



# Evidence Based Breast-Feeding Promotion: The Baby-Friendly Hospital Initiative<sup>1</sup>

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## Abstract

The Baby-Friendly Hospital Initiative (BFHI) is the translational tool developed by WHO and UNICEF to promote breast-feeding (BF) in maternity wards worldwide. BFHI was officially launched in the 1980s based on a "common sense" approach. Since then, research conducted in Latin America has shown that BFHI is highly cost-effective. BF trends over the past 2 decades strongly suggest that BFHI has had a global impact on BF outcomes. The 10th step of BFHI related to community-based BF promotion is one of the most challenging ones to address. Randomized controlled trials conducted in the Americas, Asia, and sub-Saharan Africa indicate that peer counseling is a very efficacious tool for increasing EBF rates. Low-cost rapid-response monitoring systems are needed to monitor the proper implementation and administration of BFHI steps following an evidence-based approach. This approach is essential for reenergizing the BFHI worldwide. *J. Nutr.* 137: 484–487, 2007.

Because of the undeniable health benefits that breast-feeding (BF)<sup>2</sup> offers to both women and children and the worrisome trends toward the decline in this behavior, international organizations such as WHO issued strong policy recommendations in the 1970s with regard to the need to facilitate BF promotion worldwide. As a result, UNICEF and WHO launched the Baby-Friendly Hospital Initiative (BFHI) in the 1980s with the goal of translating the international BF policy recommendations into a best practices model consisting of the 10 steps presented in **Table 1**. This initiative was originally designed mostly on the "common sense" approach. Indeed, a meta-analysis conducted in the early 1990s showed that at that time there were only 18 controlled studies published in the peer reviewed literature addressing any of the BFHI steps (1). At that time the evidence fully supported the step involving the prohibition of distributing free formulas to women in maternity wards and suggested that

rooming-in together with lactation counseling in the maternity ward were necessary to improve BF outcomes in the longer term. The latter conclusion was derived from a quasiexperimental study conducted in northern Mexico almost 20 y ago (2). In the study, primiparous women delivering in a public rooming-in hospital who were randomly assigned to receive BF counseling support from a trained nurse had higher longer-term BF rates than the standard of care group. In the short term, both rooming-in groups had significantly better BF outcomes than their primiparous counterparts delivering in a nearby public hospital. In that hospital, babies and mothers were kept in separate nursery rooms throughout the hospital stay, and infants were routinely fed infant formula by the hospital nurses. However, by 4 mo postpartum, the improvement was significant only among those women who, in addition to rooming in, received lactation counseling support from the trained nurse. Thus, these results indicated that rooming in is a necessary, but not sufficient, condition for longer-term improvement in BF rates and that lactation counseling is needed.

An important conclusion from the meta-analysis was the need for implementing well-designed studies to assess 1) the synergistic impact of all the BFHI steps combined and 2) the independent contribution of pre-, peri-, and postnatal support on BF outcomes.

The objective of this article is to illustrate how the evidence-based public nutrition framework has been used since the early 1990s to promote BF worldwide via the BFHI.

## Effectiveness of BFHI

The first well-controlled study addressing the impact of the BFHI package compared the exclusive BF (EBF) duration of women from Santos Brazil delivering either at a hospital with very

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<sup>2</sup> Abbreviations used: BF, breast-feeding; BFHI, Baby-Friendly Hospital Initiative; EBF, exclusive breast-feeding; LAC-HNS, Latin America and Caribbean Health and Nutrition Sustainability; MADLAC, Monitoreo de Apoyo Directo con la Lactancia Materna.

