



## Statewide Breastfeeding Education Program Improves Maternity Staff Knowledge, Attitudes and Self-Efficacy

Susie Amick<sup>1\*</sup>, Jane Savage<sup>2</sup>, Marci Brewer<sup>1</sup>, Maeve Wallace<sup>3</sup> and Sarah McKasson<sup>4</sup>

<sup>1</sup>Louisiana Department of Health (LDH), Office of Public Health (OPH), Bureau of Family Health (BFH), The Gift Program; 1450 Poydras Street, Rm 2032; New Orleans LA 70112; USA

<sup>2</sup>Department of Nursing, Loyola University New Orleans; 6363 St. Charles Ave.; New Orleans LA 70112; USA

<sup>3</sup>Department of Global Community Health and Behavioral Sciences; Mary-Amelia Douglas Whited Community Women's Health Education Center; Tulane University School of Public Health and Tropical Medicine; 1440 Canal St.; New Orleans LA 70112; USA

<sup>4</sup>Colorado School of Public Health; 13001 E. 17th Street, B119, Room W3134; Aurora CO 80045; USA

\*Corresponding author: Susie Amick, MSN, RN, IBCLC, LCCE; Nurse Consultant, The Gift Breastfeeding Program; LDH-OPH-BFH; E-mail: susieamick82@gmail.com

Received date: September 28, 2016; Accepted date: October 18, 2016; Published date: October 25, 2016

Copyright: © 2016 Amick S, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

### Abstract

Louisiana breastfeeding rates are among the lowest in the United States with associated infant mortality and morbidity rates among the highest. To increase maternity nursing staff breastfeeding knowledge and to improve attitudes and self-efficacy towards evidence-based promotion of breastfeeding, a six contact-hour program promoting the state's breastfeeding initiative, The Gift, was presented in 35 maternity hospital programs from 2008 to 2012 with 1086 participants. Mean post-test scores increased by an average of 25% ( $p < 0.01$ ), a strongly significant knowledge increase. Post-program evaluation analysis indicated increased confidence, as well as improved attitudes and self-efficacy of participants to implement evidence-based maternity care practices on which the state breastfeeding initiative and the global Baby-Friendly Hospital Initiatives are based. Programs, such as state's maternity staff education program are effective in increasing breastfeeding knowledge, a critical component in increasing breastfeeding rates for improved outcomes for women and infants.

**Keywords:** Breastfeeding; Quality improvement; Evidence-based practice; Baby-Friendly, Education

### Introduction

Breastfeeding has been identified as a public health priority because of the vast health benefits for the mother, as well as for the child [1,2]. National breastfeeding goals have been established by Healthy People 2010 and 2020 with support from the American Academy of Pediatrics and The Joint Commission, as well as from many other medical and public health organizations [2-4]. Additionally, the Surgeon General of the United States (US) has recommended for all healthcare professionals to collaborate in efforts to promote, protect, and support breastfeeding as a health care priority for improved outcomes for women and children [1]. If 90% of US families complied with national recommendations to exclusively breastfeed for 6 months, it is predicted that 13 billion dollars in preventable health care costs could be saved and more than 911 infant deaths could be prevented each year [5]. It is also estimated that 17.4 billion dollars in excess costs to society for women could be saved annually, if 90% of mothers were able to breastfeed their infants for at least one year [3,6].

The influence of organizational level hospital practices and policies for the promotion of breastfeeding has long been recognized [7]. In 1991, the United Nations Children's Fund (UNICEF) and the World Health Organization (WHO) established the Baby-Friendly Hospital Initiative (BFHI) as a quality improvement program, whose Baby-

Friendly designation has provided national and international recognition of hospitals that have implemented evidence-based maternity care practices promoting bonding and breastfeeding [8]. The Baby-Friendly hospital designation is based on meeting identified criteria of Baby-Friendly USA, the national body of BFHI, in implementing "Ten Steps to Successful Breastfeeding" (called the "Ten Steps"), a best-practice model for improving breastfeeding rates [9] (Table 1). There have been more than 20,000 birthing facilities ever-designated Baby-Friendly worldwide, with 152 facilities having been designated in 34 states of the US as of December 2012, with no Baby-Friendly hospitals having been designated in Louisiana (LA) at that time [9].

