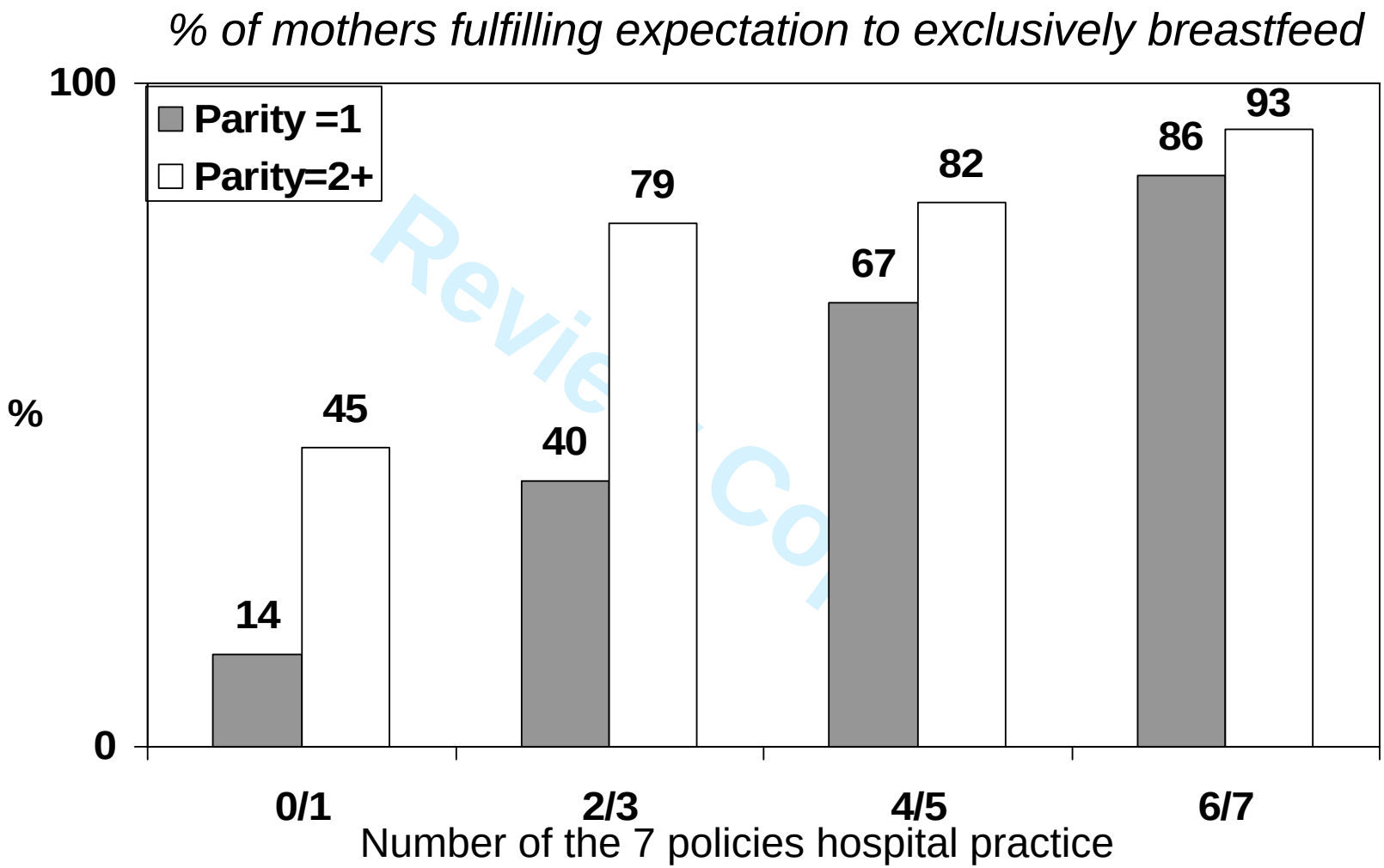
PEDIATRICS

The Impact of Hospital Practices on Womens Likelihood of Fulfilling their Intention to Exclusively Breastfeed

Journal:	*Pediatrics*
Manuscript ID:	draft
Article Type:	Regular Article
Date Submitted by the Author:	n/a
Complete List of Authors:	Declercq, Eugene; Boston University SPH, Maternal & Child Health Labbok, Miriam; Univ. North Carolina SPH, Maternal and Child Health Sakala, Carol; Childbirth Connection, Director of Programs O'Hara, MaryAnn; University of Washington, Family Medicine
Keyword/Category:	National Survey, Supplementation, Breastfeeding, Hospital performance, Infant feeding

Figure 1 Hospital support and breastfeeding success



Hospital Practices: (1) Helped mother get started BF; (2) showed how to position baby; (3) encouraged feeding on demand;(4) directed mothers to community BF resources; (5) did not supplement; (6) did not use a pacifier; (7) did not give out free formula

Note: Differences in fulfillment are statistically significant (p<.01)across numbers of policies.

