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BREASTFEEDING SHIFT CHAMPIONS AND EXCLUSIVE BREASTFEEDING

Effectiveness of Breastfeeding Shift Champions on Exclusive Breastfeeding

By

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Abstract

Purpose. This project evaluated the effect of breastfeeding support on breastfeeding and exclusive breastfeeding rates among postpartum mothers in immediate postpartum period. The breastfeeding support was provided by breastfeeding shift champions (BFSC) following childbirth.

Design. A convenience sample of BFSCs, aged between 18 and 44 years, was utilized.

Method. Pre-and post-intervention questionnaires were used to evaluate breastfeeding knowledge of BFSC. Breastfeeding and exclusive breastfeeding rates were extracted, pre- and post- intervention, from electronic medical records of newborns and their mothers.

Data analysis. Descriptive and inferential statistics were used for data analyses. Descriptive data were displayed using frequency distributions tables. Paired t-test was utilized in analyzing breastfeeding knowledge of BFSC while Chi-square and Mann-Whitney U tests were used in analyzing the breastfeeding and exclusive breastfeeding data.

Nursing Practice Relevance: Audit results of postpartum nurses in this facility indicated that nurses were unable to effectively provide breastfeeding support to mothers for reasons including heavy workload, staffing challenges, and time constraint. The goal of this project was to reduce nurses' tasks, promote newborn's wellness, increase mothers' confidence with breastfeeding, and ultimately, increase breastfeeding/exclusive breastfeeding rates.

Key words: Breastfeeding, exclusive breastfeeding, professional breastfeeding or

lactation support, immediate postpartum

BREASTFEEDING SHIFT CHAMPIONS AND EXCLUSIVE BREASTFEEDING

Effectiveness of Breastfeeding Shift Champions on Exclusive Breastfeeding Rate

Chapter 1

Introduction lactation consultant

Breastfeeding is widely accepted as the preferred method of infant feeding, and breast milk regarded as the gold standard of infant nutrition. Breastfeeding is associated with many health benefits to infants and their mothers. These health benefits include protection against childhood infections thereby increasing the child's survival rate, increased cognitive development, reduced risks of sudden infant death syndrome and development of allergies (United States Department of Health and Human Services [USDHHS], n.d.a.), and reduced risks of childhood cancers (Baby-Friendly USA[BFUSA], 2012). Mothers who breastfeed, have reduced risks of breast and ovarian cancer, and osteoporosis (BFUSA, 2012). Conversely, poor breastfeeding practices has been linked to many childhood diseases such as obesity (Centers for Disease Control and Prevention [CDC], 2015; Uwaezuoke, Eneh, & Ndu, 2017), diarrheal diseases, respiratory diseases including pneumonia, and diabetes among many others (American Academy of Pediatrics [AAP], 2012; CDC, 2015; Gunderson et al, 2015; World Health Organization [WHO], 2017; Yotebieng, Chalachala, Yabcock, & Behets, 2013). The *Breastfeeding Report Card-United States, 2016* (CDC, 2016) reveal that in many states, including Georgia, breastfeeding and exclusive breastfeeding rates fall below targets set by *Healthy People 2020*. The targets for babies 'ever breastfed' is 81.9 percent, breastfeeding at six months, 60.6 percent, while exclusive breastfeeding rate at three months is 46.2 percent (CDC, 2016; USDHHS, n.d.b). Georgia's breastfeeding scores during this period were; 69.2 percent (ever breastfed), 48.9 percent for breastfeeding at six months, and 38.7 percent for exclusive breastfeeding at three months (CDC, 2016). The WHO (2016) revealed that exclusively



breastfeeding infants for six months, will prevent some 800,000 deaths among children under five years, and save about 300 billion dollars every year. Despite these reports and the many benefits of breastfeeding, challenges with breastfeeding initiation and duration continue to occur.

