Baby-Friendly Hospital Accreditation, In-Hospital Care Practices, and Breastfeeding

WHAT’S KNOWN ON THIS SUBJECT: Baby-Friendly Hospital Initiative (BFHI) accreditation can have a positive effect on breastfeeding initiation and continuation rates; however, little is known about the effect of BFHI accreditation in populations with high breastfeeding-initiation rates and where infant-friendly practices are common.

WHAT THIS STUDY ADDS: BFHI accreditation per se does not improve breastfeeding rates at 1 and 4 months when breastfeeding-initiation rates are high and accredited and nonaccredited hospitals have infant-friendly practices. Baby-friendly practices are more important than accreditation.

abstract

OBJECTIVES: To investigate the effect of Baby-Friendly Hospital Initiative (BFHI) accreditation and hospital care practices on breastfeeding rates at 1 and 4 months.

METHODS: All women who birthed in Queensland, Australia, from February 1 to May 31, 2010, received a survey 4 months postpartum. Maternal, infant, and hospital characteristics; pregnancy and birth complications; and infant feeding outcomes were measured.

RESULTS: Sample size was 6752 women. Breastfeeding initiation rates were high (96%) and similar in BFHI-accredited and nonaccredited hospitals. After adjustment for significant maternal, infant, clinical, and hospital variables, women who birthed in BFHI-accredited hospitals had significantly lower odds of breastfeeding at 1 month (adjusted odds ratio 0.72, 95% confidence interval 0.58–0.90) than those who birthed in non–BFHI-accredited hospitals. BFHI accreditation did not affect the odds of breastfeeding at 4 months or exclusive breastfeeding at 1 or 4 months. Four in-hospital practices (early skin-to-skin contact, attempted breastfeeding within the first hour, rooming-in, and no in-hospital supplementation) were experienced by 70% to 80% of mothers, with 50.3% experiencing all 4. Women who experienced all 4 hospital practices had higher odds of breastfeeding at 1 month (adjusted odds ratio 2.20, 95% confidence interval 1.78–2.71) and 4 months (adjusted odds ratio 2.93, 95% confidence interval 2.40–3.60) than women who experienced fewer than 4.

CONCLUSIONS: When breastfeeding-initiation rates are high and evidence-based practices that support breastfeeding are common within the hospital environment, BFHI accreditation per se has little effect on both exclusive or any breastfeeding rates. Pediatrics 2013;131:685–692
In 1989, the Ten Steps to Successful Breastfeeding were formulated to address the negative impact of maternity health care practices on breastfeeding initiation, exclusivity, and maintenance. These Ten Steps were used as operational targets for hospitals and became the basis for the Baby-Friendly Hospital Initiative (BFHI) in 1991. Implementation of BFHI accreditation resulted in increases in initiation, exclusive, and any breastfeeding rates in the early postpartum period, particularly when breastfeeding rates were initially low. However, some studies failed to show a sustained increase in breastfeeding after BFHI accreditation. In addition, some authors argue that there is little evidence that BFHI accreditation influences breastfeeding duration in developed countries with high breastfeeding initiation rates.

The latest Organization for Economic Co-operation and Development report, released in 2009, showed that Australian breastfeeding rates were similar to many other Organization for Economic Co-operation and Development countries, but substantially higher than those in the United States and the United Kingdom. More recent studies continue to show a disparity between breastfeeding rates at initiation and 6 months between Australia (96% and 64% respectively) and the United States (76.9% and 47.2%) and the United Kingdom (81% initiation). Australian initiation and 6-month rates have increased from 86.0% and 46.8% respectively in 1995 to 96.0% and 64.0% in 2010. BFHI hospitals also increased from 1 in 1995 to 76 hospitals (accounting for 30% of all births) by 2012. Whether increases in breastfeeding rates can be attributed to BFHI accreditation, changes in breastfeeding practices, or other reasons is uncertain.

