

The number of Baby Friendly hospital practices experienced by mothers is positively associated with breastfeeding: A questionnaire survey

Li-Yin Chien^{a,*}, Chen-Jei Tai^{b,c}, Kuei-Hui Chu^d, Yi-Li Ko^e, Yueh-Chi Chiu^f

^a*Institute of Community Health Nursing, National Yang-Ming University, 155, Section. 2, Li-Nong St., Pei-Tou, Taipei 11221, Taiwan*

^b*Department of Traditional Chinese Medicine, Taipei Medical University Hospital, Taiwan*

^c*Department of Obstetrics and Gynecology, Taipei Medical University, Taiwan*

^d*Department of Nursing, Ching Kuo Institute of Management of Health Hospital, Taiwan*

^e*Department of Nursing, Chang Gang Institute of Technology, Taiwan*

^f*Department of Nursing, Chung Shan Hospital, Taiwan*

Received 9 September 2005; received in revised form 24 May 2006; accepted 30 May 2006

Abstract

Objectives: The objective of this study was to examine the association between number of Baby Friendly hospital practices (based on World Health Organization/United Nations Children's Fund Ten Steps to successful breastfeeding) experienced by mothers and breastfeeding initiation during hospital stay, breastfeeding at 1 month and breastfeeding at 3 months after delivery.

Methods: The study population consisted of mothers who gave birth to infants without congenital anomalies at hospitals in Taiwan from June to October of 2003, inclusively. A total of 2079 mothers participated in the postal questionnaire survey.

Results: Only 1% of women reported experiencing all 10-step practices, while 5.7% of women did not report experiencing any Baby Friendly practices. Mothers who delivered at certified Baby Friendly hospitals experienced more 10-step practices. The level of breastfeeding increased as the number of 10-step practices experienced increased at all three time points when confounders were controlled in the model.

Conclusions: This study found a dose-response relationship between number of 10-step practices experienced and breastfeeding. However, very few women in Taiwan reported experiencing all 10 steps. Our findings highlight the need for greater attention to implement the 10 steps.

© 2006 Elsevier Ltd. All rights reserved.

Keywords: Breastfeeding; Health-care quality; Maternal child health service

What is already known about the topic?

Relevance of the practices contained in the WHO/UNICEF 10 steps to successful breastfeeding is supported by research. Women who delivered at an accredited Baby Friendly hospital had a higher level of breastfeeding.

*Corresponding author. Tel.: +886 2 28267142;

fax: +886 2 28238614.

E-mail address: lychien@ym.edu.tw (L.-Y. Chien).

What this paper adds

This study found a dose–response relationship between number of the 10-step practices experienced and breastfeeding. Level of breastfeeding increased as the number of the 10-step practices experienced increased after controlling for potential confounders.

1. Introduction

In 1991, the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) jointly launched the Baby Friendly Hospital Initiative (BFHI) (World Health Organization/United Nations Children's Fund (WHO/UNICEF), 1992). This global movement emphasized the role that obstetrical services should play in protecting, promoting, and supporting breastfeeding (WHO, 1989). The aim of the BFHI is to give every baby the best start in life by ensuring a health-care environment where breastfeeding is the norm (WHO/UNICEF, 1992). This initiative uses the 10 steps to successful breastfeeding as the standard for maternity practices (Table 1). The 10 steps are applied to evaluate hospital practices and hospitals that incorporate the 10 steps are designated as Baby Friendly hospitals. By August 2002, about 15000 hospitals worldwide were designated as Baby Friendly hospitals (UNICEF Press Center, 2002).

In Taiwan, there was a significant decline in the prevalence of breastfeeding between the 1960s and 1980s (Chen and Chi, 2000). In 1992, the central government launched national programs to promote breastfeeding. In 1999, the Taiwan Department of Health began to advocate the 10 steps to successful breastfeeding and to accredit Baby Friendly hospitals in Taiwan. Since Taiwan is not a member of the WHO, the certification was awarded solely by the Taiwan Department of Health. In 2004, 77 hospitals were designated as Baby Friendly hospitals by the Taiwan Department of Health (Taiwan Bureau of Health Promotion, 2004). Despite this effort, in 2002, more than 60% of deliveries in Taiwan occurred in non-accredited hospitals (Taiwan Bureau of Health Promotion, 2002). We previously reported that in 2003 the prevalence of exclusive and partial breastfeeding (to any degree) in Taiwan was 17.9% and 47.0% during hospitalization, 22.3% and 48.4% at 1 month, and 16.7% and 17.4% at 3 months, respectively (Chien et al., 2005). These low rates of exclusive breastfeeding and short duration of breastfeeding are public health challenges in Taiwan.