The Impact of Hospital Practices on Women's Likelihood of Fulfilling their Intention to Exclusively Breastfeed

Corresponding Author:
Eugene Declercq, PhD
Assistant Dean for Doctoral Education and Professor
Department of Maternal and Child Health, Boston University School of Public Health
715 Albany Street, Talbot W540, Boston, MA 02118
Phone: (617) 638-7795, Fax: (617) 638-5370, Email: declercq@bu.edu

Miriam Labbok, MD, MPH, FACPM, IBCLC, FABM
Director, Center for Infant and Young Child Feeding and Care
Professor of the Practice, Department of Maternal and Child Health
University of North Carolina School of Public Health
Chapel Hill, NC 27599-7445
Phone: 919-966-0928; Fax: 919-966-0458; Email: labbok@unc.edu

Carol Sakala, PhD, MSPH
Director of Programs, Childbirth Connection
281 Park Avenue South, 5th Floor, New York, NY 10010
Phone: 212-777-5000 ext. 5 Email: sakala@childbirthconnection.org

MaryAnn O'Hara, MD, MPH, MSt, FABM
Clinical Assistant Professor of Family Medicine
University of Washington
206-729-1390
7739 39th Ave NE
Seattle, WA 98115
maryanno@u.washington.edu

Word Count: 3577

Acknowledgements: This research has been supported by the Robert Wood Johnson Foundation and Childbirth Connections.

The Impact of Hospital Practices on Women's Likelihood of Fulfilling their Intention to Exclusively Breastfeed

Introduction

Breastfeeding, especially exclusive breastfeeding in the first sixth months is the physiologically appropriate approach to infant feeding. Mixed or formula feeding carry with them greater risks of infection, developmental risks, higher mortality and increased risks for long term ailments such as diabetes and cancers for mother and child.[1,2,3,4] In support of the evidence, the American Academy of Pediatrics[5], American College of Obstetrics and Gynecology[6], the American Public Health Association[7], the World Health Organization[8], and other medical and health professional organizations[9,10,11] recommend that infants consume only mother's milk (exclusively breastfeed [EBF]) for the first six months of life. US Healthy People 2010 with CDC support has added the goal of 25% EBF at 6 months.[12] Nonetheless, national statistics indicate that less than 14% of mother-baby pairs achieve this goal.[13]

The Ten Steps for the Protection, Promotion and Support of Breastfeeding[14] are the central part of the Baby-Friendly Hospital Initiative, along with adherence to the International Code of Marketing of Breast-milk Substitutes and subsequent WHO resolutions.[15] These practices have been found to support breastfeeding behaviors and influence outcomes.[16,17] However, little is known about the prevalence of these practices in the US, and relative importance of specific practices on breastfeeding outcomes, especially among women who intended to breastfeed exclusively.

This study addresses this gap in the literature by examining results of a national survey that asked mothers about their feeding intentions in the third trimester and their actual feeding

patterns at one week. It also asked mothers to report on their experiences with hospital practices known to influence breastfeeding success. The goal of this study is to provide medical and hospital administrative decision-makers with the information they need to institute protocols and practices that most strongly enhance women's ability to achieve their goals of exclusive breastfeeding.

Methods

Subjects and Study Design

This study presents results from a 2006 national survey of 1,573 women 18-45 who had given birth in 2005 in a hospital to a singleton, still living infant. The survey, entitled *Listening to Mothers II*[18] was developed through a collaboration between Childbirth Connection and the Boston University School of Public Health and was conducted by Harris Interactive. The standard telephone sampling approach of random-digit dialing is not feasible for a national survey of birthing mothers because the number of births (4 million annually) is such a small proportion of the number of households (111 million), therefore respondents were drawn from two sources.

Harris Interactive maintains an ongoing Internet panel of more than 5 million individuals who agree to periodically participate in their surveys. A call went out in January, 2006 asking women between 18-45 if they had given birth in 2005 and would participate in the survey. Those mothers who responded were screened to make sure they met the inclusion criteria described above. The result was a total of 1,373 mothers who responded to a web-based version of the survey. An additional 200 black non-Hispanic and Hispanic women were surveyed by telephone

through a national list provided by a private vendor. Households in zip codes with large minority populations were called and respondents were screened to ensure they not only met the original inclusion criteria, but also were black non-Hispanic or Hispanic. The combined survey results were weighted by Harris using their "propensity scoring" system which accounts for both demographic differences and potential biases associated with online respondents. Details on the survey methodology are available at: www.childbirthconnection.org/listeningtomothers/ and in a related paper.[19] The questionnaire itself took about 30 minutes and included questions on prenatal, intrapartum and postpartum experiences, maternal attitudes related toward birth, and demographic characteristics. All phone and internet interviews were conducted between January 20 and February 21, 2006.