The aim of this article was to investigate whether BFHI accreditation or hospital care practices affected 1-month and 4-month breastfeeding rates when breastfeeding initiation rates are high, using data from the Having a Baby in Queensland Survey in Queensland, Australia.

METHODS

Participants
Participants were women who completed the 2010 Having a Baby in Queensland Survey, a retrospective cohort study of women birthing in Queensland, Australia. All women who (1) had a live single or multiple birth in Queensland from February 1 to May 31, 2010, (2) did not have a neonatal death, and (3) had an accurate mailing address in their Queensland Registry of Births, Deaths, and Marriages records, were mailed a survey ∼4 months postpartum. Women could complete the survey on paper and return by reply-paid mail, over the telephone (using a translator if required), or via a secure online survey system. Reminder/thank-you slips were mailed to all participants 2 weeks after the initial survey. Ethical approval for the survey was obtained from the Behavioral and Social Sciences Ethical Review Committee of the University of Queensland.

Measures

BFHI Accreditation
Hospitals that were BFHI accredited at the time of the survey were identified and BFHI accreditation (yes/no) for the hospital in which women birthed was derived from their reported birth facility.

Breastfeeding
The first of 2 items about infant feeding asked “How old was your baby when he or she last had breast milk?” with responses of “in the last 24 hours,” “my baby has never had breast milk,” or the number of days, weeks, or months. Time of cessation of breastfeeding was converted to weeks.

Variables for any breastfeeding at 1 and 4 months were derived by adding the participants who were breastfeeding at survey completion with those who had ceased breastfeeding after 1 or 4 months. One month was chosen to assess the effect of BFHI accreditation on early breastfeeding, whereas 4 months captured most women who completed the survey.

Exclusive breastfeeding rates at 1 and 4 months were calculated based on any breastfeeding classification excluding participants whose infants had received other foods or fluids (except vitamins, mineral supplements, or medicine) from birth to 1 or 4 months.

Baby-Friendly Practices
The survey asked about 4 baby-friendly practices: (1) rooming-in (all the time), (2) time to the first attempted breastfeed (within 60 minutes), (3) supplementation in hospital, and (4) skin-to-skin contact (at the first contact). Participants were coded as having experienced, or not having experienced, each of these practices. As the Ten Steps work synergistically, we devised a variable to assess the number of these infant-friendly practices experienced (range: 0–4).

Nonmodifiable Maternal and Infant Characteristics
Three categories of relative socioeconomic disadvantage were derived based on deciles of Socioeconomic Index for...
A dichotomous education variable was derived to reflect whether women had completed secondary-level education (ie, year 12 or equivalent) or not.

Area of residence was assessed based on Accessibility/Remoteness Index of Australia classification with 4 categories (major city, inner regional, outer regional, remote and very remote).

Women were asked to report their own country of birth and responses were coded as Australia or Other Country. Maternal age at time of giving birth (in years) was calculated by subtracting infant date of birth from maternal date of birth.

Dichotomous variables were derived for parity (primiparous and multiparous), infant gestational age at birth (<37 weeks’ gestation) and ≥37 weeks’ gestation), and birth weight (<2500 g and ≥2500 g).

Clinical Variables

Women indicated if they experienced pregnancy complications, including gestational diabetes mellitus, hypertension, preeclampsia, and depression. A dichotomous variable was created to reflect whether women had a vaginal or cesarean birth.

Women were asked about use of pain relief (injection of opioids, epidural or spinal anesthesia, and general anesthesia) in labor and birth. Responses were coded “no” if they did not use the medication and “yes” if they had.

Women could indicate whether they experienced complications during labor or birth, including emergency transfer of the mother; maternal admission to intensive care; postpartum hemorrhage; retained placenta; the labor failed to progress; or the infant was breech, distressed, became “stuck,” had to be resuscitated, or was admitted to special care.

Hospital Variables

Type of hospital for birth (ie, public facility or private facility) was assessed dichotomously.

Length of hospital stay after birth was categorized as <24 hours, 1 to 2 nights, 3 to 4 nights, or ≥5 nights.