Previous studies demonstrated that women who delivered at an accredited Baby Friendly hospital had a higher rate of any breastfeeding, a higher rate of exclusive breastfeeding, and a longer duration of breastfeeding (Broadfoot et al., 2005; DiGirolamo et al., 2001; Kramer et al., 2001; Philipp et al., 2001;

Saadeh and Akre, 1996). Regardless of the accredited status of Baby Friendly hospitals, studies have shown considerable variations in hospital level implementation of the 10 steps (Dodgson et al., 1999; Kersting and Dulon, 2002; Kovach 1997; Levitt et al., 1996). Two studies evaluated the level of implementation of Baby Friendly practices by hospitals based on reports by hospital staff and its relationship to breastfeeding. One study found that a moderate level of implementation was associated with a satisfactory early breastfeeding prevalence, but was not effective for long-term breastfeeding (Kersting and Dulon, 2002). The other study found a higher level of implementation of Baby Friendly practices by hospitals was significantly associated with full breastfeeding at 4 and 6 months (Dulon et al., 2003). Few studies, however, have considered the mothers' experience with the 10 steps and the relationship between experiencing these 10-step practices and breastfeeding among women. DiGirolamo and colleagues reported that increased experience with Baby Friendly hospital practices by mothers improved their chances of breastfeeding beyond 6 weeks. But they only included 5 of the 10-step practices and used termination of breastfeeding within 6 weeks as a single outcome (DiGirolamo et al., 2001). The objectives of this study were to determine the percentage of women experiencing the 10 steps to successful breastfeeding and to examine the association between the number of these practices they experienced and breastfeeding initiation during hospital stay, breastfeeding at 1 month, and breastfeeding at 3 months after delivery using a Taiwanese national sample.

2. Methods

2.1. Study participants

The study population consisted of mothers who gave birth to infants without congenital anomalies at hospitals in Taiwan from June to October 2003, inclusively. The sampling frame was obtained from birth registrations at the Bureau of Population Statistics of the Taiwan Department of Health. Taiwan was divided into 6 districts: North, Middle, South, East, Taipei City, and Kaohsiung City. A proportional probability sampling method was used to draw samples according to maternal residence. The number of birth registrations sampled from each of the six areas was based on the number of births in each district in the year 2002, therefore sampling fraction was not the same for each district. A random sample was drawn from the records depending on the desired sample size for each district.

The selected mothers were first contacted by telephone if their phone numbers were available, with our research

Table 1

Percentages of 10-step practices experienced by mothers in hospitals with and without accredited Baby Friendly hospital (BFH) status

Practices	All (<i>n</i> = 2079)	BFH (<i>n</i> = 914)	Non-BFH (<i>n</i> = 1165)	χ^2 , <i>p</i>
<i>Step 1.</i> Have a written breastfeeding policy posted in hospitals Q: I saw written breastfeeding policies posted in hospitals and I could understand the words they used.	63.0	76.5	52.4	127.7, <0.001
<i>Step 2.</i> Health care staff have enough knowledge and support breastfeeding Q: Health-care staff have enough knowledge and support breastfeeding.	85.4	94.3	78.4	104.3, <0.001
<i>Step 3.</i> Inform all pregnant women about the benefits and management of breastfeeding Q: During my pregnancy, health care staff taught me the importance of breastfeeding and how to breastfeed.	68.7	80.4	59.5	104.3, <0.001
<i>Step 4.</i> Initiate breastfeeding within 30 min of birth Q: The first time that my baby sucked on my breast was within 30 min of birth.	15.3	29.0	4.5	236.2, <0.001
<i>Step 5.</i> Show mothers how to breastfeed, and how to maintain lactation Q: Health care staff taught me how to breastfeed, and how to express breast milk if I had to separate from my baby.	66.6	81.1	55.2	154.1, <0.001
<i>Step 6.</i> Give newborn infants no food or drink other than breast-milk Q: My baby only had breast-milk and did not have any other food or drink during the hospital stay.	19.3	35.2	6.9	264.2, <0.001
<i>Step 7.</i> Practice rooming-in Q: My baby stayed with me all the time except for necessary medical procedures during the hospital stay.	8.3	14.9	3.2	92.0, <0.001
<i>Step 8.</i> Encourage breastfeeding on demand Q: Health care staff taught me that if the baby wanted to suck, if the baby slept too long, or if I felt full in the breast, then I should breastfeed the baby.	37.6	58.8	20.9	312.2, <0.001
<i>Step 9.</i> Give no artificial teats or pacifiers Q: My baby did not use artificial teats or pacifiers during the hospital stay.	26.0	48.6	8.3	431.1, <0.001
<i>Step 10.</i> Foster the establishment of breastfeeding support groups and refer mother to them on discharge from the hospital Q: At discharge from the hospital, hospital staff told me how to contact breastfeeding support groups.	27.9	41.6	17.3	150.5, <0.001