LA breastfeeding rates have been among the lowest in the US with associated infant mortality and morbidity rates among the highest [10,11]. If 90% of LA infants were exclusively breastfed for the first 6 months, it is predicted that more than 216 million dollars could be saved and 18 infant's deaths could be prevented annually [12]. Nationally, as in LA, significant disparities and inequities in breastfeeding rates have been identified, with non-Hispanic black and socioeconomically disadvantaged groups having lower breastfeeding rates [13]. Factors associated with increased breastfeeding rates at 6 months include increased maternal age, non-US born mothers, no breastfeeding problems documented in the hospital, private insurance, and no smokers in the household, while lower breastfeeding rates at six months have been identified within WIC and black populations [14].

Ten Steps to Successful Breastfeeding
1. Have a written breastfeeding policy that is routinely communicated to all health care staff.
2. Train all health care staff in skills necessary to implement this policy.
3. Inform all pregnant women about the benefits and management of breastfeeding.
4. Help mothers initiate breastfeeding within one hour of birth.
5. Show mothers how to breastfeed and how to maintain lactation, even if they are separated from their infants.
6. Give newborn infants no food or drink other than breastmilk, unless medically indicated.
7. Practice "rooming in", allow mothers and infants to remain together 24 hours a day.
8. Encourage breastfeeding on demand.
9. Give no pacifiers or artificial nipples to breastfeeding infants.
10. Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or birth center.

**Table 1:** WHO/UNICEF baby-friendly hospital initiative.

A growing body of evidence has demonstrated a strong association of Baby-Friendly designation with increased breastfeeding rates, including rates of initiation, early exclusivity and longer durations of breastfeeding [15]. Hospital implementation of the Baby-Friendly "Ten Steps" and hospital designations as Baby-Friendly have also been recognized as effective strategies for reducing disparities and inequities in breastfeeding rates at 6 months among poor, low-income, and black infants [14]. An identified barrier to implementing the "Ten Steps" in low breastfeeding populations is a lack of breastfeeding knowledge by maternity staff [16,17]. Improving healthcare provider breastfeeding knowledge and attitudes have been associated with increasing breastfeeding rates [16,17]. More studies are needed to identify breastfeeding barriers and to develop effective strategies to improve maternity staff knowledge and attitudes for facilitating "Ten Steps" implementation and increasing Baby-Friendly designations [17].

The Gift, LA's breastfeeding promotion initiative for birthing facilities, was launched in 2006 by the LA Maternal and Child Health Coalition and the LA Department of Health and Hospitals (DHH), Office of Public Health (OPH), Maternal-Child Health Program (presently the Bureau of Family Health) [18]. The Gift hospital designation is a quality improvement recognition of LA hospitals for implementing evidence-based maternity care practices supporting the model policy elements of the BFHI "Ten Steps" [18,19]. The Gift designation was not developed to replace the Baby-Friendly designation, but rather to serve as a stepping stone to Baby-Friendly designation, by recognizing hospitals that have demonstrated incremental progress in adopting evidence-based maternity care practices of the BFHI [18,19].

United States' state, territorial, and tribal breastfeeding coalitions have promoted the "Ten Steps" through initiatives similar to The Gift, focused on increasing breastfeeding rates and reducing disparities and inequities in breastfeeding rates among all populations [20]. US statewide breastfeeding initiatives, which like The Gift share a focus on implementing the BFHI "Ten Steps to Successful Breastfeeding", include the "Texas Ten Step" and the "Colorado Can Do Five" programs [20].

The CDC Report Card of 2010 based on the National Immunization Survey (NIS) data of 2007 (development year for The Gift maternity

staff breastfeeding education program of this manuscript) reported LA breastfeeding rates at 56.6% ever breastfed, 20.2% breastfeeding at six months; 9.8% breastfeeding at 1 year; 22% exclusively breastfeeding at 3 months and 7.8% at 6 months [11]. These rates place LA's state ranking as 50th (of 54 states and territories and falls short of Healthy People 2010 breastfeeding target goals, with LA ranking in the lowest quartile of US states in each measured category [3].

Due to low LA breastfeeding rates and associated poor health outcomes, the LA DHH, having identified breastfeeding as a priority, supported efforts to promote the implementation of evidence-based maternity care practices associated with increased breastfeeding rates across the nine LA DHH regions in LA's 53 maternity hospitals. Other events, which triggered the decision to make a change, included an examination of LA's available resources, including The Gift breastfeeding promotion initiative. A meeting was held by the LA Maternal and Child Health (MCH) Coalition director with The Gift Program Manager, after which an action plan, including a needs assessment, was developed to improve LA breastfeeding rates and associated health outcomes.