The resulting sample of mothers who gave birth in 2005 is largely representative of the comparable (18-45; singleton, hospital births) national population of birthing mothers, [19] based on the most recent U.S. data[20] available for comparison (data not shown). Survey respondents came from all 50 states and the District of Columbia. In terms of age, 52% of the study population and 52% of the comparable birthing population were between ages 25 – 34. Black non-Hispanic mothers made up 12% and Hispanic mothers 21% of the study sample, compared to 14% and 23% respectively in the birthing population. Finally the breastfeeding rates reported here are generally comparable to 2005 rates reported by CDC based on the National Immunization Survey. While the specific questions were not the same, the overall rate of any breastfeeding at all at 1 week in our sample (73%) is comparable to the 72.9% reported as "ever breastfed" in the 2005 NIS.[21]

The survey complied with the codes and standards of the Council of American Survey Research Organizations and the code of the National Council of Public Polls. The principal investigator's involvement was reviewed by the Institutional Review Board of his institution and he was granted exempt status since the data were collected and housed securely by Harris Interactive and the authors had access to only a de-identified file provided by Harris.

Measurements

Mothers were asked retrospectively about their intention during the third trimester regarding infant feeding, their feeding practices at one week, nine specific hospital practices related to the breastfeeding process, and a global question about the breastfeeding support they received from hospital staff. Many of these items are taken from the Baby-Friendly Hospital Initiative Ten Steps (BFHI),[22] with specific BFHI steps corresponding to survey questions noted in Table 4. We also asked the mothers if they practiced "rooming in" as encouraged by step 7.

These results were tabulated with a particular focus on mothers who intended to exclusively breastfeed at the end of pregnancy and were not doing so at 1 week postpartum. All analyses were stratified by parity. Since our intention is to examine the typical postpartum experience for mothers, in Tables 3 through 6, and Figure 1, the analysis is limited to those cases where the infant was not in the intensive care unit. This resulted in the loss of 6% (100) of the respondents. Data analyses were conducted using SPSS v13.0.[23] Multiple logistic regression methods were performed to examine the association between fulfillment of intention to breastfeed, various hospital practices and related demographic variables for each parity stratum.

Results

Comparing Intent and Practice

Mothers were given 3 possible ways to describe the pattern of feeding intended during late pregnancy and practice at one week: 1) exclusive breastfeeding (EBF), 2) exclusive formula feeding or 3) mixed feeding. *Table 1* presents the intended and the one week rates to identify consistency or variance from intention. Most mothers fulfilled their intention, with 65% of primiparas and 79% of multiparas feeding the baby at one week in the way they intended at the end of pregnancy. The largest proportion were mothers who intended to, and at one week were, exclusively breastfeeding their babies. Most who did not achieve their intention to exclusively breastfeed, (20% of primiparous women; 7% of multiparous women) primarily practiced mixed feeding. There were some respondents (4% of primiparas and 5% of multiparas) who changed from an intention to mix feed, to exclusive breastfeeding at one week.

Overall 61% of respondents indicated they had intended EBF, while half of the mothers (51%) were breastfeeding at 1 week. *Table 2* presents these overall results broken down by parity (1 or 2+) and a number of demographic characteristics. The impact of parity is clearly seen in Table 2. There was only a slight difference between the percent of multiparas (Parity = 2+) intending EBF (57%)and the percent who were exclusively breastfeeding at 1 week (53%), while the difference for primiparas was much greater (from 70% to 50%).

Among primiparas, both intent to breastfeed and the likelihood of breastfeeding at one week vary substantially across demographic subgroups. Those most likely to intend to and actually exclusively breastfeed at one week were mothers who were white non-Hispanic, better educated,

higher income and had private insurance. The first-time mothers with the largest discrepancy between intent and exclusive breastfeeding (EBF) were mothers with a reported income of $25,000 – $49,999 (78% intention, to 49% EBF at 1 week), Hispanic mothers (59% to 32%), black non-Hispanic mothers (59% to 33%) and mothers employed part-time (78% to 51%). Among multiparas the same general patterns emerge, though with the difference between intent and actual EBF much smaller. In a small number of cases the rate of EBF at one week is slightly higher than the rate of those intending EBF prior to birth. The reason, as noted above, is that some of the mothers who intended to mix feed reported EBF at one week.

Table 3 looks only at the subset of mothers who intended EBF and the percents shown represent those who were doing so at 1 week, that is, 65% of primiparas who intended EBF were doing so at 1 week, compared to 83% among multiparas. We further limited the analysis in this and subsequent tables to mothers whose infants were not in the neonatal intensive care unit, stratifying the results by differences in the mothers' birth experience. Among primiparas, factors that were related in bivariate analysis to achievement of intent to exclusively breastfeed included having an obstetrician as prenatal care provider and not having a cesarean delivery. Among multiparas, there were more factors related to achievement of intention, including not having an epidural or a cesarean, having the baby in contact with the mothers immediately after birth, having rooming-in and a shorter postpartum length of stay.

Hospital Practices

Table 4 presents responses from mothers who intended EBF, and whose babies were not in the NICU, concerning hospital practices related to breastfeeding. The findings are stratified by parity. About 4 out of 5 primiparas (81%) who intended EBF indicated the staff encouraged them. In terms of specific hospital practices and primiparas, in some cases staff were highly supportive, providing help getting started (89%) encouraging breastfeeding on demand (80%) and showing how to position the baby (78%). However, almost half (49%) of those first-time mothers who intended to exclusively breastfeed reported their baby was given water or formula for supplementation, their baby had been given a pacifier (45%) and 74 percent received free formula samples or offers. On the whole, the pattern for multiparas involved less variation across the different practices which were either supportive of or threats to exclusive breastfeeding. Multiparas intending to exclusively breastfeed were less likely than primiparas to receive formula samples (61%), find their baby given supplemental liquids (29%) or given a pacifier (40%). An analysis of these practices by race/ethnicity (data not shown) finds white non-Hispanic primiparas much less likely to report supplementation with water or formula (40%) than black non-Hispanic (71%) or Hispanic (74%) mothers.