p-Value from χ^2 -statistics, *df* = 1. Q: Questions used in the survey, responses to the questions were “yes” or “no”.

assistant explaining the study, checking for the correct address, and obtaining oral consent for participation. Then, the study subjects were mailed an introductory letter, consent form, and questionnaire. Where phone numbers were unavailable (10–18% of the study subjects in the six districts), postal packages were sent to them directly. A reminder was given either by phone or by postcard if the questionnaire had not been returned within 2 weeks. Postal packages were resent to the

women if needed. The study was approved by the institutional review board of Taipei Veterans General Hospital. The written informed consent of each mother was obligatory for participation. Details of the study design have been described elsewhere (Chien et al., 2005).

A total of 3670 questionnaires were sent out by post and 2079 (56.6%) completed questionnaires were returned. The response rate for the six areas ranged

from 52.0% to 60.3%. Of the 2079 participants with completed questionnaires, 1468 (70.6%) had breastfed at 1 month after delivery. For participants who did not breastfeed at 1 month, breastfeeding status was not monitored and it was assumed the women were not breastfeeding at 3 months after delivery. Of the 1468 participants who breastfed at 1 month, only 15 could not be contacted. Thus, the 3-month sample consisted of 1453 mothers (Fig. 1). Comparison of our sample with national statistics revealed no significant differences in district-specific number of births, maternal age at 5-year intervals, or the infant's birth order.

2.2. Measurement

A postal questionnaire survey in Mandarin Chinese was conducted at 1 month and 3 months after delivery. Two categories of breastfeeding practice were considered: exclusive and partial breastfeeding. Exclusive breastfeeding consisted of the subset of infants who were fed only human milk, with no supplemental formula used. Partial breastfeeding consisted of the subset of infants who were fed human milk and supplemental formula. The information for these two categories was combined into the “any breastfeeding” category, which included all infants fed human milk to any degree. Data on hospital of delivery was obtained from the birth registration records. Experiences with the 10 steps to successful breastfeeding were assessed using questions adapted from the Baby Friendly hospitals checklist (Taiwan Bureau of Health Promotion, Accessed 2005). The questionnaire was designed so that each question corresponded to one Baby Friendly Step (Table 1). Three experts, including a head nurse

in an obstetrical unit, an obstetrician, and a nursing researcher, assessed the equivalence of the questions to the corresponding 10-step practices. The equivalence was rated to be acceptable. The number of the 10-step practices experienced was calculated by summing the ten items.

The first survey was used to obtain information on breastfeeding status during hospital stay as well as at 1 month after delivery, experiences with the 10 steps to successful breastfeeding, sociodemographic variables (maternal age, marital status, maternal education level and occupation), perinatal variables (parity, method of delivery, and infant birth weight), and spousal support for breastfeeding. Spousal support for breastfeeding was measured by an 8-item scale specifically designed for this study, with higher scores indicating higher support. This scale was reviewed by experts and the internal consistency as assessed by Cronbach's alpha was 0.90 in this study. Breastfeeding status at 3 months after delivery was obtained by the second postal questionnaire.

2.3. Data analysis

The data analysis was performed using unweighted statistical analysis. Data on experiences with the 10 steps to successful breastfeeding were presented as a percentage of all women who participated in this study. The association between breastfeeding status and the number of 10-step practices experienced was examined by cross-tables and χ^2 -statistics. Ordinal logistic regression analysis was used to examine the association between the number of 10-step practices experienced and breastfeeding, after controlling for potential confounding variables. Factors that were commonly reported