Health care staff breastfeeding education programs promoting the "Ten Steps" have been related to improved staff breastfeeding attitudes, knowledge, and self-efficacy, as well as increased breastfeeding rates [21]. The implementation of each of the BFHI "Ten Steps" has been associated with increasing breastfeeding rates [15]. A critical component in "Step Two" of the Baby-Friendly and The Gift "Ten Steps" includes providing breastfeeding education for hospital maternity staff on effective implementation of each of the evidence-based "Ten Steps" [18,19]. To fulfill the need to increase LA breastfeeding rates by improving maternity staff breastfeeding knowledge of The Gift's "Ten Steps," an education program for LA hospitals' maternity staff was developed in 2007 [18]. Goals of the education program were to increase maternity staff breastfeeding knowledge, to improve attitudes towards breastfeeding, and to increase self-efficacy and intentions among hospital staff to seek Gift designations for their hospitals. Increasing breastfeeding knowledge of maternity nursing staff has not only been demonstrated to increase breastfeeding initiation rates, but also to increase exclusive breastfeeding rates at hospital discharge, a goal of The Joint

Commission's Perinatal Care Core Measure breastfeeding requirements [3,22,23].

The impetus for The Gift maternity staff breastfeeding education programs included results of a needs assessment conducted by The Gift Program Manager, which was sent to each LA maternity hospital in 2007. The aim of the needs assessment was to identify LA hospital maternity staff needs. This assessment (response rate of 50%) indicated a desire for a full-day breastfeeding education program with nursing continuing education contact-hour credit provided. It also identified staff desire to increase breastfeeding knowledge levels among LA registered nurses on evidence-based maternity care practices that facilitate maternal-infant bonding and breastfeeding.

## Methodology

The Gift program for maternity staff to improve breastfeeding knowledge levels was approved by Tulane University's institutional review board (IRB). All questionnaires and evaluations are secured in a locked location. There are no conflicts of interests to disclose by the authors.

## Settings

All 53 LA birthing facilities were eligible to participate in The Gift maternity staff breastfeeding education programs. Thirty-five programs were conducted across LA based on hospitals' needs assessment results and geographic locations to facilitate participation from LA DHH's nine regions of the state. Regular announcements regarding available program dates and locations in facilities offering adequate meeting space and audio-visual access were sent via email by The Gift Program Manager to potential participants. Hospitals interested in hosting a program and nursing staff interested in attending a program contacted The Gift Program Manager who handled scheduling and posting of program information on The Gift website. The target audience included maternity staff registered nurses from all LA birthing facilities.

## Program planning

Based on the results of the LA hospitals' needs assessment, a meeting was arranged by the Director of the MCH Coalition, The Gift Program Manager and a LA Internationally Board Certified Lactation

Consultant (IBCLC), which resulted in plans for development of a statewide program entitled, "Promoting Evidence-Based Breastfeeding Support in Louisiana: The Gift." Registered participants attended a free, one day, six contact-hour breastfeeding education program developed and presented by an IBCLC who is also a registered nurse. Program objectives included increasing the ability of participants to be able to 1) Explain benefits of breastfeeding and risks of not breastfeeding for infants and women; 2) Describe elements in assessing maternal-infant breastfeeding positioning, correct infant latch, and signs of adequate milk transfer; 3) Identify two breastfeeding challenges for the mother and two for the infant with management of each; 4) Discuss two barriers to breastfeeding based on myths and effective strategies for overcoming them; 5) Discuss three best practices to promote exclusive breastfeeding and breast milk use in the hospital; 6) Discuss the importance of breastmilk use in the NICU; 7) Discuss communication techniques facilitating informed maternal decisions related to infant feeding choices; and 8.) List national, state and local resources for breastfeeding support. The objectives provided a foundation for the development and evaluation of the educational offering. Funding for the program was provided by the LA DHH, OPH, Maternal-Child Health Program (presently the Bureau of Family Health).