Statistical Analysis

Results were analyzed by using SPSS for Windows (version 20.0) (SPSS Inc, Chicago, IL). Participant characteristics were presented as means or numbers and percentages. Demographics were compared with those available for the total Queensland population of birthing women using χ² test for discrete variables and t test for continuous variables.

Univariate logistic regression was used to determine the relationships between BFHI accreditation and breastfeeding and infant-friendly practices. Univariate logistic regression also assessed the relationship between breastfeeding and (1) nonmodifiable maternal and infant characteristics, (2) clinical variables, and (3) hospital variables. Variables that were significant in the unadjusted analysis at P < .1 were included in the final regression model for BFHI accreditation and hospital practices (any breastfeeding only); α was set at 0.05 for all analyses.

Only participants who had initiated breastfeeding were included in the analyses predicting hospital practices and in the multivariate logistic regression to predict breastfeeding.

RESULTS

Participants

Of 20,056 eligible women invited to complete the survey, 7194 provided usable data (response rate 35.8%). Another 442 women were excluded because of uncertainty of the age of the infant at survey completion (n = 240), no or unreliable breastfeeding data (n = 102), or no recorded birth facility (n = 100), leaving a study cohort of 6752. Compared with the total population of women birthing in Queensland in 2009, respondents in the sample were older (mean 30.4 years versus mean 29.2 years, t [6397] = 18.14, P < .001). Further details are found in Table 1.

Breastfeeding

Breastfeeding initiation rate was 96.1% and dropped to 84.0% at 1 month and 68.5% at 4 months. Exclusive breastfeeding rates declined from 53.5% at 1 month to 31.4% at 4 months.

BFHI Hospitals

At the time of the survey, 11 of 41 birthing facilities in Queensland were BFHI accredited. About one-fifth of participants (n = 1457; 21.6%) birthed in a BFHI-accredited hospital (BFHI hospital) compared with 21.3% of all women who birthed in Queensland during the sampling period (χ² [1] = 1.24 P = .27).

Neither of the 2 largest hospitals in the state were accredited at the time of the survey; however, other large tertiary hospitals were accredited and the mix of accredited and nonaccredited hospitals was similar. Women birthing in BFHI hospitals were younger (mean = 30.66 years non-BFHI hospital, mean = 29.51 years BFHI hospital, t [6396] = 7.19, P < .001). Further details are found in Table 2.

Each of the 4 baby-friendly practices studied were experienced by between 70% and 80% of women (see Table 3). They occurred more frequently in BFHI hospitals. Furthermore, women birthing in BFHI hospitals had significantly higher odds of experiencing 2, 3, or 4 of these practices than if they birthed in a non–BFHI-accredited hospital (non-BFHI hospital) (see Table 3).

BFHI Status and Breastfeeding Rates

Breastfeeding initiation did not differ according to BFHI accreditation (see
Table 3); however, women who birthed in a BFHI hospital had significantly lower odds of breastfeeding at 1 and 4 months. After adjustment for non-modifiable maternal and infant characteristics, and clinical and hospital variables significant in univariate analysis, women who birthed in a BFHI hospital continued to have significantly lower odds of breastfeeding at 1 month, but there was no difference in odds of breastfeeding at 4 months (Table 4).

In contrast, women who birthed in a BFHI hospital had higher odds of exclusively breastfeeding at 1 month, although this did not persist to 4 months (see Table 3). After multivariate analysis, there was no difference between women who birthed at a BFHI or a non-BFHI hospital in the odds of exclusive breastfeeding at 1 or 4 months (see Table 4).

Analyses were repeated to include 6 hospitals accredited between the time of the survey and the time of analysis to account for hospitals preparing for accreditation. The results were unchanged.