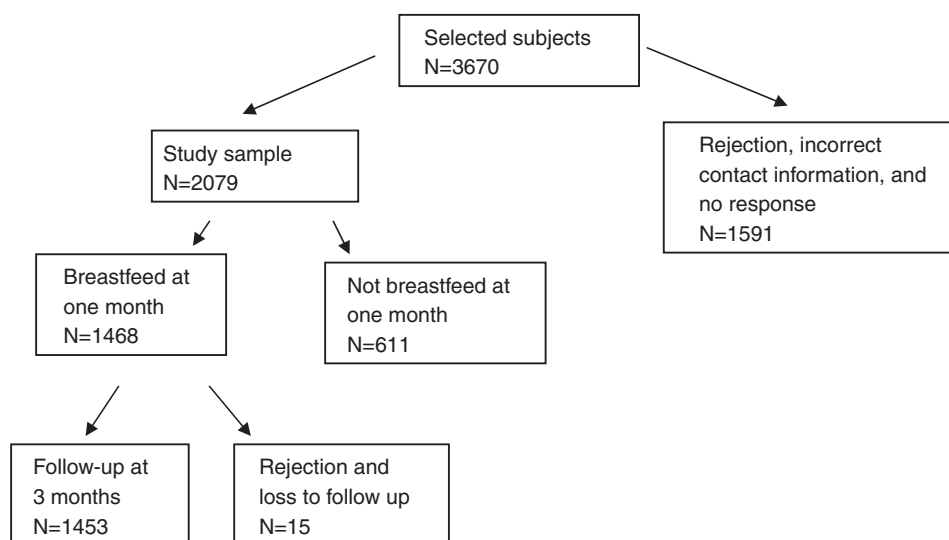


Fig. 1. Flow diagram of the study samples.

being associated with breastfeeding in previous studies were included as potential confounders. In ordinal logistic regression, a three-level ordinal breastfeeding dependent variable (exclusive breastfeeding, partial breastfeeding, and no breastfeeding) was applied. The Statistical Package for the Social Sciences (SPSS) for Windows (Version 10.0; SPSS Inc, Chicago, IL, USA) was used for statistical analysis.

3. Results

The mean age of the study participants was 28.4 years ($SD = 4.71$; range, 15–45), with 50 participants (2.4%) aged less than 20 years and 195 (9.4%) over 35 years. The majority of the infants (99%) had a birth weight greater than 2500 g. About half of the mothers (51.8%) had an educational level of senior high school or below, while 21.1% had a bachelor's or higher degree. More than half of the participants (55.3%) were employed before delivery, with the majority of these working fulltime (46.9%). About one third of the mothers (33.9%) had a cesarean delivery. About half of the participants were first-time mothers (50.5%), with 37.8% delivering for the second time. About 65% (exclusive: 17.9%, partial: 47.0%) of mothers breastfed during hospital stay. At 1 month and 3 months after delivery, the prevalence of any breastfeeding was 70.6% (exclusive: 22.3%, partial: 48.3%) and 34.1% (exclusive: 16.7%, partial: 17.4%), respectively (Table 2).

The percentage of women experiencing each of the 10 steps ranged from 8.3% to 85.4%. The mean number of the 10-step practices experienced was 4.18 ($SD = 2.33$). Only 20 (1%) women experienced all ten practices, while 119 (5.7%) women did not experience any of the Baby Friendly practices (Table 1). Five of the ten practices were experienced at percentages lower than 30%, including practicing rooming-in (8.3%), initiating breastfeeding within 30 min of birth (15.3%), giving infants no food or drink other than breast-milk (19.3%), giving no artificial teats or pacifiers (26.0%), and fostering the establishment of breastfeeding support groups and referring mothers at hospital discharge (27.9%). Four practices were experienced at percentages higher than 60%, including having a written breastfeeding policy posted in hospitals (63.0%), showing mothers how to breastfeed and how to maintain lactation (66.6%), informing all pregnant women about the benefits and management of breastfeeding (68.7%), and health-care staff having enough knowledge and supporting breastfeeding (85.4%). Women who delivered at accredited Baby Friendly hospitals had a higher percentage of experiencing each of the 10 steps (all $p < 0.01$, $df = 1$; Table 1).