The objectives and outline of the program were reviewed by a panel of International Board Certified Lactation Consultants to determine the potential impact of the educational offering. A pre-test/post-test was designed to be given before and after each program to assess program outcomes. Thirty-five breastfeeding education programs were offered for LA hospitals' maternity staff with a selection of sites based on each facility's willingness to host a program, the availability of an adequate meeting space with audio-visual access, and with consideration of location to accommodate regional representation. The pre and post-program questionnaires were based on evidence-based maternity care practices of the BFHI. A panel of IBCLCs from across LA and Master in Public Health graduate students determined content validity of the questionnaires, and evaluations, as well as the pre-tests and post-tests. Immediately after attending each program, participants completed program evaluations and questionnaires to measure their knowledge of breastfeeding and evidence-based maternity practices facilitating breastfeeding, as well as to evaluate their attitudes, intentions, and self-efficacy related to implementing recommended practices after having attended the program.

Sample Pre-Test and Post-Test Questions-True or False*
1. Immediately after birth, the best place for a healthy term baby is in the nursery, until after the baby is weighed, bathed, gets eye drops and Vitamin K is given, then brought to mom for the 1st breastfeeding.
2. If a newborn baby is fussy and wants to be breastfed every 1-2 hours, mom should get a pacifier and a list of gassy foods to avoid.
3. Until a mother's milk "comes in," it is recommended to give a baby sugar water to prevent jaundice and hypoglycemia.
(*Correct answers are false)

**Table 2:** Sample pre-test and post-test questions.

Goals of the program included increasing participant breastfeeding knowledge by 15%, as well as improving attitudes, self-efficacy, and intentions for implementing evidence-based maternity care practices that are required for The Gift and Baby-Friendly hospital designations. Highlights of the program included:

- Educating staff on the importance of breastfeeding and human milk for improved infant and maternal outcomes
- The role of maternity nursing staff in facilitating maternal-infant bonding and successful breastfeeding
- The process of human milk production and milk transfer from mother to infant, as well as factors facilitating and hindering each

- Improving customer service by promoting effective communication
- Supporting informed maternal decisions related to infant feeding choices
- Promoting utilization of community, state and national breastfeeding resources
- Providing support for national breastfeeding goals and initiatives

Best practices for bonding and breastfeeding that were included in The Gift maternity staff breastfeeding education program were based on guidelines for implementing the BFHI's "Ten Steps to Successful Breastfeeding" [19]. These practices include:

- Promoting early frequent maternal-infant skin to skin contact
- Avoiding unnecessary separation of mother-infant dyads, keeping mother and infant together (rooming-in)
- Promoting maternal competency with staff support for unrestricted adequate infant feedings per infant cues
- Promoting exclusive breast milk feedings in the hospital
- Providing maternal prenatal, perinatal and postpartum education, assistance and support for each mother's informed feeding decisions
- Facilitating referrals to community resources for mothers and infants following hospital discharge

### Strategies for teaching

Educational methods included the use of PowerPoint presentations, films, discussions, case studies, and break-out sessions. Films that reinforced lecture and discussion topics included a film on maternal-infant skin to skin contact immediately following birth and facilitating the first breastfeeding (The Healthy Children Project film replaced Lenard Righard's film in 2010), an animated film depicting correct latch-on elements, instructional films on hand-expression and hands-on pumping techniques, and Boston Medical Center's motivational film on their journey "From Bottles to Breasts to Baby-Friendly" [24-28]. Handouts accompanied traditional learning strategies, and a program CD with additional references and resources was provided to each participant. Hosting hospitals were provided a copy of *Medications and Mother's Milk* by Thomas W. Hale, Ph.D., and a selection of Amy Spangler's breastfeeding books, as well as Ameda's "Your Baby Knows How to Latch-On" DVD and a set of "belly balls" (representing stomach sizes of the newborn), which were provided by the publishers or authors [29-31].

Priority in attendance was given to hospital-based registered nurses working in maternity settings. Eighty percent of the program participants (n=1,086) were registered nurses working in maternal-child departments including labor and delivery, postpartum, nursery, lactation, and NICU. Other participants included physicians, nutritionists, nurse practitioners, hospital management staff, medical office staff (Obstetric, Pediatric and Family Practice), WIC staff, Nurse-Family Partnership staff, and Public Health staff, as well as health science and nursing school faculty and students.