Table 1

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Survey Population (n = 6752) %</th>
<th>Total Population23 (n = 61,021) %</th>
<th>P</th>
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</thead>
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<tr>
<td>Parity</td>
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<tr>
<td>Primiparous</td>
<td>45.9</td>
<td>40.4</td>
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<tr>
<td>Multiparous</td>
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<td>.26</td>
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<tr>
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<td>Cesarean delivery</td>
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<td>&lt;24 h</td>
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<td>≥5</td>
<td>24.6</td>
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</table>

Table 1: Characteristics of Survey Population

DISCUSSION

This is the first Australian study assessing the impact of BFHI accreditation on any and exclusive breastfeeding in the short and medium term and on the relationship among infant-friendly practices, BFHI accreditation, and breastfeeding.

Even after adjusting for other factors known to be associated with breastfeeding discontinuation, the results contradict the view that BFHI accreditation improves breastfeeding rates, at least in a context of high breastfeeding initiation rates and when infant-friendly practices are embedded within the community. However, our findings demonstrate that experiencing infant-friendly practices improves breastfeeding rates at 1 and 4 months. It also confirms that having BFHI accreditation increases the odds of a woman experiencing infant-friendly practices.

BFHI Accreditation

Although breastfeeding initiation was similar in BFHI and non-BFHI facilities and other variables that affect breastfeeding were adjusted for, women who birthed in a BFHI hospital were less likely to be breastfeeding at 1 month and BFHI accreditation made no difference to breastfeeding rates at 4 months or exclusive breastfeeding rates at 1 or 4 months.

These results are in contrast to most other studies that assessed the impact of BFHI accreditation. Studies in the United States, the Czech Republic, and Scotland found that women who birthed in BFHI hospitals were more likely to initiate breastfeeding,7,8 to be breastfeeding at hospital discharge,6,24 and to be breastfeeding at 7 days.5 BFHI accreditation was also associated with an increase in exclusive breastfeeding. After adjusting for significant univariate associations, including BFHI accreditation, women who experienced all 4 infant-friendly practices studied had 3 times the odds (adjusted odds ratio 3.04, 95% confidence interval 2.01–4.60) of any breastfeeding at 1 month and 4.5 times the odds at 4 months (adjusted odds ratio 4.53, 95% confidence interval 3.08–6.67) than women who experienced no practices. There was a dose-response association between the total number of infant-friendly practices experienced and women’s odds of breastfeeding at 4 months when the number of hospital practices experienced exceeded 1 practice. At 1 month, there was only a difference between experiencing 4 practices relative to 3 (see Table 5).
breastfeeding up to 6 months\textsuperscript{3,14,25–27} and any breastfeeding to 12\textsuperscript{27} and 24 months,\textsuperscript{10} whereas a large study in Switzerland found an increase in the duration of exclusive and full breastfeeding.\textsuperscript{8} In many of these studies, initial breastfeeding rates were lower than in this study (eg, 58\%,\textsuperscript{8} 43\%). In addition, the proportion of women experiencing baby-friendly practices was lower, allowing more room for improvement. For example, rates for no supplementation in hospital varied from <20\%\textsuperscript{28,29} to 40.5\%.\textsuperscript{30,31}

In contrast, the Millennium Cohort Study found that, although breastfeeding initiation rates were higher in BFHI hospitals, this difference disappeared by 1 month.\textsuperscript{11} Additionally, in Turkey, exclusive breastfeeding rates up to 6 months did not improve with BFHI accreditation.\textsuperscript{10} There is no simple explanation for why the odds of breastfeeding were lower at 1 month for women who birthed in BFHI hospitals. Some women may have initiated breastfeeding although they did not intend to continue breastfeeding after discharge, leading to a drop in breastfeeding rates within the first month. Additionally, some hospitals may have become accredited to improve low breastfeeding rates. Although their breastfeeding initiation rates have risen, women who birth at these hospitals may lack sufficient breastfeeding support after discharge to continue to breastfeed. Without access to historical or facility-level data or women's breastfeeding intention, we are unable to confirm these hypotheses.