Table 5 presents, as Table 3 did, the proportion of mothers whose babies were not in the NICU and who fulfilled their intention to exclusively breastfeed. In this case the different columns represent different levels of parity and whether or not the mother reported that the hospital engaged in a particular practice. For example, 69% of those mothers who intended to exclusively breastfeed and reported that hospital staff helped them get started breastfeeding were exclusively

breastfeeding at one week compared to 33% of primiparas in hospitals where they did not get help. Among primiparas there was a significant difference in the rate of achieving intention to exclusively breastfeed by whether or not a hospital engaged in each of the practices, particularly supplementation, with slightly less than half (49%) achieving their intention to breastfeed compared to 81% in cases where there was no supplementation.

The differences for multiparas were generally not so pronounced, with the exception of supplementation; 94% of the mothers that did not report supplementation occurring achieved their intention to exclusively breastfeed, compared to 56% where supplementation was reported. The provision of formula samples or coupons, a practice that has been shown to have a negative impact on exclusive breastfeeding success,[24] is a politically sensitive issue.[25] Such provision was related to a significant reduction in achievement of intention for both primiparas and multiparas.

We examined whether or not there was a dose-response relationship between the number of practices hospitals engaged in that supported breastfeeding and the achievement of intentions to exclusively breastfeed. The results are in Figure 1. There is a strong cumulative effect of these policies for both parity groups. Primiparas reporting hospitals engaged in 6 or 7 of the practices were six times more likely (86% to 14%) to fulfill their intention to exclusively breastfeed while experienced mothers in the same comparison were more than twice as likely (93% to 45%) as mothers who reported hospitals engaged in none or just one of the practices.

Finally we examined what factors were most strongly related to achievement of intention to breastfeed in a multivariate analysis. Because of the substantial differences already noted for

parity, we ran separate models for primiparas and multiparas. With our focus on the impact of hospital practices on achievement of breastfeeding intention, we included 7 hospital practices as well as key intrapartum variables (e.g., method of delivery, rooming in and where the baby was in the first hours after birth) and demographic variables (age, education, income, race/ethnicity, employment status and third party payer source) associated with feeding choices.

Controlling for all the other noted demographic and intrapartum variables, among primiparas, four hospital practices statistically significantly impacted the likelihood of achieving breastfeeding intentions. They were: helping mothers get started (Adjusted odds ratio = 6.3 [95% Confidence interval 1.8-21.6]); hospital staff *not* supplementing with formula or water (AOR = 4.4 [95%C.I. 2.1-9.3]); telling mothers about community resources for breastfeeding support (AOR = 2.3 [95%C.I. 1.1-4.9]); staff *not* giving the baby a pacifier (AOR = 2.3 [95%C.I. 1.2-4.4]). Among multiparas, two practices significantly impacted fulfillment of intention: *not* having supplementation (AOR = 8.8 [95%C.I. 4.4-17.6]) and encouragement for feeding on demand (AOR = 3.4 [95%C.I. 1.7-6.8]). None of the demographic or intrapartum events remained significantly related to achievement in these models.

DISCUSSION

This national study found that identifiable hospital practices were strongly related to successful initiation of breastfeeding. It used a large, representative national sample to focus on a critical time in establishing exclusive breastfeeding – from the end of pregnancy through the first week after birth. It examined how hospital practices are positively and negatively associated with the

likelihood that a mother who intended to exclusively breastfeed as she completed her pregnancy, was actually doing so one week after the birth. It also documents hospital practices from a unique perspective – that of mothers, rather than stated policies or reports from hospital staff. In this way it can serve as a complement to two CDC surveys of hospital staff concerning hospital practices and policies related to breastfeeding. [26,27]

We found a substantial gap between primiparas intentions to exclusively breastfeed (70%) and what they were actually doing at one week (50%). Interestingly, multiparas were far less likely to report an intention to breastfeed (57%) but more likely to actually be breastfeeding (53%) at 1 week. These shifts between intention and practice represent a huge lost opportunity to encourage and support breastfeeding in the U.S. Applying these differences to national birthing data results in a total of more than 425,000 infants (10% of all U.S. births) whose mothers intended to breastfeed as they completed their pregnancies but were not doing so at 1 week.

Mothers also reported higher levels of some hospital practices that inhibit exclusive breastfeeding (i.e., supplementation, free formula samples, use of pacifiers) than might be expected given the protocols of various health professional groups, with some of these practices clearly related to a mother achieving her feeding intention. In hospitals with a comprehensive package of supportive practices, primiparas were 6 times more likely and multiparas twice as likely to achieve their EBF intention.