### Data collection and analysis

Each participant completed a pre-test and an identical post-test based on evidence-based maternity care practices facilitating breastfeeding to evaluate the learning that took place during the program (Table 2). Scores were calculated as a sum of correct responses with a maximum of 10 points possible. Additionally, a

program evaluation, which included a 5-point Likert Scale (1=not at all, 2=poor, 3=fair, 4=good, 5=excellent) was administered at the end of each program to measure participant knowledge on self-efficacy in breastfeeding promotion and to identify the degree to which the program had changed participant breastfeeding related knowledge, a skill or attitude, practices, and customer service. To measure perceived confidence and self-efficacy, participants were asked to state how they intended to use newly acquired information.

Descriptive statistics were computed for pre-tests, post-tests, and evaluations. Differences in the mean pre-test and post-test scores overall and by state regions were determined using paired t-tests. Responses to the open-ended evaluation self-efficacy inquiry provided descriptive evidence of the training program's impact.

## Results

### Pre- and Post-tests

Thirty-five maternity staff breastfeeding education programs across the state were conducted from November 2008 to February 2012, which included representation from each of LA's 9 DHH regions. Staff from 48 of the 53 LA maternity hospitals participated in The Gift maternity staff breastfeeding education programs held in their regions of the state.

Paired samples t-test analysis of pre-test and post-test data indicated significantly increased post-test scores from pre-test scores after each of the 35 facility programs ( $P < 0.01$ ). The overall mean post-test score was 24.7% greater than the overall mean pre-test score. On average, knowledge levels after the program intervention ( $M = 72.78$ ) were significantly higher than before the educational program ( $M = 97.46$ ,  $t = -37.48$ ,  $p = 0.0001$ ).

### Program evaluation

Participant responses were overwhelmingly positive (over 95% of "good" or "excellent") for the program increasing participant knowledge, changing a skill or an attitude, enhancing practice performance or improving customer service. Open-ended statement responses indicated increased intentions of participants to implement newly learned strategies promoting evidence-based maternity care practices, as well as their intentions to seek Gift designations and advocate for Baby Friendly designations for their hospitals.

Evaluations were completed with a 91% response rate (n=985). Responses to the training program were overwhelmingly positive. A vast majority of participants reported good or excellent ratings and that the program had:

- Increased their knowledge (98.7%)
- Changed a skill or an attitude (98.4%)
- Enhanced practice performance (98.4%)
- Improved customer service (98.9%)

The evaluation process revealed changes in attitudes, intention, and self-efficacy. Open-ended responses provided more explicit evidence of participants' confidence and perceived ability to implement the strategies and changes in practice that occurred as a result of attending the training. Three prevailing themes emerged during the response analysis:

- 1) Confidence in communicating with women and in providing education facilitating informed maternal infant feeding decisions



- 2) Empowerment for changing practice performance
- 3) Motivation for Baby-Friendly Hospital Initiative policy advocacy

These themes were evident in comments from evaluations that included supporting infant feeding choices for women already breastfeeding, as well as discussing the choice to do so.

## Knowledge

“This course gave me the information to be more supportive of breastfeeding and to correctly approach the patients and hopefully resolve their problem.”

“It gave me clear ways to instruct parents on the benefits of breastfeeding, in ways that include the dad and other family members.”

“Having access to this information makes me more comfortable in talking to the family.”

“I am now knowledgeable about the process of breastfeeding and truths vs. myths and how to relay this to the patient.”

Respondents were appreciative of the inclusion of current evidence-based information about breastfeeding practices and policies. Nurses and staff with extensive foundations in breastfeeding promotion, as well as novice providers, expressed how the knowledge they gained from the program empowered and invigorated them in practice performance.

## Advocacy

“[I] already had a large knowledge of breastfeeding. But [I] learned new practices about pumping and manually expressing milk. I will no longer be afraid to advocate breastfeeding to a large group of people that rarely breastfeed.”

“[I will] be more supportive of breastfeeding moms now that I have more knowledge and understanding.”

“Great program to remind nurses of ways to promote breastfeeding that we may have forgotten or did not even know.”

Host facilities were not chosen based on their Gift designation status. At every training program held at a facility that was not previously Gift designated, at least one participant expressed how the session had increased their motivation, ability and intention to advocate for their facility to work towards The Gift designation.

“First, [I plan to] meet with staff, inform them of the desired change and the need for us to work as a team as every person is an intricate part of each family’s puzzle. Have them voice their concerns/biases. Initiate the change slowly, encouraging staff to embrace each step.”