Statement of the Problem

Evidence shows that more than 80 percent of babies in the United States are breastfed at birth, but only 25 percent are exclusively breast fed at six months of age (CDC, 2016). Support from families, clinicians, and the society, influence a mother's decision and willingness to initiate and sustain breastfeeding (CDC, 2015; 2016). The Joint Commission (TJC) weighed in on exclusive breastfeeding practices and mandated its inclusion as one of the perinatal core measures for birthing facilities delivering more than 1100 births annually (United States Breastfeeding Committee [USBC], 2013). Based on this mandate, a large acute care hospital in Georgia adopted exclusive breastfeeding rate as a performance indicator for its mother-baby unit, to be reported quarterly and annually. The unit's goal was set at 30 percent. To facilitate meeting this goal, the hospital adopted the Baby-Friendly USA's *Baby-Friendly Hospital Initiatives* ([BFHI] BFUSA, 2012) which included integrating the *Ten Steps to Successful Breastfeeding* into its maternity practices. Following the integration of BFHI into its practices, the hospital's exclusive breastfeeding rate improved, resulting in its designation as a baby-friendly hospital. Several months after its designation as baby-friendly, the exclusive breastfeeding rates started to decline. The mother baby unit of this hospital has struggled to attain the exclusive breastfeeding goal of 30 percent set by its executive management. Exclusive breastfeeding scores for the first quarter of 2015 was 26.7 percent, followed by 36.0 percent, 27.1 percent, and 22.9 percent, respectively, in the second, third, and final quarters. The 2015 average annual performance score was 28.4 percent. Further decline in exclusive breastfeeding rate was observed in 2016. In the



first quarter of 2016, the rate was 23 percent, followed by 28.1 percent in second quarter, and 26.8 percent in third quarter, respectively. Random breastfeeding audit of postpartum nurses on the unit revealed that nurses were unable to effectively provide breastfeeding support to mothers for reasons including heavy workload, staffing challenges, and the amount of time required to provide support. The hospital faced dearth of lactation consultants with a total of two designated for an average annual delivery of 2,500. Both the lactation and nursing staff are expected to provide needed breastfeeding support to new mothers.

Background

The path to designation of a maternity facility as ‘baby-friendly’ is not easy. Maintaining this designation and meeting yearly targets for breastfeeding and exclusive breastfeeding rates, are priorities for this hospital. New mothers need breastfeeding education and support especially in immediate postpartum period, to initiate and sustain breastfeeding (Fu et al., 2014). The role of clinicians in effectively providing the required breastfeeding support in the immediate puerperium, cannot be underestimated. Evidence indicates that when hospital workers provide breastfeeding support to new mothers, it increases the chances of continuity of breastfeeding at home, after discharge from hospital (CDC, 2011). Mothers lose confidence with sustaining breastfeeding when the desired professional support is not available (Nesbitt et al., 2012). Results of periodic audit of new mothers on the mother-baby unit indicate that some mothers struggle with knowing how to position their babies for optimal breastfeeding. Other problems identified include challenges with achieving latch, understanding pacifier use, and a lack of adequate knowledge of feeding babies on demand. In addition, mothers were anxious about adequacy of breast milk production. Likewise, related audits of the nurses on the mother baby unit indicate that the nurses experienced time constraint with providing breastfeeding support to

new mothers. Depending on the mother's lactation needs, providing breastfeeding support may take longer than anticipated causing nurses to prioritize clinical activities. To augment the nurses' breastfeeding support practices, the hospital has two designated lactation consultants who provide lactation support for its annual average 2500 births and hundreds of prenatal visits. The dearth of lactation consultants created additional burden to the nurses' workload and their abilities to effectively support breastfeeding mothers.

Definition of Terms

Breastfeeding. Feeding with breastmilk in conjunction with other forms of food or liquid including water.

Exclusive breastfeeding. Feeding with breastmilk only. The infant has not received any other form of food or liquid including water.

Breastfeeding Shift Champion. A registered nurse, patient care technician, and/or certified nursing assistant, who received lactation course, or is classified as a 'Certified Lactation Counselor' (CLC).

Breastfeeding support. Individualized or group guidance with positioning of infants, assistance with latch. In addition, demonstration of the use of breast pumps, pumping of breast milk, and management of common breastfeeding problems.

Professional breastfeeding support. Includes breastfeeding assistance provided by healthcare workers and clinicians such as nurses, support staff, lactation consultants.