The similarities of the other breastfeeding outcomes between BFHI and non-BFHI hospitals may be because of a number of factors. First, breastfeeding initiation rates were very high in BFHI and non-BFHI hospitals and it may be unrealistic to expect a further increase after accounting for women who are unable or do not wish to breastfeed; however, other studies with high initiation rates have still found a difference in breastfeeding duration.\textsuperscript{27} Second, the 4 infant-friendly practices investigated were common in BFHI and non-BFHI hospitals. Although these practices were statistically more common in BFHI hospitals, the difference may not be clinically significant or there may not have been a difference if other maternal, infant, and birth factors were adjusted for. Third, we were unable to ascertain the compliance of infant-friendly practices in individual hospitals, although our data, taken from maternal recall, indicate actual practice.\textsuperscript{32} Furthermore, we studied only 4 infant-friendly practices. Other practices may not work synergistically with those we studied or hospitals may be less compliant with other practices. Merten et al\textsuperscript{9} found a difference in breastfeeding outcomes between BFHI hospitals that had high or

\begin{table}[h]
\centering
\caption{Characteristics of Women Birthing in Non-BFHI and BFHI-Accredited Hospitals}
\begin{tabular}{lcccc}
\hline
& Non-BFHI, %, n = 5295 & BFHI, %, n = 1457 & Unadjusted OR (95\% CI) \\
\hline
Parity & & & \\
Primiparous & 46.2 & 44.9 & 1 \\
Multiparous & 53.8 & 55.1 & 1.05 (0.94–1.18) \\
Country of birth & & & \\
Australia & 80.6 & 78.3 & 1 \\
Other country & 19.4 & 20.7 & 1.08 (0.94–1.25) \\
Secondary education & & & \\
Not completed & 8.6 & 14.1 & 1.74 (1.46–2.08)** \\
Completed & 91.4 & 85.9 & 1 \\
Area of residence & & & \\
Major city & 68.6 & 47.5 & 1 \\
Inner regional & 20.5 & 15.0 & 1.06 (0.9–1.26) \\
Outer regional & 8.6 & 34.9 & 5.87 (5.04–6.84)** \\
Remote and very remote & 2.3 & 2.5 & 1.53 (1.06–2.28)* \\
Socioeconomic disadvantage & & & \\
High & 26.4 & 25.5 & 1 \\
Medium & 33.8 & 52.0 & 1.59 (1.38–1.84)** \\
Low & 39.9 & 22.5 & 0.58 (0.50–0.69)* \\
Infant gestational age & & & \\
<37 wk & 7.9 & 6.9 & 0.87 (0.69–1.08) \\
\geq 37 wk & 92.1 & 93.1 & 1 \\
Infant birth weight & & & \\
<2500 g & 5.0 & 4.8 & 0.92 (0.69–1.20) \\
\geq 2500 g & 95.0 & 95.2 & 1 \\
Method of birth & & & \\
Vaginal & 64.0 & 70.9 & 1 \\
Cesarean delivery & 36.0 & 29.1 & 0.73 (0.64–0.83)** \\
Opioid analgesia & & & \\
No & 76.4 & 70.2 & 1 \\
Yes & 23.6 & 29.8 & 1.37 (1.20–1.58)** \\
Epidural anesthesia & & & \\
No & 48.5 & 60.4 & 1 \\
Yes & 51.5 & 39.6 & 0.62 (0.55–0.70)** \\
General anesthesia & & & \\
No & 96.1 & 96.9 & 1 \\
Yes & 3.9 & 3.1 & 0.79 (0.55–1.13) \\
Type of facility & & & \\
Public & 51.2 & 81.0 & 1 \\
Private & 48.8 & 19.0 & 0.25 (0.21–0.28)** \\
Length of stay & & & \\
<24 h & 4.5 & 6.0 & 1 \\
1–2 nights & 24.1 & 37.1 & 1.16 (0.89–1.52) \\
3–4 nights & 45.4 & 37.5 & 0.62 (0.48–0.81)** \\
\geq 5 nights & 26.0 & 19.4 & 0.56 (0.43–0.74)** \\
\hline
\end{tabular}
\end{table}
TABLE 3 Univariate Associations Between BFHI Status and Breastfeeding Rates and Practices