“[I plan to] help [birthing facility] put Gift policies into practice and educate patients with new knowledge.”

“[I plan to] put into practice the things learned to help our facility become Gift designated.”

“I have the attitude that I can make a difference, which is exciting!”

## Outcomes

Six hospitals had achieved The Gift designation prior to hosting programs at their facilities. Twelve additional hosting facilities achieved The Gift designation following their programs, within 21 months on average. Two non-hosting facilities whose staff had

attended The Gift training sessions in their regions submitted Gift applications with their hospitals becoming Gift designated within 21 months of attending a program. Additional information on state breastfeeding data before and after completion of The Gift maternity staff breastfeeding education programs includes the following:

- LA’s ranking among US states and territories by the CDC mPINC surveys of evidence-based “Maternity Practices in Infant Nutrition and Care” improved from 50th place (of 54) in the 2007 mPINC report to 36th place (of 53) in the 2015 mPINC report [32].
- The number of LA Gift designated hospitals increased from 6, when programs began, to 29 as of September 2016 [18].
- There were no Baby-Friendly designated hospitals in LA prior to or during The Gift maternity staff breastfeeding education programs. Five Louisiana hospitals have since been designated Baby-Friendly as of March 2015 (4 of these were previously Gift designated) [9,18].

The LDH, OPH, Bureau of Family Health has continued to provide resources promoting breastfeeding following the conclusion of The Gift maternity staff breastfeeding education programs. This support has resulted in statewide, regional, and community meetings promoting breastfeeding and facilitating collaboration between hospitals, community partners and other breastfeeding advocates. Whether in person, in teleconferences, or in webinars, discussions among LA hospitals have continued with hospitals offering and providing support to each other in meeting The Gift goal of increasing LA breastfeeding rates for improved maternal and child health outcomes.

## Implications for Practice

### Program strengths (reported by participants)

According to participants, program strengths included having live instruction which increased learning by facilitating discussions, small group exercises, question and answer sessions and role-playing. Repeating programs within regions facilitated staff attendance from the same facility, since staff working during one program could attend another. Participant attendance was incentivized by affording six free nursing education contact-hours, as well as by having programs near home which saved attendees travel and lodging expenses.

Limitations of the program included an attendance barrier, especially in smaller hospitals, due to staffing challenges posed by a day-long program. Study design and limited data analysis preclude any long-term program effectiveness.

More research is needed to explore effective strategies for improving maternity staff breastfeeding knowledge and attitudes [33]. Shorter breastfeeding programs may increase attendance due to challenges posed by longer programs. Other recommendations to increase maternity staff access include promoting train-the-trainer programs for local presenter development, webinar programs for reducing time/travel constraints, and media stream programs on accessible sites. More research is needed in identifying factors related to socio-demographic and racial-ethnic disparities and inequities in breastfeeding rates to identify and implement effective strategies for overcoming barriers in underperforming states. The time has come for recognition of the importance of fostering and promoting a collaborative environment among maternity hospitals and other breastfeeding advocates seeking common goals to increase breastfeeding rates.

The results of an investigation of a six contact-hour education program for maternity hospital nursing staff to promote the “Ten Steps to Successful Breastfeeding” suggest there is an improvement in staff breastfeeding knowledge, attitudes, intentions and self-efficacy toward implementing evidence-based maternity practices associated with increased breastfeeding rates.

## Conclusions

In this study, we have demonstrated that The Gift breastfeeding education programs promoted quality improvement by increasing LA maternity staff knowledge, attitudes and self-efficacy to pursue The Gift and Baby-Friendly designations. When The Gift breastfeeding education programs of 2008-2012 began, there were LA WIC breastfeeding promotions, but no hospital focused LA breastfeeding promotion programs in progress.

Since the conclusion of The Gift maternity staff breastfeeding programs, with demonstrated improvements in breastfeeding knowledge, attitudes and self-efficacy for implementing the “Ten Steps,” collaboration and participation by LA hospitals in other breastfeeding programs have increased.