Immediate postpartum or puerperium. Period from childbirth till hospital discharge.

Feeding on cue. A baby is fed on demand when there is indication of hunger.

Healthcare providers. Everyone working with patients, including mothers and their infants. Include physicians, nurses, ancillary staff, and lactation consultants.

Primiparas. First time mothers.



Purpose of the Study

The purpose of this quality improvement project is to evaluate the effectiveness of BFSC in increasing breastfeeding and exclusive breastfeeding rates among postpartum mothers. The champions, through the provision of breastfeeding support to new mothers, provide opportunities for mothers to ask questions, and be offered individualized care. This project explores the feasibility of utilizing direct patient care providers; nurses, patient care technicians, and nursing assistants, who have received the basic lactation course, to provide such breastfeeding support to new mothers.

Aims and Clinical Questions

The project question is, “Will the use of BFSC over a period of four weeks, versus non-use of champions, increase breastfeeding/exclusive breastfeeding rate at hospital discharge among postpartum women?” The project assumed that new mothers have heard about breastfeeding before childbirth, and that BFSC possess the knowledge, preparation, and skills to support new mothers to breastfeed effectively. The third assumption is that breastfeeding and exclusive breastfeeding rates can be measured and improved upon. There are two main aims of the project:

- A. To increase the champions’ breastfeeding knowledge level and the ability to provide breastfeeding support to new mothers.
 1. Does breastfeeding class increase the champions’ breastfeeding knowledge level?
 2. Does breastfeeding class increase the champion’s readiness to provide breastfeeding support to new mothers?
- B. To increase breastfeeding and exclusive breastfeeding rates among new mothers

3. Does breastfeeding support provided by breastfeeding champions, increase breastfeeding rates?
4. Does provision of breastfeeding support to new mothers, result in increased exclusive breastfeeding rates?

Opportunities and Challenges

This scholarly project assessed whether breastfeeding support provided to new mothers by breastfeeding champions, increased breastfeeding and exclusive breastfeeding rates at discharge of mother-baby couplets from the hospital. Current practice of the hospital is to have primary care nurses, a lactation counselor, and two lactation consultants, provide breastfeeding support to mothers. In the face of nursing shortage, nurses are unable to fulfill this expectation. In the United States of America, it is projected that shortage of nurses will continue as many baby boomers retire, and the complexity of care increases, leading to increased demand for healthcare services (American Association of Colleges of Nursing, 2016). By the year 2022, it is expected that the nursing workforce will grow by 19 percent from 2.71 million in 2012 to 3.24 million (U.S. Department of Labor, 2013), an indication that the nursing shortage will not go away any time soon. In recognition that there is massive shortage of nurses, hospitals are embarking on strategies to ameliorate its negative impact on patient care. This project is a change phenomenon designed to promote breastfeeding practice among new mothers in the immediate postpartum. This is achieved by utilizing breastfeeding champions to support breastfeeding activities, rather than rely on primary care nurses and lactation consultants to do so.

Chapter 2

Review of Literature and Synthesis of Evidence

In this chapter, literature on breastfeeding support is discussed. Included are the search criteria used to obtain literature, the summary, and the synthesis of literature regarding breastfeeding support. Also included are the theoretical frameworks supporting the project.

Search for Evidence

A literature search was conducted using GALILEO, for scholarly work published between 2010 and 2017. Databases searched were PROQUEST, PUBMED, and CINAHL. Key words used initially for the search include “breastfeeding” AND “postpartum mother” AND “lactation support”. Secondary search using terms “breastfeeding”, “exclusive breastfeeding”, “postpartum period”, and “clinical lactation support”, was conducted “. The searches returned 7, 521 articles. Additionally, women health printed journals were manually searched and five articles found. A total of 56 articles were found suitable for use. However, 12 articles, directly related to the improvement project, were selected and included. The search/selection process is highlighted in Figure 1.

Summary of Evidence

The articles obtained were reviewed and synthesized. The synthesis of literature revealed six major areas of concentration: a) postpartum mothers and breastfeeding, b) impact on breastfeeding and exclusive breastfeeding rates, c) nature of breastfeeding support, d) timing of support, e) effectiveness of breastfeeding support, and f) clinicians offering the support.