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**TABLE 1** WHO/UNICEF baby-friendly hospital initiative: the 10 steps

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Written BF promotion policies
BF training for all health personnel
Prenatal BF promotion
BF initiation within 30 min postpartum
BF counseling to mothers in maternity wards
Breast milk only for newborns
Rooming in
BF on demand
No baby bottles or pacifiers
Community-based postnatal BF support

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strong implementation of all BFHI steps or in a hospital where women roomed in with their babies and formula was not allowed, but where there was very little lactation counseling support (3). There was a 3.4-fold increase in the median EBF duration associated with exposure to the full BFHI packet (75 d vs. 22 d, respectively;  $P < 0.0001$ ). Women at both hospitals were similar in their socioeconomic and demographic characteristics. The large effect size together with the fact that women were not randomly assigned to groups understandably led some researchers to question whether this was a causal finding or not.

In 2001 Kramer et al. published the results from the Promotion of Breast-feeding Intervention Trial (PROBIT) in Belarus (4). This study of over 17,000 dyads involved randomly assigning 31 hospitals and corresponding polyclinics to either full implementation of the BFHI steps or to remain with the existing infant-feeding policies and practices that were nonconductive to BF. This trial confirmed the findings from Brazil (3) by documenting a major impact of BFHI on EBF rates. In this instance the difference in EBF rates at 3 mo between the BFHI intervention groups and the control hospitals was almost 7-fold (43.3 vs. 6.4%;  $P < 0.001$ ). Results also showed significantly higher rates of any BF at 12 mo in the intervention group (19.7 vs. 11.4%, respectively;  $P < 0.01$ ). PROBIT also included infant health measures. Even though the trial did not detect an impact of BFHI on respiratory infections or otitis media, it did demonstrate a beneficial impact ( $P < 0.05$ ) of BFHI on episodes of gastrointestinal illness and atopic eczema.

#### Cost-effectiveness of BFHI

The study conducted in Santos, Brazil was part of a multicountry BF promotion cost-effectiveness project funded by the U.S. Agency for International Development (USAID) Latin America and Caribbean Health and Nutrition Sustainability (LAC-HNS) Program. The studies conducted in Mexico and Honduras followed a similar study design (i.e., comparing infant feeding outcomes among women delivering in hospitals with strong BFHI implementation to those among women delivering in hospitals with a weak BFHI implementation). In Honduras, a positive impact of BFHI on EBF duration was observed (5), and in Mexico the impact was restricted to any BF duration (6). A cost-effectiveness analysis was then conducted (7). The impact of BFHI on BF was translated into health care savings associated with lower incidence of diarrheal and respiratory illness based on Demographic and Health Survey data. In all countries, detailed cost data associated with BFHI implementation and administration were collected. Using a disability-adjusted life years (DALY) approach, this study showed that BF promotion through a BFHI-like model is very cost-effective (1992 US\$2–19

per DALY). Indeed the cost-effectiveness of BFHI is comparable to the cost-effectiveness of immunizations, vitamin A supplementation, and short-term tuberculosis treatment.

#### Efficacy of community-based BF peer counseling (Step 10)

An important conclusion from the LAC-HNS study was that because women stayed for a very short period of time after hospital discharge, it is important to substantially strengthen step 10 of BFHI related to facilitating BF promotion at the community level. This section presents efficacy and effectiveness data related to BF promotion efforts at the community level.

*Mexico.* In 1999, Ardythe Morrow and her colleagues published a seminal study on the impact of community-based peer counseling on EBF behaviors among low-income women in Mexico City (8). This randomized controlled trial included 2 intervention groups and a control group. The first intervention group received 6 peer counselor visits starting in early pregnancy and ending at wk 8 postpartum. The second intervention group received 3 peer counselor visits starting in late pregnancy and ending in wk 2 after delivery. This community-based intervention had a strong impact on EBF rates at both 2 wk and 12 wk postpartum. The impact of the intervention followed a dose-response pattern, with the 3-visit group still receiving a major benefit from the intervention (67 vs. 50% vs. 12%,  $P < 0.05$ , for those with 6, 3, or no peer counselor visits, respectively). This efficacy trial also demonstrated a 50% reduction of the cumulative incidence of diarrhea as a result of the peer counseling intervention (12% in both intervention groups combined vs. 26% in control group,  $P < 0.05$ ).