Subsequently, LA hospitals have been participating in breastfeeding promotion activities where collaboration and sharing prevail, including the formation of mentor-mentee relationships between LA hospitals of similar sizes with shared challenges for sustainability of study outcomes. Other programs that have taken place in LA from 2014-present include two statewide breastfeeding summits, as well as quarterly regional collaborative meetings and cohort calls with participation among area hospitals from North, Central, and South Louisiana (with more planned in the future). These meetings of hospitals have facilitated collaboration in implementing the “Ten Steps.” Support, technical assistance and resources for these LA breastfeeding promotion activities has been provided by the LA Bureau of Family Health, whose Gift Breastfeeding Program Team includes three IBCLC nurse consultants.

Additionally, hospitals across LA have applied for and have been participating in national and regional programs promoting the “Ten Steps” and Baby-Friendly designations, which may be related to the self-efficacy outcome demonstrated in the study. As the study program was nearing its end, 4 LA hospitals that had hosted The Gift education programs applied for and were accepted in the CDC Best Fed Beginnings breastfeeding initiative, which provided assistance and resources in their 4-D Pathway (Discovery, Development, Dissemination, Designation) to Baby-Friendly designation [9,34]. Terrebonne General Hospital, Opelousas General Hospital, East Jefferson General Hospital, and Tulane Lakeside Hospital for Women and Children were among the first 5 Baby-Friendly hospitals in LA by April 2015 [34]. The 1st LA Baby-Friendly hospital was Ochsner Baton Rouge, which did not participate in the CDC program. As of September 2015, fifteen additional LA hospitals whose staff had attended The Gift education programs in their regions had applied for and had been accepted in either the CDC Enhancing Maternity Practices (EMPower) Breastfeeding Initiative or the Communities and Hospitals Advancing Maternity Practices (CHAMPS) Initiative [35,36]. These initiatives have been providing assistance and resources promoting hospital implementation of the “Ten Steps”, as well as facilitating progression through the 4-D Pathway to Baby-Friendly designation [9,35,36].

Porter-O’Grady [37], international healthcare consultant, has called on nursing to connect evidence-based practice with innovation for improved outcomes in care delivery. Education of the patient and family impacts information management of the healthcare team as well. It is essential to continue to improve and monitor maternity staff knowledge, attitudes and self-efficacy, as well as to effectively utilize resources facilitating implementation of the “Ten Steps.”

Louisiana breastfeeding initiation rates have increased during the study by review of NIS data from 2007 to 2013, however LA breastfeeding rates have remained in the lowest quartile of US state rankings in each category of Healthy People 2020 goals, as reported by the CDC Breastfeeding Report Card [3,11]. We believe that higher rates of breastfeeding require continued education of hospital staff to sustain critical outcomes of this study. Expectations are high for associated increases in breastfeeding rates with improved outcomes for LA women and children.

Funding for this project was provided by the LA DHH-OPH-Maternal Child Health Program (presently known as the LA Department of Health-OPH-Bureau of Family Health).

## References

1. United States Department of Health and Human Services (US DHHS) (2011) The surgeon general’s call to action to support breastfeeding. US Department of Health and Human Services: Office of the Surgeon General.
2. American Academy of Pediatrics (2012) Breastfeeding and the use of human milk. *Pediatrics* 115: 496.
3. Healthy people 2020: Breastfeeding objectives (2011) United States Breastfeeding Committee (USBC).
4. Implementing the joint commission perinatal care core measure on exclusive breast milk feeding (2010) United States Breastfeeding Committee (USBC).
5. Bartick M, Reinhold A (2010) The burden of suboptimal breastfeeding in the United States: A pediatric cost analysis. *Pediatrics* 125: e1048-1056.
6. Bartick MC, Stuebe AM, Schwarz EB, Luongo C, Reinhold AG, et al. (2013) Cost analysis of maternal disease associated with suboptimal breastfeeding. *Obstet Gynecol* 122: 111-119.
7. Rosenberg KD, Stull JD, Adler MR, Kasehagen LJ, Crivelli-Kovach A (2008) Impact of hospital practices on breastfeeding outcomes. *Breastfeeding Medicine* 3: 110-116.
8. UNICEF/WHO (2010) BFHI USA: Implementing the UNICEF/WHO baby friendly hospital initiative in the usa.
9. Baby Friendly USA (2016) Baby friendly USA: The gold standard of care.
10. State morbidity report (2010) Louisiana Department of Health and Hospitals (LA-DHH).
11. Breastfeeding report cards: 2007-2016, national immunization survey data and maternity practices in infant nutrition and care survey data (2016) Centers for Disease Control and Prevention.
12. Ma P, Brewer-Asling M, Magnus JH (2013) A case study on the economic impact of optimal breastfeeding. *Matern Child Health J* 17: 9-13.
13. Morbidity and mortality weekly report (2010) Racial and ethnic differences in breastfeeding initiation and duration, by state-National immunization survey, United States, 2004-2008. *Centers for Disease Control and Prevention* 59: 327-334.
14. Merewood A, Patel B, Newton K, MacAuley L, Chamberlain L, et al. (2007) Breastfeeding duration rates and factors affecting continued breastfeeding among infants born at an inner-city US Baby Friendly Hospital. *J Hum Lact* 23: 157-164.
15. DiGirolamo AM, Grummer-Strawn LM, Fein SB (2008) Effect of maternity-care practices on breastfeeding. *Pediatrics* 122 Suppl 2: S43-49.