The prevalence of any breastfeeding increased as the reported number of 10-step practices experienced

Table 2
Characteristics of the study participants ($n = 2079$)

Variables	<i>n</i>	%
Mother's age ^a		
<20	50	2.4
20–24	385	18.5
25–29	804	38.7
30–34	643	31.0
>35	195	9.4
Infant birthweight ^b		
<2500	20	1.0
2500–3500	673	32.4
>3500	1382	66.6
Mother's educational level		
Senior high school or lower	1077	51.8
Vocational school	564	27.1
University	376	18.1
Graduate school	62	3.0
Mother's work status before delivery		
None	929	44.7
Part-time	174	8.4
Full-time	976	46.9
Method of delivery		
Cesarean	704	33.9
Vaginal	1375	66.1
Parity		
First	1049	50.5
Second	785	37.8
Third	198	9.5
Fourth or higher	47	2.3
Delivered at an accredited Baby Friendly Hospital		
Yes	914	44.0
No	1165	56.0
Breastfeeding initiation during hospital stay		
Exclusive breastfeeding	372	17.9
Partial breastfeeding	977	47.0
Breastfeeding at one month after delivery		
Exclusive breastfeeding	464	22.3
Partial breastfeeding	1004	48.3
Breastfeeding at three months after delivery ^c		
Exclusive breastfeeding	344	16.7
Partial breastfeeding	359	17.4
Number of Baby Friendly 10-step practices experienced by mothers		
0	119	5.7
1	163	7.8
2	218	10.5
3	345	16.6
4	346	16.6

Table 2 (continued)

Variables	<i>n</i>	%
5	314	15.1
6	219	10.5
7	152	7.3
8	121	5.8
9	62	3.0
10	20	1.0

^aData on age was missing for 2 mothers. Sample size is *n* = 2077.

^bData on infant birthweight was missing for 4 mothers. Sample size is *n* = 2075.

^cData on breastfeeding at 3 months was unavailable for 15 mothers. Sample size is *n* = 2063.

increased (Fig. 2). There were significant associations between the prevalence of any breastfeeding and the number of 10-step practices experienced at all three time points (all *p* from likelihood ratio χ^2 -test <0.001, *df* = 10). The χ^2 -statistics for linear associations between level of breastfeeding (none, partial, exclude) and number of 10-step practices were significant during hospital stay (χ^2 = 799.88, *df* = 1, *p* < 0.001), at 1 month after delivery (χ^2 = 139.67, *df* = 1, *p* < 0.001), and at 3 months after delivery (χ^2 = 75.41, *df* = 1, *p* < 0.001).

The ordinal logistic regression model showed that the odds ratio of breastfeeding significantly increased as the number of Baby Friendly practices experienced increased after controlling for age, education, work status of the mother, method of delivery, and spousal support for breastfeeding in the model (Table 3). Parity and infant birth weight were dropped from the model since they were not significant predictors in any of the three models (breastfeeding initiation during hospital stay, breastfeeding at 1 month, and breastfeeding at 3 months after delivery). The adjusted odds ratio of the number of the 10-step practices experienced was 2.0 for breastfeeding initiation during hospital stay, 1.22 for breastfeeding at 1 month after delivery, and 1.19 for breastfeeding at 3 months after delivery. Adding number of the 10-step practices to the model with just the confounders increased the model explanatory power (Cox and Snell r^2 increased from 0.07 to 0.41 for breastfeeding initiation during hospital stay, 0.07–0.12 for breastfeeding at 1 month after delivery, and 0.06–0.10 for breastfeeding at 3 months after delivery).

4. Discussion

There has been convincing evidence supporting the relevance of the practices contained in the WHO/UNICEF 10 steps to successful breastfeeding in

developing and developed countries alike (Kramer et al., 2001; Saadeh and Akre, 1996). A large scale randomized controlled trial demonstrated that an experiment modeled on the 10 steps increased the duration and degree of breastfeeding and decreased the risk of gastrointestinal tract infection and atopic eczema in the first year of life (Kramer et al., 2001). A quasi-experimental study supported the 10-step practices in the Taiwanese context (Gau, 2004). This study further demonstrated a dose–response relationship between the number of 10-step practices experienced and the level of breastfeeding (exclusive, partial, and none). There was a significantly higher level of experiencing all 10-step practices in accredited Baby Friendly hospitals than in non-accredited hospitals. Yet low rates of experiencing some of the 10-step practices were still reported even in accredited Baby Friendly hospitals. Altogether, these findings suggest even if hospitals have Baby Friendly status accreditation, they still need to work toward full implementation of the 10-step practices, as each additional step may significantly influence women's success with breastfeeding.