<table>
<thead>
<tr>
<th></th>
<th>All (n = 6752)</th>
<th>Non-BFHI, n = 5295</th>
<th>BFHI, n = 1457</th>
<th>Unadjusted OR (95%CI)</th>
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<td>3.8</td>
<td>4.1</td>
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<td>96.1</td>
<td>96.2</td>
<td>95.9</td>
<td>0.92 (0.69–1.24)</td>
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<td><strong>Any BF at 1 mo</strong></td>
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<td></td>
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<td>15.2</td>
<td>18.9</td>
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<td>Yes</td>
<td>84.0</td>
<td>84.8</td>
<td>81.1</td>
<td>0.77 (0.66–0.90)     **</td>
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<td>53.5</td>
<td>52.4</td>
<td>57.6</td>
<td>1.24 (1.10–1.39)     ***</td>
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<td><strong>Any BF at 4 mo</strong></td>
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<td>62.9</td>
<td>0.82 (0.73–0.93)     **</td>
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<td>Yes</td>
<td>31.4</td>
<td>31.5</td>
<td>31.1</td>
<td>0.98 (0.87–1.11)</td>
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<td>Yes</td>
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<td>70.9</td>
<td>79.0</td>
<td>1.54 (1.34–1.78)     ***</td>
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<td>77.9</td>
<td>82.7</td>
<td>1.36 (1.17–1.59)     ***</td>
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<td>83.8</td>
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<td>7.7</td>
<td>8.5</td>
<td>5.3</td>
<td>1.52 (0.95–2.43)</td>
</tr>
<tr>
<td>2</td>
<td>13.0</td>
<td>13.7</td>
<td>11.5</td>
<td>1.65 (1.24–2.21)     ***</td>
</tr>
<tr>
<td>3</td>
<td>24.0</td>
<td>25.1</td>
<td>22.0</td>
<td>1.45 (1.18–1.79)     ***</td>
</tr>
<tr>
<td>4</td>
<td>49.3</td>
<td>47.8</td>
<td>59.2</td>
<td>1.88 (1.61–2.19)     ***</td>
</tr>
</tbody>
</table>

Reference category is non-BFHI. BF, breastfeeding; CI, confidence interval; OR, odds ratio. ** P < .01. *** P < .001.

* Analysis conducted on participants who initiated breastfeeding.

TABLE 4 Association Between BFHI Accreditation and Any and Exclusive Breastfeeding at 1 and 4 Months

<table>
<thead>
<tr>
<th>BFHI Accreditation</th>
<th>n</th>
<th>%</th>
<th>Unadjusted OR (95% CI)</th>
<th>Adjusted OR (95% CI)</th>
<th>%</th>
<th>Unadjusted OR (95% CI)</th>
<th>Adjusted OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Breastfeeding at 1 mo</td>
<td></td>
<td></td>
<td>Breastfeeding at 4 mo</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>5093</td>
<td>88.1</td>
<td>1</td>
<td>1^</td>
<td>70.1</td>
<td>1</td>
<td>1^</td>
</tr>
<tr>
<td>Yes</td>
<td>1397</td>
<td>94.6</td>
<td>0.74 (0.63–0.88)^***</td>
<td>0.72 (0.58–0.90)^**</td>
<td>65.6</td>
<td>0.81 (0.72–0.92)^**</td>
<td>0.90 (0.76–1.07)</td>
</tr>
<tr>
<td>Exclusive BF at 1 mo</td>
<td></td>
<td></td>
<td>Excluded</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>4951</td>
<td>54.5</td>
<td>1</td>
<td>1^</td>
<td>52.8</td>
<td>1</td>
<td>1^</td>
</tr>
<tr>
<td>Yes</td>
<td>1567</td>
<td>60.1</td>
<td>1.26 (1.11–1.42)^***</td>
<td>1.14 (0.97–1.34)</td>
<td>52.4</td>
<td>0.99 (0.87–1.12)</td>
<td>1.17 (0.99–1.38)</td>
</tr>
</tbody>
</table>

CI, confidence interval; OR, odds ratio. ** P < .01. *** P < .001.