16. Meyers JA (2012) Breastfeeding rates increase after a city-wide effort to improve healthcare provider knowledge and attitude. *Breastfeeding Medicine* 8: 342-343.
17. Walsh AD, Pincombe J, Henderson A (2011) An examination of maternity staff attitudes towards implementing baby friendly health initiative (BFHI) accreditation in Australia. *Maternal and Child Health Journal* 15: 597-609.
18. Squiers L, Brown D, Parvanta S, Dolina S, Kelly B, et al. (2016) The smokefreetxt (SFTXT) Study: Web and mobile data collection to evaluate smoking cessation for young adults. *JMIR Res Protoc* 5: e134.
19. Baby Friendly Hospital Initiative (BFHI) (2016) The ten steps to successful breastfeeding.
20. United States Breastfeeding Committee (USBC) (2013) Directory of state, territorial and tribal breastfeeding coalitions.
21. Ingram J, Johnson D, Condon L (2011) The effects of baby friendly initiative training on breastfeeding rates and the breastfeeding attitudes, knowledge and self-efficacy of community health-care staff. *Prim Health Care Res Dev* 12: 266-275.
22. Martens PJ (2000) Does breastfeeding education affect nursing staff beliefs, exclusive breastfeeding rates and baby friendly hospital initiative compliance? The experience of a small, rural Canadian hospital. *J Hum Lact* 16: 309-316.
23. Tender JA1, Janakiram J, Arce E, Mason R, Jordan T, et al. (2009) Reasons for in-hospital formula supplementation of breastfed infants from low-income families. *J Hum Lact* 25: 11-17.
24. Healthy Children Project Center for Breastfeeding on Line Video (2010) Skin to skin in the first hour after birth: Practical advice for staff after vaginal and cesarean birth.
25. Righard L (1992) Lennard Righard's delivery self attachment (DVD). Geddes Productions LLC.
26. Ameda (2008) "Your baby knows how to latch-on".
27. Morton J (2008) Making enough milk, the key to successful breastfeeding-planning for day one (DVD). "Early hand expression increases later milk supply"; "How to use your hands when you pump".
28. Injoy Videos (2001) "From bottles to breasts to baby-friendly: The challenge of change".
29. Hale TW (2006) Medications and mother's milk. Hale Publishing, LC.
30. Spangler A (2004) Breastfeeding, keep it simple. Amy's Babies Publishing.
31. Spangler A (2006) Breastfeeding: A parent's guide. Amy's Babies Publishing.
32. Centers for Disease Control and Prevention (CDC) (2008) Breastfeeding-related maternity practices at hospitals and birth centers--United States, 2007. *Morb Mortal Wkly Rep* 57: 621-625.
33. Bernaix LW, Schmidt CA, Arrizola M, Iovinelli D, Modina-Poelinex C (2008) Success of a lactation education program on NICU nurses' knowledge and attitudes. *J Obstet Gynecol Neonatal Nurs*. 37: 436-445.
34. Centers for Disease Control and Protection (2016) Best fed beginnings.
35. Centers for Disease Control and Protection (2015) Empower breastfeeding: Enhancing maternity practices.
36. Community hospitals advancing maternity practices (CHAMPS) (2014) CHAMPS hospitals.
37. Davidson S, Weber D, Porter-O'Grady T, Malloch K (2017) Leadership for evidence-based innovation in nursing and health professions. Jones Bartlett Learning.