The findings also reveal the importance of treating mothers individually, with different combinations of factors influencing the ability of primiparas and multiparas to fulfill their

expectations. The provision of formula or water to supplement breastfeeding was the only practice significantly influencing both parity groups; mothers in hospitals where supplementation did not occur were either 4.4 times (primips) or 8.8 times (multips) more likely to achieve their intention to exclusively breastfeed.

WHO is about to release an updated compendium, *Evidence for the Ten Steps to Successful Breastfeeding*, which confirms that there is substantial evidence behind Step 6, "Give newborn infants no food or drink other than breastmilk, unless medically indicated." By 1998, it was widely recognized that the use of supplementation feeding disrupted breastfeeding, [28] including a 1996 Honduran study which found prelacteal water use had a negative impact on exclusive breastfeeding (OR=0.19, 95% CI 0.09-0.41) and milk-based prelacteal feedings were negatively associated with exclusive (OR=0.19, 95% CI 0.08-0.43) and any breastfeeding (OR=0.21, 95% CI 0.09- 0.48).[29] More recently, an Italian study found a similar negative impact associated with supplementation.[30]

Comparison with Other Studies

There are few studies in the literature that include exclusive breastfeeding (EBF) as the outcome in assessing intention and later success in breastfeeding. One of the studies evaluated the impact of EBF counseling on different ethnicities[31] and found that such counseling was associated with increased prevalence of EBF at 2 months in a mixed ethnic population. A recent randomized, non-blinded controlled trial examined whether an individualized prenatal and postnatal lactation consultant intervention resulted in increased cumulative intensity of breastfeeding up to 52

weeks among women who delivered in the same hospitals[32]. While the intervention group was more likely to breastfeed through week 20 (53.0% vs. 39.3%), exclusive breastfeeding rates were low and did not differ according to group.

In Brazil, two systems for the promotion of exclusive breastfeeding were compared[33] -- a hospital-based system and the same system combined with a programme of home visits. The primary outcome measure was the rate of exclusive breastfeeding from birth to 6 months. While hospital-training intervention achieved a high rate (70%) of exclusive breastfeeding in the hospitals, this rate was not sustained at home. The patterns of exclusive breastfeeding in the two trial groups for days 10-180 differed significantly ($p<0.0001$), with a mean aggregated prevalence of 45% among the group assigned home visits compared with 13% for the group assigned none.

These studies reinforce the importance of the in-hospital practices, as well as the 10th step of the Ten Steps – continued support in the community - for the initiation and later successful continuation of EBF.

Limitations

This study is limited in several ways. It is based on a U.S. national sample that was drawn from a combination of Internet and telephone respondents. While Internet based samples are increasingly being used in public opinion research[34] and our data were weighted to adjust for the propensity to be online, there may be differences in the breastfeeding experiences and behavior

of mothers who respond to Internet surveys. To help ensure a more demographically representative sample we supplemented the Internet responses with a telephone over sample of black non-Hispanic and Hispanic mothers, and the result is a sample that is generally representative of the U.S. birthing and breastfeeding population. However, there is no way to determine if there is an underlying attitudinal difference between our respondents and U.S. birth mothers.

The study also relies on mothers' recall, and their recollections may be faulty. Past research has shown that mothers are generally accurate in their reports of their own birth experiences,[35] but it may be that mothers inaccurately reported on some key variables. What is less clear is why there would be a systematic bias toward reporting in any given direction in these cases. It is possible that some mothers who stopped breastfeeding for a personal reason chose to blame hospital practices, but it is unlikely that impacted a significant proportion of mothers. Also the comparable national data most often used in reporting breastfeeding trends, the NIS and Abbott Laboratories' surveys, both rely on maternal recall.[36]

Conclusion

Breastfeeding protection, promotion and support may rely on identifying and using "teachable moments" to increase intention to exclusively breastfeed, and these findings present opportunities in two areas. First, the issue of intention raises a classic "glass half full or empty" problem. Should we be pleased or disappointed that 70% of first-time and 57% of experienced mothers had the intention late in their pregnancy to exclusively breastfeed? In addition to

examining hospital practices, we need to consider why almost half of multiparous mothers were not interested in exclusively breastfeeding their baby born in 2005. Clearly some efforts are needed to promote increased interest in breastfeeding among all mothers, but particularly those who have given birth before and may have had adverse experiences.

Perhaps of greater interest would be why those hospital practices that have been repeatedly shown to increase breastfeeding among new mothers, and which this study finds to have a powerful cumulative impact, have not been instituted in all facilities in the US and globally. There have been many policies promulgated supporting the need to encourage longer duration in exclusive breastfeeding. However, we are losing a large portion of mothers in the first week, and that, in turn, appears strongly related to hospital practices. As policy statements from the AAP and others declare, these practices must be changed at the hospital, professional organizational and perhaps governmental levels to ensure that the hospital experience more consistently contributes to the health and welfare of mothers and babies. Implementation of the new BFHI approach will contribute to increasing the proportion of mothers who fulfill their intention to exclusively breastfeed.