* Adjusted for variables significant in univariate analysis: maternal age; level of education; remoteness; relative socioeconomic disadvantage; gestational diabetes; hypertension or depression in pregnancy; infant being “stuck” during labor; having opioid, epidural, or general analgesia/anesthesia during labor or birth; and birthing at a public or private facility.

* Adjusted for variables significant in univariate analysis: maternal age; country of birth; level of education; remoteness; Socioeconomic Index for Areas relative socioeconomic disadvantage; infant gestational age and birth weight; method of birth; hypertension or depression in pregnancy; postpartum hemorrhage; infant being distressed or “stuck” during labor; emergency transfer of the mother; having opioid, epidural, or general analgesia/anesthesia during labor or birth; infant being admitted to special care; birthing at a public or private facility; and length of hospital stay.

* Adjusted for variables significant in univariate analysis: maternal age; parity; secondary education; remoteness; relative socioeconomic disadvantage; infant gestational age and birth weight; maternal gestational diabetes; hypertension or depression in pregnancy; method of birth; having opioid, epidural, or general analgesia/anesthesia during labor or birth; infant being breech, distressed, or “stuck” during labor or needing resuscitation; mother needing emergency transfer during labor or being admitted to intensive care; infant being admitted to special care; birthing at a public or private facility; and length of hospital stay.

* Adjusted for variables significant in univariate analysis: maternal age; secondary education; remoteness; relative socioeconomic disadvantage; infant gestational age and birth weight; maternal gestational diabetes; hypertension or depression in pregnancy; method of birth; having opioid, epidural, or general analgesia/anesthesia during labor or birth; infant being breech, distressed, or “stuck” during labor or needing resuscitation; mother needing emergency transfer during labor or being admitted to intensive care; infant being admitted to special care; birthing at a public or private facility; and length of hospital stay.

In the analysis, we adjusted for many maternal, infant, and birth characteristics known to be associated with breastfeeding. However, it may be that other unmeasured confounders have affected the outcome of this study.

**Baby-Friendly Practices**

In contrast to the effect of BFHI accreditation, women’s odds of any breastfeeding at 4 months increased with the number of baby-friendly practices experienced (except for an increase from none to 1 practice). This association persisted after adjustment for other factors affecting breastfeeding rates, including BFHI accreditation.

These results concur with other studies that found that the more baby-friendly practices women experienced in hospital, the more likely they were to be breastfeeding and exclusively low compliance with the Ten Steps. Qualitative studies have highlighted difficulties for hospital staff in implementing BFHI within their work places33–35 and call into question the ongoing commitment of hospitals to ensure women receive best practice.

Low breastfeeding rates in Australia have been attributed to a lack of support in the hospital setting for breastfeeding, with low compliance with the Ten Steps. Qualitative studies have highlighted difficulties for hospital staff in implementing BFHI within their work places33–35 and call into question the ongoing commitment of hospitals to ensure women receive best practice.

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breastfeeding while in hospital and for varying times after discharge.2,29,30,36–39 These findings strengthen the view that baby-friendly practices have a long-term impact on breastfeeding.

LIMITATIONS

One major limitation of this study is the low response rate of 35%. Sampling via birth notifications with minimal exclusions allowed us to reduce biases associated with sample selection. Although survey respondents were representative of all Queensland women who birthed in 2009 on some of the factors, there were differences in other factors associated with breastfeeding rates that (despite inclusion in the multivariate analysis) might affect the generalizability of our findings. This retrospective survey also relies on maternal recall for hospital practices and feeding data. Most women completed the survey when their infants were 4 to 5 months of age. Maternal recall for breastfeeding initiation and duration is good until the child is 3 years old, but recall of the addition of other foods and fluids is more problematic and may affect the validity of exclusive breastfeeding measurement in this study.40 This study was also unable to account for intrapersonal factors, such as breastfeeding intention and self-efficacy, that may moderate the effect of BFHI accreditation on breastfeeding.