This study examined mothers' experience with the 10-step practices, which is only one aspect of Baby Friendly hospital practice. We did not address hospital breastfeeding policies or the level of adherence of the hospital staff in implementing Baby Friendly practices. But study of a mother's experiences is an important step to incorporate the view of the person receiving these practices, which is a different perspective from that of the hospital staff. The percentage of women experiencing the 10 steps, using the national sample presented by this study, could serve as a benchmark for hospitals. Comparison of policies and routine practices concerning infant feeding with national data may help hospitals to understand their strengths and weaknesses in the implementation of these steps and to develop goals to improve quality of care.

The study showed that there seemed to be two discrete levels in experiencing the 10 steps. Six practices that were experienced at low levels (8.3–37.6%) in this study were rooming-in, initiating breastfeeding within 30 min of birth, giving newborn infants no food or drink other than breast-milk, giving no artificial teats or pacifiers, fostering the establishment of breastfeeding support groups and referring the mother to them on discharge from hospital, and encouraging breastfeeding on demand. On the contrary, the other four practices were experienced at relatively high levels (63.0–85.4%). These included having a written breastfeeding policy posted in hospitals, informing all pregnant women about the benefits and management of breastfeeding, showing mothers how to breastfeed and maintain lactation, and health-care staff having enough knowledge and supporting breastfeeding. These results suggested that hospitals do better in training personnel and providing women