Table 1. Breastfeeding Intentions Compared to Actual Practice at One Week Postpartum

Parity = 1 (n=519)	***INTENTION***			
	Exclusive Breastfeeding %	Exclusive Formula %	Mixed %	Total*
PRACTICE				
Exclusive Breastfeeding	44	1	4	50
Exclusive Formula	6	13	4	22
Mixed	20	0	8	28
Total	70	14	16	100

Parity = 2+ (n=1052)	***INTENTION***			
	Exclusive Breastfeeding %	Exclusive Formula %	Mixed %	Total*
PRACTICE				
Exclusive Breastfeeding	47	1	5	53
Exclusive Formula	3	21	5	29
Mixed	7	1	11	18
Total	57	22	21	100

*totals subject to rounding

Question wording on intent: *As you came to the end of your pregnancy, how had you hoped to feed your baby?* Options: *Breastfeeding alone; Formula only; A combination of breastfeeding and formula*

Question wording on practice: *One week after you gave birth, how were you feeding your baby?* Options: *Breastfeeding alone; Formula only; A combination of breastfeeding and formula*

Table 2. Exclusive Breastfeeding: Prenatal Intention vs. Behavior at 1 Week, stratified by Parity and Background Variables

	Parity = 1			Parity = 2+		
	Intent %	1 Week %	n	Intent %	1 Week %	n
ALL	70	50	519	57	53	1054
Characteristics						
Age						
18-24	62	45	201	52	46	234
25-34	76	54	264	59	53	567
35+	67	47	55	59	57	253
	(p=.012)	(p=.036)		(p=.343)	(p=.042)	
Education						
High school or less	55	37	198	51	44	489
Some college	69	48	137	57	53	311
College graduate	85	64	185	69	68	252
	(p=.000)	(p=.000)		(p=.000)	(p=.000)	
Income						
<$25,000	51	33	118	46	37	230
$25,000 -- $49,999	78	49	116	62	54	296
$50,000 -- $74,999	69	51	88	53	55	206
$75,000+	85	65	153	66	62	258
	(p=.000)	(p=.000)		(p=.000)	(p=.000)	
Race/Ethnicity						
White non-Hispanic	76	59	324	60	54	656
Black non-Hispanic	59	33	61	50	47	129
Hispanic	59	32	112	53	54	218
	(p=.000)	(p=.000)		(p=.002)	(p=.000)	
Region						
Northeast	75	48	79	62	54	154
Midwest	73	56	118	47	50	222
South	68	49	139	58	49	330
West	79	57	107	67	63	215
	(p=.387)	(p=.537)		(p=.000)	(p=.000)	
Current Employment Status						
Employed Full-Time	69	55	165	48	46	250
Employed Part-Time	78	51	89	52	46	133
Self-employed	60	50	15	77	73	52
Not working	68	45	251	60	55	619
	(p=.000)	(p=.002)		(p=.000)	(p=.003)	
Insurance Payer for Birth						
Private paid all or some	76	54	318	62	60	622
Medicaid paid all or some	60	38	183	49	41	407
	(p=.000	(p=.000)		(p=.000)	(p=.000)	

*p values based on Chi Square for comparisons within parity and demographic grouping

Table 3 Percent of mothers achieving stated intention to exclusively breastfeed**

	Parity = 1 % (n)	Parity = 2+ % (n)
ALL	65 (338)	83 (577)
Maternal Experiences		
Pregnancy Intention		
Planned	65 (196)	84 (278)
Unplanned	64 (142)	82 (297)
	*(p=.816)	(p=.535)
Took CBE Classes?		
Yes	65 (219)	82 (50)
No	65 (118)	83 (527)
	(p=.939)	(p=.923)
PNC Provider		
Obstetrician	68 (278)	82 (441)
Family Medicine Doctor	33 (21)	87 (38)
Midwife	58 (26)	78 (74)
	(p=.004)	(p=.534)
Had an Epidural?		
Yes	64 (289)	80 (419)
No	68 (47)	89 (156)
	(p=.588)	(p=.010)
Method of Delivery		
Spontaneous Vaginal	71 (183)	87 (383)
Assisted Vaginal	76 (38)	79 (33)
Cesarean	52 (114)	74 (154)
	(p=.001)	(p=.001)
Where was baby in first hrs after birth?		
In mother's arms	69 (93)	90 (268)
In partner's arms	73 (64)	77 (83)
With staff	61 (163)	77 (217)
	(p=.144)	(p=.000)
Rooming In?		
Yes	69 (229)	86 (431)
No	57 (108)	72 (146)
	(p=.045)	(p=.000)
Postpartum Length of Stay		
2 days or less	71 (173)	87 (364)
More than 2 days	60 (131)	72 (157)
	(p=.035)	(p=.000)

*p values based on Chi Square for comparisons within parity and demographic grouping

** Among those mothers who intended to exclusively breastfeed, percentage who achieved this goal as of 1 week after birth, stratified by prenatal and birth related factors and excluding mothers of babies admitted to the NICU.