*Asia.* Following the Mexico City trial, similar efficacy trials were also implemented in Asia, with all of them showing a positive impact of the intervention on EBF rates at 3 to 5 mo postpartum (9,10). However, there were no published trials of this nature from sub-Saharan Africa, a region of the world in dire need of EBF promotion.

*Ghana.* Aidam et al. (11) randomly assigned women from urban Ghana to 2 intervention groups and 1 control group. The first intervention group received peer counselor visits prenatally, perinatally, and postnatally. The second intervention group received peer counselor visits only perinatally and postnatally. The control group received peer counselor visits throughout. However, in this instance topics such as immunizations and family planning were covered but not BF. Thus through this design the researchers wanted to answer the following questions: 1) Can peer counseling have an impact on EBF in sub-Saharan Africa? 2) If so, can those differences still be detected after controlling for the potential Hawthorne effect (analogous to the placebo effect)? 3) Is prenatal peer counseling needed in this context? Results clearly showed that regardless of the EBF definition used, the peer-counseling intervention had a strong positive impact on EBF rates (92 vs. 88% vs. 66% at 3 mo postpartum using the EBF during the previous 24-h indicator,  $P < 0.01$ ). A comparison of the combined intervention groups vs. the control group showed that there was no evidence that the prenatal component added additional benefit (EBF rates throughout 6 mo were 40% in each of the intervention groups combined vs. 20% in the control group,  $P < 0.05$ ). This finding must be interpreted within the context of strong prenatal EBF education as already routinely received in the health facilities attended by the study participants.

**United States.** Another country where until recently it was unknown if EBF rates could be improved through peer counseling is the United States. Anderson et al. (12) randomly assigned low-income, inner-city women living in Hartford, Connecticut delivering in an urban BFHI hospital to an intensive protocol of prenatal, perinatal, and postnatal peer counseling visits or to the control group. At 3 mo postpartum, the intervention had a powerful effect on EBF rates (20.6 vs. 1.4%,  $P < 0.001$ ), on lactational amenorrhea (52.4 vs. 33.3%,  $P < 0.05$ ), and in offering protection to infants against experiencing at least 1 episode of gastrointestinal infections (17.5 vs. 37.5%,  $P = 0.01$ ). Thus, trials from all over the world have confirmed that community-based EBF peer counseling interventions are highly efficacious. However, are these interventions effective under real world conditions?

### Effectiveness of community-based peer counseling (Step 10)

**Guatemala.** Dearden et al. (13) conducted an effectiveness study in periurban Guatemala where the intervention consisted of training unpaid volunteers as lactation counselors by La Leche League. The trained counselors were then instructed to offer BF support to their communities following a standard protocol. The researchers conducted a survey in 2 of the intervention and 2 of the control communities among women with children under 6 months of age. There was no impact of this intervention on EBF rates (21 vs. 19%). It is likely that this result is explained by the fact that the coverage was very low (only 16% of women in intervention communities participated in support groups, and only 21% received a home visit from a peer counselor). As expected, EBF rates were 45% among those exposed to both home visits and support groups, followed by 42% among those exposed to support groups, 32% among those exposed to home visits only, and 14% among those not exposed to either ( $P < 0.05$ ). Thus, this study does not challenge the efficacy but rather the effectiveness of the intervention in the context in which it took place. The problem here is not that community-based EBF promotion doesn't work but rather that the program had not been truly implemented. These findings are very consistent with findings from a similar La Leche League BF peer-counseling project in El Progreso, Honduras (i.e., substantial training of volunteers, followed by minimal coverage of the community within the next 2 y) (14).

**United States.** Another effectiveness study conducted by Chapman et al. (15) in Hartford, Connecticut involved a randomized design to assess the impact of an existing program on any BF among women prenatally planning to breast-feed. The results showed a modest but significant impact of the intervention on BF initiation rates that tended to wane across time and that was no longer detectable at 6 mo postpartum. Researchers also documented that the peer-counseling intervention was not as intensive as the program protocols indicated. As in the study in Guatemala, this trial illustrates the challenges involved in translating efficacy results into best-practice real-world programs.