Figure 1. Literature Selection Process

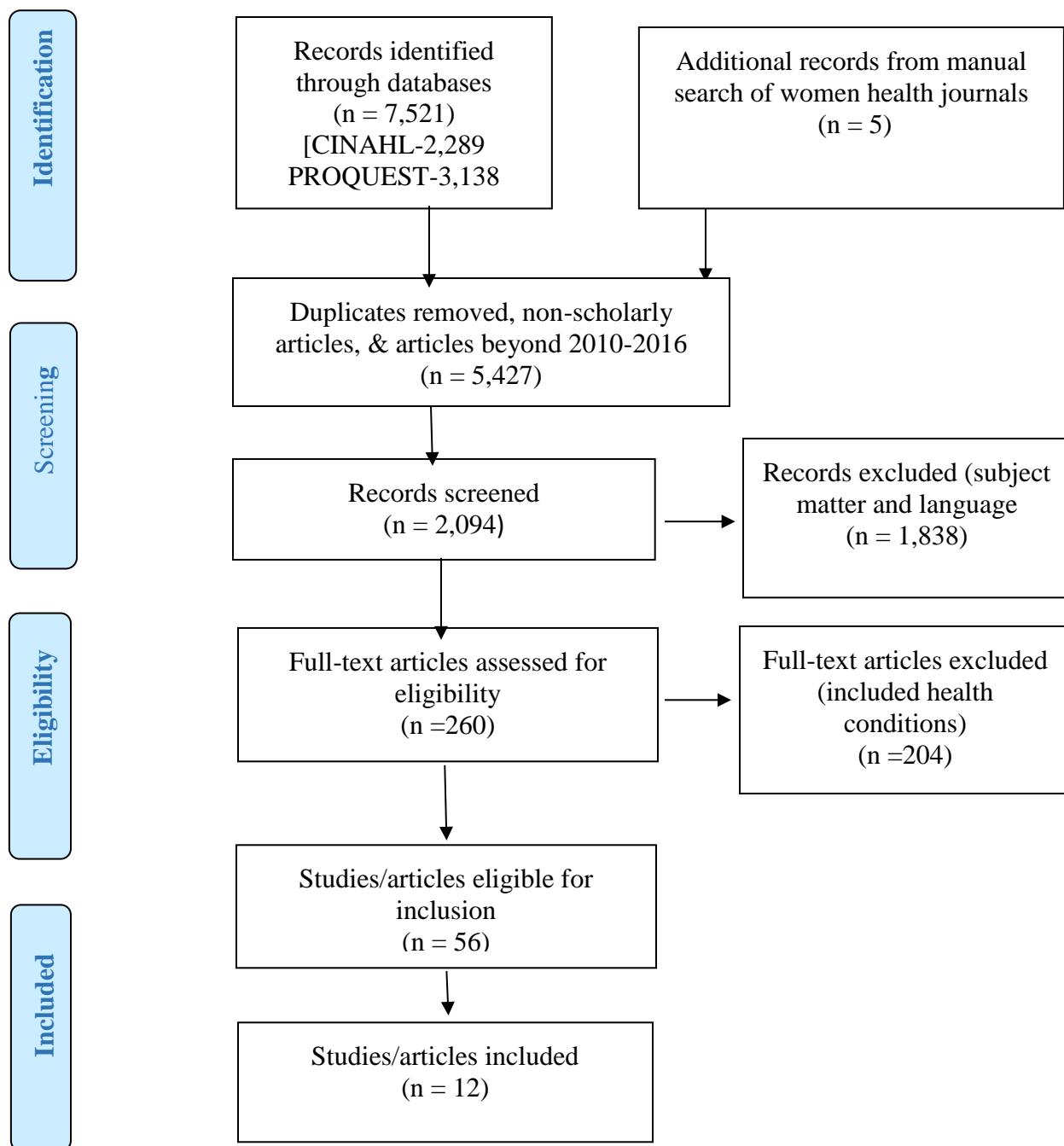


Figure 1. Flow Diagram of Literature Search. Adapted from “Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement” by D. Moher, A. Liberati, J. Tetzlaff, and D. Altman, 2009, *PLoS Med* 6(6): e1000097. Doi:10.1371/journal.pmed1000097