CONCLUSIONS

This study found that BHFI accreditation does not have a positive impact on short- and medium-term breastfeeding rates as initiation rates reach ceiling and BFHI becomes embedded in the community. With hospital, state, and other policies changing to reflect evidence-based practices, the differences between BFHI and non-BFHI hospitals become less distinct and differences in breastfeeding rates may become less apparent. However, BFHI accreditation can play an important role as a quality-improvement strategy, especially in areas where breastfeeding initiation rates are low. Once hospitals become BFHI accredited, it is imperative that they continue to comply with the Ten Steps to maintain best practice. This study highlights the need for other strategies to support breastfeeding in the community so that gains from optimal hospital care can continue and women can attain their breastfeeding goals.41

Not all previous studies have found a positive association between BFHI accreditation and breastfeeding rates. Further work should be undertaken to confirm the results of this study.

ACKNOWLEDGMENTS

This study was conducted as part of the Having a Baby in Queensland Survey Program of the Queensland Centre for Mothers & Babies at The University of Queensland. We are grateful to the Queensland government for funding, to the women who provided survey data, and to the Queensland Registry of Births, Deaths, and Marriages for inviting women to participate on behalf of the Queensland Centre for Mothers & Babies.

TABLE 5 Associations Between Increasing Number of Baby-Friendly Practices Experienced and Any Breastfeeding at 1 Month and 4 Months

<table>
<thead>
<tr>
<th>No. of Infant-Friendly Practices</th>
<th>n</th>
<th>Breastfeeding at 1 mo</th>
<th></th>
<th>Breastfeeding at 4 mo</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>% Unadjusted (95% CI)</td>
<td>Adjusted OR (95% CI)</td>
<td>% Unadjusted (95% CI)</td>
<td>Adjusted OR (95% CI)</td>
</tr>
<tr>
<td>0</td>
<td>267</td>
<td>80.5</td>
<td>1</td>
<td>1</td>
<td>51.3</td>
</tr>
<tr>
<td>1</td>
<td>500</td>
<td>83.8</td>
<td>1.25 (0.85–1.84)</td>
<td>1.23 (0.77–1.97)</td>
<td>58.6</td>
</tr>
<tr>
<td>2</td>
<td>842</td>
<td>82.8</td>
<td>1.04 (0.80–1.35)</td>
<td>1.09 (0.79–1.49)</td>
<td>59.5</td>
</tr>
<tr>
<td>3</td>
<td>1558</td>
<td>85.0</td>
<td>1.21 (0.98–1.47)</td>
<td>1.20 (0.94–1.53)</td>
<td>64.3</td>
</tr>
<tr>
<td>4</td>
<td>3201</td>
<td>91.0</td>
<td>2.07 (1.75–2.44) ***</td>
<td>2.20 (1.78–2.71) ***</td>
<td>77.3</td>
</tr>
</tbody>
</table>

CI, confidence interval; OR, odds ratio. ** P < .01. *** P < .001.

* Adjusted for variables significant in univariate analysis: maternal age; level of education; remoteness; relative socioeconomic disadvantage; gestational diabetes; hypertension or depression in pregnancy; infant being “stuck” during labor; having opioid, epidural, or general analgesia/anesthesia during the birth; birthing at a public or private facility, and BFHI accreditation.

** Adjusted for variables significant in univariate analysis: maternal age; parity; country of birth; level of education; remoteness; relative socioeconomic disadvantage; infant gestational age and birth weight; method of birth; hypertension or depression in pregnancy; postpartum hemorrhage; infant being distressed and “stuck” during labor; emergency transfer of the mother; having opioid, epidural, or general analgesia/anesthesia during labor or birth; infant being admitted to special care; birthing at a public or private facility; length of stay; and BFHI accreditation.

REFERENCES


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Baby-Friendly Hospital Accreditation, In-Hospital Care Practices, and Breastfeeding

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