### Low-cost BF best-practices monitoring systems: MADLAC

Low-cost BF counseling monitoring systems are needed to ensure that BFHI best practices indicators are implemented and maintained.

The "Sistema de Monitoreo de Apoyo Directo con la Lactancia Materna" (MADLAC) is a low-cost rapid-response BF counseling monitoring system pretested in Honduras and Ecuador and implemented at a national level in El Salvador (16). MADLAC is based on applying a 5- to 7-min questionnaire containing BF promotion/counseling indicators (several of which were identified as significant predictors of EBF in the LAC-HNS study) to 50 randomly selected women at hospital discharge per month per institution. The questionnaire is applied by hospital personnel not directly involved in providing BF counseling to women. Data are entered and graphed by hospital personnel using Epi Info or Microsoft Excel. Each hospital MADLAC committee meets when 100 women have been interviewed and their data have been entered and analyzed (i.e., approximately once every 3 mo). As a result of these meetings, the hospitals implement changes in BF support in response to MADLAC committee recommendations. The impact of these decisions is monitored through the MADLAC system. A national application in El Salvador where all 28 national hospitals participated showed that, as a result of the implementation of this system, key BFHI process indicators improved significantly during the 1-y-long trial (Table 2). An important finding from this study was that few if any of the previously BFHI-certified participating maternity wards would have been certified as such at the time MADLAC was tested. There is little doubt that MADLAC can

**TABLE 2** Influence of MADLAC on key BF promotion and counseling indicators (%), El Salvador, 2001–2003<sup>1–3</sup>

Indicator	t <sub>0</sub> (2001) Apr–Dec (n = 2399)	t <sub>1</sub> (2003) Jan–Mar (n = 1555)	t <sub>2</sub> (2003) Apr–Jun (n = 2739)	t <sub>3</sub> (2003) Jul–Sept (n = 3004)	t <sub>4</sub> (2003) Oct–Dec (n = 1457)
Prenatal BF information	66	72	73	76	78
Planning to BF > 12 mo	55	57	63	72	73
Advised how long to EBF	73	80	87	93	95
Planning EBF for 6 mo	75	75	81	88	91
BF in delivery room	66	63	70	72	72
BF within 30 min	57	60	63	70	70
BF counseling in maternity ward	60	74	79	84	90
Taught how to express breast milk	50	65	68	73	82
Referral to community BF counseling	40	64	69	81	82
Continuous rooming-in	88	85	89	90	92

<sup>1</sup> Sample size may vary across indicators because of missing data.

<sup>2</sup> All time trends were statistically significant ( $P < 0.001$ ).

<sup>3</sup> Feeding of newborns with baby bottles was exceedingly rare throughout the study.

enormously complement the official BFHI evaluation process. The results from El Salvador in fact show that monitoring systems such as MADLAC are essential for understanding if and how the BFHI steps are being implemented (i.e., process evaluation).

### BFHI as part of national BF programs

A very important question is whether BFHI has played a role in the recent improvements in BF outcomes in different parts of the world (17). A recent BF policy analysis from Brazil (18) provides useful insights. The major improvements in BF duration in Brazil over the past 25 y (from 2 to 10 mo of BF duration) have involved complex multisectorial coordination. This effort has involved civil society, celebrities, politicians and legislators, health policy makers, mass media, international organizations, researchers, and the translation of policies into programs through massive training and program implementation. There is little doubt that in Brazil, as in many other countries, BFHI and the translational efforts that preceded it played a major role in this success story.

In conclusion, 1) based on efficacy trials, the LAC-HNS cost-effectiveness study, and national BF program experience (i.e., Brazil), the plausibility that BFHI is responsible at least in part for BF improvements worldwide is very high. 2) Community-based peer counseling is highly efficacious at improving EBF and infant health outcomes. 3) The evidence-based public nutrition framework should be applied to improve our ability to translate these efficacy results into real-world cost-effective programs worldwide.

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