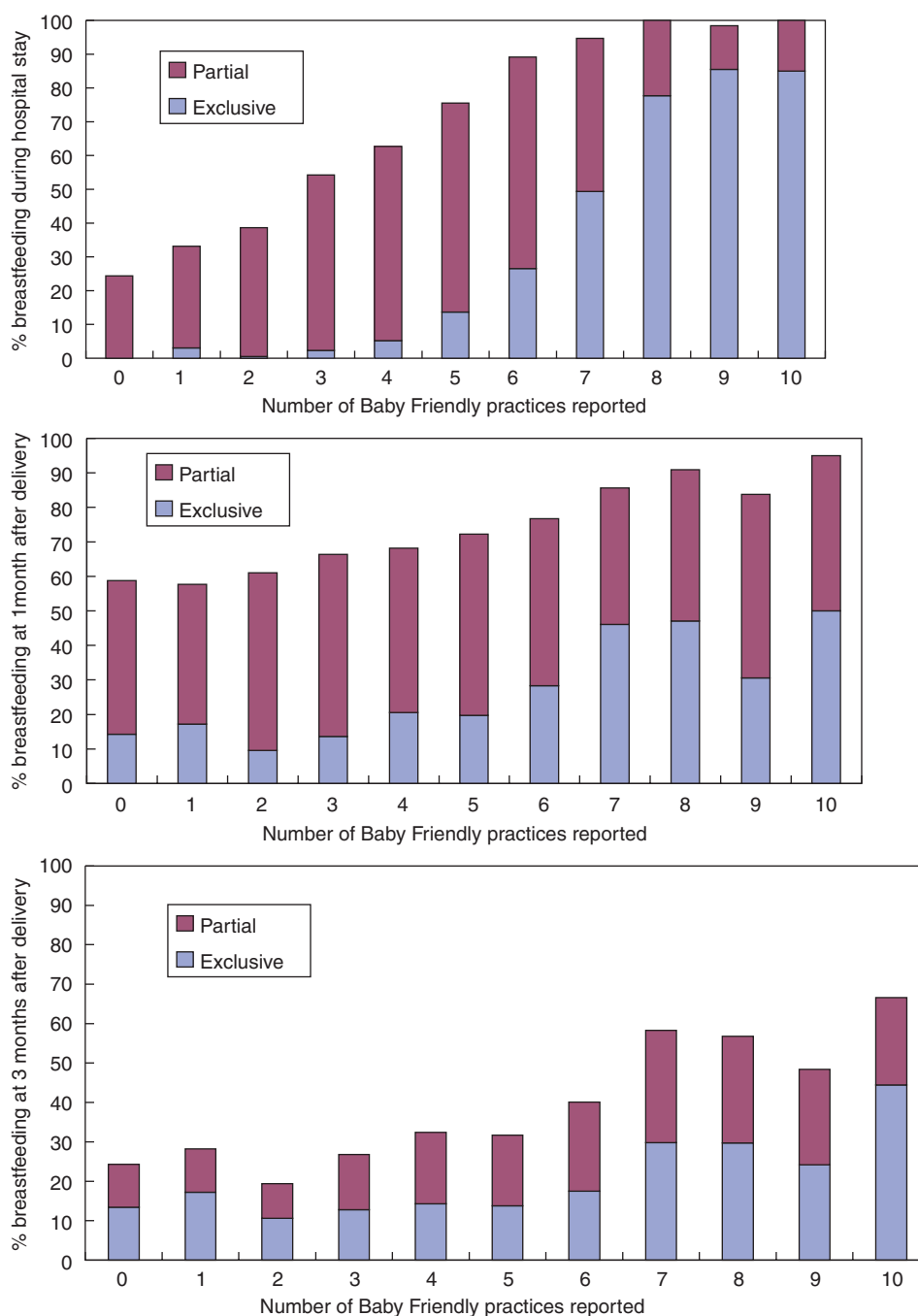


Fig. 2. Prevalence of breastfeeding initiation during hospital stay, breastfeeding at 1 month, and breastfeeding at 3 months after delivery by number of Baby Friendly 10-step practices experienced by mothers.

with health education on breastfeeding. However, practices, which require a change in hospital routines, such as early feeding, rooming-in, no supplement for breast milk, and no artificial teats or pacifiers, had significantly lower implementation levels. A previous review based on expert opinions identified barriers to

implement the Baby Friendly practices in Taiwan (Chen et al., 2000). The identified barriers include limited space, interference with medical treatment, concerns about infant infection, resistance from workers, fatigue among mothers, and mothers and families' beliefs about infant nutrition. Also, traditional cultural practices that

Table 3

Adjusted odds ratio and 95% confidence intervals for the number of practices experienced on breastfeeding

	β (SE)	Adjusted odds ratio	95% confidence interval
Breastfeeding initiation during hospital stay	0.70 (0.03)	2.00	1.90–2.11
Breastfeeding at 1 month after delivery	0.20 (0.02)	1.22	1.17–1.26
Breastfeeding at 3 months after delivery	0.18 (0.02)	1.19	1.15–1.24

The dependent variable is coded as exclusive breastfeeding (2), partial breastfeeding (1), and no breastfeeding (0).

Analysis controlled for age, education, and work status of the mother, method of delivery, and spousal support for breastfeeding.

require mothers to rest as much as possible during the postpartum period might be a significant barrier. Studies have shown that training health-care workers for the BFHI is an effective strategy in changing hospital practices, improving knowledge of health workers, and increasing breastfeeding rates (Cattaneo and Buzzetti, 2001; Owoaje et al., 2002). Further training for health-care workers and nurses is implicated. Strategies should be developed to overcome barriers and thus improve the implementation of these practices.

The mothers' experiences with the Baby Friendly practices were based on their self-report, and thus accuracy of their recall was a concern. Nonetheless, the low reported rates of experiencing early feeding within 30 min of birth and 24-h rooming-in are consistent with our clinical observations. In addition, the wide variations in the reported rates of experiencing the 10-step practices and the higher rates at Baby Friendly hospitals support the validity of our data. One other concern is that women who breastfed their babies may have been more likely to recall receiving Baby Friendly practices than women who did not breastfeed. Further study that applies a prospective design is needed to address this concern. This study examined whether the mother experienced the 10-step practices and did not take into account the quality of the practices they received. Future study should consider the quality of implementation of the 10-step practices in order to account for potential variations in the quality of implementation. By design, each Baby Friendly Step was measured by one yes–no question in the questionnaire. As a result, some questions included two or more separate issues within the same question, such as questions for Step 1, 2, 3, 5, and 8. Therefore, if a woman gave a negative answer to these questions, we could not distinguish whether the answer was the same for each separate issue within the same question. The other concern is that the scale for spousal support has not been tested psychometrically in this study. Validation of this instrument in another sample is needed.

One weakness of this study was the moderate response rate (57%), which occurred despite the use of several strategies to increase participation, such as telephone contact, reminders, and resending the questionnaire. We

examined the representativeness of the study samples by comparing the number of births, maternal age, and parity with national data. There were no significant differences between our sample and national data, suggesting that the sample is representative of the study population. In addition, characteristics of the study participants (Table 1) appear to be similar to national statistics on women of reproductive age.

Acknowledgement

This study was funded by the Bureau of Health Promotion, Taiwan Department of Health (DOH 92-HP-1206).