Table 4 Hospital practices, as reported by mothers intending to exclusively breastfeed*

	Parity = 1	Parity = 2+	All
Hospital Practices	(n=338)	(n=577)	(n=915)
On the whole would you say the staff (BFHI #3)	%	%	%
Encouraged Breastfeeding	81	73	76
Encouraged Formula Feeding	5	1	2
Expressed no preference	15	26	22
Hospital Practices^			
Helped you get started breastfeeding when you and your baby were ready (BFHI # 4)	89	70	77
Gave you free formula samples or offers†	74	61	65
Showed you how to position your baby to limit nipple soreness (BFHI # 5)	78	59	66
Encouraged you to feed "on demand" (BFHI # 8)	80	75	77
Told you about community breastfeeding support resources for ongoing help (BFHI # 10)	69	64	65
Provided formula or water to supplement your breast milk (BFHI # 6)	49	29	37
Gave your baby a pacifier (BFHI # 9)	45	40	42

* excluding mothers with babies in the NICU
^ Most closely related Baby-Friendly Hospital Initiative (BFHI) Step noted in parentheses
† Violates International Code of Marketing Breast-milk Substitutes

Table 5 Percent of mothers who intended to exclusively breastfeed who were breastfeeding at 1 week by hospital practices related to breastfeeding**

	Parity = 1		Parity = 2+	
Hospital Practices	Hospital Did Practice % (n)	Hospital Did not do Practice % (n)	Hospital Did Practice % (n)	Hospital Did not do Practice % (n)
Helped you get started breastfeeding when you and your baby were ready	69 (301)	33 (36)	83 (403)	82 (173)
	(p=.000)*		(p=.691)	
Gave you free formula samples or offers	61 (249)	74 (90)	77 (349)	92 (228)
	(p=.002)		(p=.000)	
Showed you how to position your baby to limit nipple soreness	69 (263)	49 (75)	82 (339)	83 (238)
	(p=.002)		(p=.883)	
Encouraged you to feed "on demand"	69 (271)	50 (66)	87 (432)	70 (144)
	(p=.004)		(p=.000)	
Told you about community breastfeeding support resources for ongoing help	73 (231)	48 (106)	84 (367)	81 (210)
	(p=.000)		(p=.334)	
Provided formula or water to supplement your breast milk	49 (166)	81 (172)	56 (169)	94 (407)
	(p=.000)		(p=.000)	
Gave your baby a pacifier	57 (152)	71 (186)	82 (228)	83 (349)
	(p=.009)		(p=.640)	
Hospital Staff Attitude	Parity = 1 (n=337)		Parity = 2 (n=557)	
Hosp. Staff Encouraged Breastfeeding	67		85	
Hosp. Staff Encouraged Formula	40		80	
Hosp. Staff Expressed No Preference	60		78	
	(p=.071)		(p=.115)	

*p values reflect Chi Square test on comparisons of within parity group breastfeeding rate at one week across hospital practices

** excluding mothers with babies in the NICU

REFERENCES

[1] Ip S, Chung M, Raman G, Chef P, Magula A, DeVine D, Trikalinos T, Lau J. for Agency for Healthcare Research and Quality. Evidence Report/Technology Assessment Number 153: Breastfeeding and Maternal and Infant Health Outcomes in Developed Countries, AHRQ Publication, 2007.

[2] Jones G, Steketee RW, Black RE, Bhutta ZA, Morris SS; Bellagio Child Survival Study Group. How many child deaths can we prevent this year? *Lancet.* 2003;362:65-71.

[3] Horta B, Bahl R, Martines J, Victora C. Evidence on the long-term effects of breastfeeding: Systematic reviews and meta-analyses. WHO, Geneva, 2007.

[4] Labbok MH. Effects of breastfeeding on the mother. *Pediatr Clin North Am*. 2001 Feb;48(1):143-58; Labbok M Breastfeeding: a woman's reproductive right. *Int J Gynaecol Obstet*. 2006;94(3):277-86.

[5] Gartner LM, Morton J, Lawrence RA, Naylor AJ, O'Hare D, Schanler RJ, et al. Breastfeeding and the use of human milk. *Pediatrics* 2005;115:496-506.

[6] ACOG Committee for Healthcare of Underserved Women and Committee on Obstetrical Practices. Special report from ACOG. Breastfeeding: Maternal and Infant Aspects. Clinical Review Vol 12, Issue 1 Supplement, Jan/Feb 2007

[7] APHA Supports the Health and Human Services Blueprint for Action on Breastfeeding Policy Date: 1/1/2001. Policy Number: 200114 http://www.apha.org/advocacy/policy/policysearch/default.htm?id=253,Accessed June 2007

[8] WHO/UNICEF Global Strategy for Infant and Young Child Feeding, WHO, 2003

[9] Moreland J, Coombs J. Promoting and supporting breast-feeding. Am Fam Physician 2000;61(7):2093-100, 2103-4; American Academy of Family Physicians. Breastfeeding (Policy

Statement). 2001; American Academy of Family Physicians. Breastfeeding (Position Paper). 2001.

[10] Academy of Breastfeeding Medicine. Mission Statement; 2006. www.bfmed.org. Accessed on Nov 7, 2006.

[11] American College of Nurse Midwives. Position Statement: Breastfeeding. Silver Spring, MD: American College of Nurse Midwives; 2004 Feb.