Postpartum Mothers and Breastfeeding

Research indicates that some women regardless of age, ethnicity, and number of previous births, find it difficult to initiate and sustain breastfeeding without some form of breastfeeding education and/or support (Fu et al., 2014; Lewallen & Street, 2010; Wambach et al., 2011). In a randomized control study designed to evaluate the effectiveness of breastfeeding education on breastfeeding initiation, Wambach et al. (2011), observed that adolescent mothers require some form of breastfeeding support to initiate and sustain breastfeeding. The participants, African-American primiparas, aged between 15 and 18 years, were randomly assigned to one experimental and two control groups. Outcome variables measured at discharge from hospital were breastfeeding and exclusive breastfeeding initiation. Wambach et al. (2011) reported a higher value and significant difference ($p < .05$) in intention to breastfeed, and the use of social and professional support, in the experimental group. Findings revealed that 69 percent of the sample ($n = 289$) initiated breastfeeding by hospital discharge. Higher scores of breastfeeding were recorded among the experimental group (79 percent), and a significant association was reported between the intervention and breastfeeding initiation ($\chi^2(df = 2) = 6.81, p < .03$). The proportion of mothers exclusively breastfeeding at hospital discharge was 44.6 percent. In an unrelated study of 13 African-American mothers, Lewallen and Street (2010) found that many mothers were unable to initiate and sustain breastfeeding because of lack of professional or peer support. In addition to lack of professional support, the authors found that inadequate breastfeeding knowledge impeded breastfeeding. The study therefore, emphasized the importance of providing new mothers with breastfeeding information and support, as early as possible, in pregnancy, and after delivery (Lewallen & Street, 2010).

Impact on breastfeeding and exclusive breastfeeding

Reasons attributed for inability to breastfeed range from lack of breastfeeding information, negative and insufficient guidance with breastfeeding techniques, lack of information on handling common breastfeeding problems, and inadequate emotional support (Lewallen, & Street, 2010). In a study by Hinsliff-Smith, Spencer, Lecturer, and Walsh (2013), new mothers expressed how unprepared some of them were to the reality and demands of breastfeeding. The mothers perceived that breastfeeding prenatal classes did not prepare them for the reality of postnatal experience. The mothers reported limited readiness to engage in breastfeeding activities because of failure to understand behaviors of newborns (Hinsliff-Smith et al., 2013). Furthermore, the authors (Hinsliff-Smith et al., 2013), reported that new mothers who felt ill-prepared to understand newborns' feeding cues, attributed newborn cries to hunger, resulting in frequent infant feeding. The mothers became frustrated leading to a negative impact on breastfeeding. Other barriers include inadequate support from people within the new mother's immediate environment, delay in providing breastfeeding support (Chaput, Adair, Nettel-Aguirre, Musto, & Tough, 2015), low milk supply, mother-baby separation, lack of confidence, and insufficient breastfeeding information (Haroon, Das, Salam, Imdad, & Bhutta, 2013). Many studies and reports recommend breastfeeding support as strategy for improving initiation rates and duration, and such support should be available to all mothers (USDHHS, 2011).

Nature of breastfeeding support

Breastfeeding support varies from group or individualized breastfeeding teaching, counseling, to practical demonstration of breastfeeding techniques, equipment uses, and/or distribution of promotional materials. In a systematic review of studies conducted in over 21 countries, involving more than 56,000 couplets, Renfrew, McCormick, Wade, Quinn, and

Dowswell (2012) found that breastfeeding support, whether individualized or group, face to face or otherwise, should be offered to mothers to increase exclusive breastfeeding initiation and duration. The authors observed that support which was planned, scheduled, timely, and based on the mother's needs, was more effective than when the support was reactive and initiated by the mother. On the contrary, Chaput et al (2015) reported a negative effect on breastfeeding rate when new mothers received unsolicited breastfeeding support from nurses. It is important to note that no other study supports Chaput's finding.