References

- Broadfoot, M., Britten, J., MacKenzie, J., 2005. The Baby Friendly Hospital Initiative and breastfeeding rates in Scotland. *Archives of Disease in Childhood. Fetal and Neonatal Edition* 90 (2), F114–F116.
- Cattaneo, A., Buzzetti, R., 2001. Effect on rates of breast feeding of training for the Baby Friendly Hospital Initiative. *British Medical Journal* 323 (7325), 1358–1362.
- Chen, C.H., Chi, C.S., 2000. Factors associated with maternal decision regarding infant feeding. *Clinical Neonatology* 7, 24–29.
- Chen, C.H., Gau, M.L., Lu, Y.Y., Pan, L.L., 2000. Review of Taiwan's Baby Friendly program and the implications for breastfeeding. *Chang Gung Nursing Journal* 12, 64–71.
- Chien, L.Y., Chu, K.H., Tai, C.J., Lin, C.Y., 2005. National prevalence of breastfeeding in Taiwan. *Journal of Human Lactation* 21 (3), 338–344.
- DiGirolamo, A.M., Grummer-Strawn, L.M., Fein, S., 2001. Maternity care practices: implications for breastfeeding. *Birth* 28 (2), 94–100.
- Dodgson, J.E., Allard-Hale, C.J., Bramscher, A., Brown, F., Duckett, L., 1999. Adherence to the ten steps of the Baby Friendly Hospital Initiative in Minnesota Hospitals. *Birth* 26 (4), 239–247.
- Dulon, M., Kersting, M., Bender, R., 2003. Breastfeeding promotion in non-UNICEF-certified hospitals and long-term breastfeeding success in Germany. *Acta Paediatrica* 92 (6), 653–658.

- Gau, M.L., 2004. Evaluation of a lactation intervention program to encourage breastfeeding: a longitudinal study. *International Journal of Nursing Studies* 41 (4), 425–435.
- Kersting, M., Dulon, M., 2002. Assessment of breastfeeding promotion in hospitals and follow-up survey of mother-infant pairs in Germany: the SuSe Study. *Public Health Nutrition* 5 (4), 547–552.
- Kovach, A.C., 1997. Hospital breastfeeding policies in the Philadelphia area: a comparison with the Ten Steps to Successful Breastfeeding. *Birth* 24 (1), 41–48.
- Kramer, M.S., Chalmers, B., Hodnett, E.D., Sevkovskaya, Z., Dzikovich, I., Shapiro, S., et al., 2001. Promotion of breastfeeding intervention trial: a randomized trial in the Republic of Belarus. *Journal of the American Medical Association* 285 (4), 413–420.
- Levitt, C.A., Kaczorowski, J., Hanvey, L., Avard, D., Chance, G.W., 1996. Breastfeeding policies and practices in Canadian hospitals providing maternity care. *Journal of the Canadian Medical Association* 155 (2), 181–188.
- Owoaje, E.T., Oyemade, A., Kolude, O.O., 2002. Previous BFHI training and nurses' knowledge, attitudes and practices regarding exclusive breastfeeding. *African Journal of Medicine and Medical Sciences* 31 (2), 137–140.
- Philipp, B.L., Merewood, A., Miller, L.W., Chawla, N., Murphy-Smith, M.M., Gomes, J.S., et al., 2001. Baby-Friendly Hospital Initiative improves breastfeeding initiation rates in a US hospital setting. *Pediatrics* 108 (3), 677–681.
- Saadeh, R., Akre, J., 1996. Ten steps to successful breastfeeding: a summary of the rationale and scientific evidence. *Birth* 23 (3), 154–160.
- Taiwan Bureau of Health Promotion, 2002. Institutional birth registration analysis in 2002. Taiwan Department of Health, Taipei (in Chinese).
- Taiwan Bureau of Health Promotion, 2004. Baby Friendly Hospitals. List of Accredited Hospitals in Year 2004. Available at: <<http://www.bhp.doh.gov.tw/breastfeeding/index05-5.htm>> (Accessed April 29, 2005) (in Chinese).
- Taiwan Bureau of Health Promotion, Taiwan Department of Health. Baby Friendly Hospitals. Baby Friendly Hospital Checklist. Available at: <<http://www.bhp.doh.gov.tw/BHP/fileviewer?id=11943>> (Accessed April 29, 2005).
- UNICEF Press Center, 2002. UNICEF: Breastfeeding still best for infants and mothers. Available: <http://www.unicef.org/media/media_19222.html> (Accessed April 29, 2005).
- World Health Organization, 1989. Protecting, Promoting and Supporting Breastfeeding: The Special Role of Maternity Services A joint WHO/UNICEF statement. WHO, Geneva.
- World Health Organization/United Nations Children's Fund, 1992. Baby Friendly Hospital Initiative. WHO/UNICEF, Geneva.