[12] CDC. Breastfeeding Practices — Results from the 2005 National Immunization Survey. http://www.cdc.gov/breastfeeding/data/NIS_data/data_2005.htm, Accessed June 2007

[13] CDC. Breastfeeding Practices — Results from the 2005 National Immunization Survey. http://www.cdc.gov/breastfeeding/data/NIS_data/data_2005.htm, Accessed June 2007

[14] Joint WHO/UNICEF Statement. *Protecting, Promoting and Supporting Breastfeeding: The Special Role of Maternity Services,* WHO, 1990.

[15] WHO Code of Marketing of Breast-milk Substitutes, http://www.who.int/nutrition/publications/code_english.pdf, Accessed June 2007.

[16] WHO/UNICEF BFHI: Revised and Updated Materials, 2006. http://www.unicef.org/nutrition/index_24850.html, accessed June 2007

[17] Kramer MS, Chalmers B, Hodnett ED, Sevkovskaya Z, Dzikovich I, Shapiro S, Collet JP, Vanilovich I, Mezen I, Ducruet T, Shishko G, Zubovich V, Mknuik D, Gluchanina E, Dombrovskiy V, Ustinovitch A, Kot T, Bogdanovich N, Ovchinikova L, Helsing E; PROBIT Study Group (Promotion of Breastfeeding Intervention Trial). Promotion of Breastfeeding Intervention Trial (PROBIT): a randomized trial in the Republic of Belarus. *JAMA.* 2001; 285(4):413-20.

[18] Declercq ER, Sakala C, Corry MP, Applebaum S. *Listening to Mothers II: report of the second national U.S. survey of women's childbearing experiences*. New York, Childbirth Connection, 2006. Available at http://www.childbirthconnection.org/listeningtomothers/.

[19] Declercq ER, Cunningham D, Johnson C, Sakala C. Mothers' Reports of postpartum pain associated with vaginal and cesarean deliveries: Results of a national survey. *Birth*. 2008 (in press)

[20] Martin JA, Hamilton BE, Sutton PD, Ventura SJ, Menacker F, Kimeyer S. Births: final data for 2004. Natl Vital Stat Rep 2006;55(1). Hyattsville, MD: National Center for Health Statistics.

[21] CDC. Breastfeeding Practices — Results from the 2005 National Immunization Survey. http://www.cdc.gov/breastfeeding/data/NIS_data/data_2005.htm, Accessed June 2007

[22] WHO/UNICEF BFHI: Revised and Updated Materials, 2006 http://www.unicef.org/nutrition/index_24850.html, accessed June 2007

[23] SPSS 13 for Windows. SPSS Inc. Chicago, Ill.

[24] Donnelly A, Snowden HM, Renfrew MJ, Woolridge MW. Commercial hospital discharge packs for breastfeeding women. Cochrane Database Syst Rev. 2000;(2):CD002075.

[25] Smith, S. Romney ousts 3 at health council: Gone are backers of a ban on infant formula giveaways. *Boston Globe*. May 20, 2006.

[26] DeGirolamo AM, Grummer-Strawn LM, Fein S. Do perceived attitudes of physicians and hospital staff affect breastfeeding decisions? *Birth*. 2003;30(2):94-100..

[27] CDC. Maternity Care Practices Survey. http://www.cdc.gov/breastfeeding/data/maternity_care.htm, accessed June 2007.

[28] WHO. Evidence for the Ten Steps to Successful Breastfeeding. WHO/CHD/98.9, WHO, 1998.

[29] Pérez-Escamilla, R., Segura-Millán, S., Canahuati, J. and Allen, H. Prelacteal feeds are negatively associated with breast-feeding outcomes in Honduras. *Journal of Nutrition.1996;* 126:2765-2773.

[30] Giovannini M, Riva E, Banderali G, et al. Exclusive versus predominant breastfeeding in Italian maternity wards and feeding practices through the first year of life. *J Hum Lact.2005;* 21:259-65.

[31] Anderson AK, Damio G, Chapman DJ, Perez-Escamilla R. Differential response to an exclusive breastfeeding peer counseling intervention: the role of ethnicity. *J Hum Lact*. 2007;23:16-23.

[32] Bonuck KA, Trombley M, Freeman K, McKee D. Randomized, controlled trial of a prenatal and postnatal lactation consultant intervention on duration and intensity of breastfeeding up to 12 months. Pediatrics. 2005;116:1413-26.

[33] Coutinho SB, de Lira PI, de Carvalho Lima M, Ashworth A. Comparison of the effect of two systems for the promotion of exclusive breastfeeding. *Lancet*. 2005;366:1094-100.

[34] Couper M. Web surveys: a review of issues and approaches. *Public Opinion Quarterly* 2000; 64:464-494.

[35] Yawn BP, Suman VJ, Jacobsen SJ. Maternal recall of distant pregnancy events. *J Clin Epidemiol* 1998; 51:399-405.

[36] Ryan AS, Zhou W, Gaston MH. Regional and sociodemographic variation of breastfeeding in the United States, 2002. *Clin Pediatr (Phila).* 2004;43(9):815-24.