Timing of support

Timing addresses the period of initiation and the length of time spent providing support to each of the mothers. Fu et al. (2014) found that timeliness of breastfeeding support significantly impacts breastfeeding initiation and duration. The authors concluded that breastfeeding support provided in the immediate post-partum period, within 24 hours after childbirth, is critical to increasing exclusive breastfeeding rate. Lewallen and Street (2010) recommended that the prenatal period should be devoted to teaching mothers the benefits of breastfeeding, as foundation for follow-up breastfeeding support in the postpartum period. Studies have emphasized the effectiveness of breastfeeding support provided during postpartum period on breastfeeding rates (Chaput et al., 2015; Pannu, Giglia, Binns, Scott, & Oddy, 2011). In their study, Pannu et al. (2011) emphasized the effectiveness of breastfeeding education and promotion materials provided during antenatal and postpartum periods in increasing breastfeeding rates. The authors found that breastfeeding education was required in both periods however, breastfeeding support during postpartum, was more significant on breastfeeding initiation and duration. Chaput et al. (2015), opined that breastfeeding support should be provided immediately after childbirth, to postpartum mothers experiencing breastfeeding

difficulties, as strategy to increase initiation and duration of breastfeeding. To significantly impact breastfeeding, the support should be readily available, accessible, and provided by knowledgeable clinicians.

On the other hand, a study conducted in Australia on views of nurses and midwives on breastfeeding support needs of mothers (McLlland, Hall, Gilmour, & Cant, 2014), revealed that some mothers need extensive time-consuming breastfeeding support, to initiate and sustain breastfeeding. However, in the busyness of a nurse's daily activities, providing breastfeeding support may be challenging because of time constraint. Other more demanding activities may be prioritized over breastfeeding support. This results in mothers getting frustrated and giving up on breastfeeding.

Effectiveness of breastfeeding support

Breastfeeding support has shown to impact breastfeeding duration and rates. Haroon et al. (2013), conducted a systematic review of studies to examine the effectiveness of various educational interventions and breastfeeding support on various categories of breastfeeding, exclusive, predominant, partial, or no breastfeeding. Diverse settings were used in that study including hospitals and community health centers, urban and rural, large and small facilities, and developing and developed nations. Haroon et al. (2013) reported a statistically significant increase in exclusive breastfeeding rate by 43 percent among mothers who received breastfeeding education/support at day one, 30 percent less than one month, and 90 percent at one to five months, respectively. Similarly, in a systematic review of 67 studies on in-hospital breastfeeding support, Renfrew et al. (2012) evaluated various types of lactation support, the timing, the providers providing the support, and the impact of the support on breastfeeding rates and duration. The findings revealed that breastfeeding support, irrespective of the type, increased

breastfeeding and exclusive breastfeeding duration. The Risk Ratio (RR) for stopping breastfeeding before six months was 0.91, 95% confidence interval (CI) 0.88, 0.96). Likewise, there was a correlation between breastfeeding support and increased exclusive breastfeeding (RR at six months 0.86, 95% CI 0.82 to 0.91; RR at four to six weeks 0.74, 95% CI 0.61 to 0.89). Based on the findings, professional breastfeeding support from clinicians and /or peer support, were more effective, if provided more regularly, and if tailored to the mothers' needs. On the contrary, Khresheh, Suhaimat, and Jalamdeh (2011) found no association between breastfeeding education and support, and breastfeeding duration though there was an increase in breastfeeding knowledge among the new mothers. No other study was found to support this finding.

Clinicians offering the breastfeeding support

It is known that clinicians in the immediate postpartum period influence mothers' ability to initiate and sustain breastfeeding. In a study of breast pump education, Chen, Johnson and Rosenthal (2012) reported a positive association and longer breastfeeding duration when breast pump education was conducted by the mothers' friends and/or relatives (OR: 1.70, 95% CI: 1.13-2.55). The expectation would have been that clinicians would make positive impact on mothers. Evidence reveals that clinicians may positively or negatively impact breastfeeding outcomes (Renfrew et al., 2012). Factors that could impact the effectiveness of breastfeeding support include inadequate staffing, communication style, and clinicians' level of breastfeeding knowledge (Schmied, Beake, Sheehan, McCourt, & Dykes, 2011). Regardless of provider type, peer and professional support are crucial and essential for optimal breastfeeding (Renfrew et al., 2012). Schmied et al. (2011), reported that professional support fostered communication between the nurse and new mother, thereby increased the new mother's confidence with breastfeeding. Professional support was perceived as being on a continuum with positive on one

end, and discouraging, non-productive, or inhibiting factors on the other (Schmied et al., 2011). Support perceived as positive, effective, and supporting, helped the mothers connect with their babies.

Summary of Expert Evidence

Breastfeeding may be a natural phenomenon however, it is not innate, and research reveals that it is a learned skill (Australia Breastfeeding Association, 2012; Office on Women Health, 2017). Many mothers therefore, require active support for establishing and sustaining appropriate breastfeeding practices (Haroon et al., 2013; USDHHS, 2011). In line with this, in 1992, WHO and United Nations Children Emergency Fund (UNICEF), launched the BFHI and the *Ten Steps to Successful Breastfeeding* to strengthen hospital practices and enable hospitals to provide evidence-based breastfeeding support of mothers (WHO, 2017). Mothers who received breastfeeding education and support are more likely to initiate and sustain breastfeeding. Nurses and support staff play very important roles in providing breastfeeding education, counseling, coaching, and support to new mothers. This is vital in ensuring that each mother has adequate breastfeeding information to make informed infant feeding choices, and to attain individualized breastfeeding goals.

In a position statement in support of breastfeeding, the Association of Women's Health, Obstetric and Neonatal Nurses (AWHONN), acknowledges that nurses providing care to mothers and infants in the United States, are crucial in supporting breastfeeding because 98 percent of all births occur in hospitals (AWHONN, 2015). Nurses and ancillary staff, especially those in constant care of the mother- baby couplets, are expected to possess appropriate breastfeeding knowledge and competencies to effectively support mothers. The basic preparation of registered nurses is not adequate for nurses to effectively support breastfeeding mothers. Studies have

shown that in many settings, the clinicians providing care to new mothers, do not possess in-depth knowledge of how to prevent and/or handle breastfeeding problems (McFadden et al., 2017). More preparation and training are required to equip these clinicians to provide appropriate and effective breastfeeding support to new mothers and their families. In response to this, the USBC (2010) developed a set of breastfeeding competencies which addresses breastfeeding knowledge, attitudes, and skills of nursing staff.

The Surgeon General's call to action on breastfeeding practices, emphasized the provision of professional breastfeeding support especially in the immediate puerperium, to promote breastfeeding (USDHHS, 2011). Professional support provided by healthcare workers and clinicians is crucial in addressing new mothers' concerns with positioning, latch, milk production, use of breast pumps, and common breastfeeding problems. Thus, breastfeeding support from nurses, lactation consultants, and others, should be provided to all mothers intending to breastfeed. The Surgeon General's *Call to Action* (USDHHS, 2011), highlights the need for provisions to be made in the community for continuity of care, to ensure that breastfeeding concerns are addressed. Accordingly, there is need for 8.6 *International Board-Certified Lactation Consultants* (IBCLC) for every 1,000 births (USDHHS, 2011). This contrasts with the case in Georgia where in 2012, approximately 133,915 births were recorded however, and there were 319 IBCLC holders (Healthy Mothers Healthy Babies [HMHB], 2016). In 2016, Georgia had 2.77 IBCLC per 1,000 births (CDC, 2016).

Critical Analysis of Current Evidence

Breastfeeding support is essential in facilitating breastfeeding initiation and duration (Pannu et al., 2011; Renfrew et al., 2012; Wambach et al., 2011). It has been shown to contribute to the increase in exclusive breastfeeding rates (Fu et al., 2014; Renfrew et al., 2012);

Wambach et al., 2011). In few cases where there was no impact on exclusive breastfeeding rate, breastfeeding education and support increased maternal knowledge especially in new mothers (Khresheh et al., 2011; Lewallen & Street, 2010). Breastfeeding education may be initiated early in prenatal period; however, professional support is crucial in postpartum to support mothers with breastfeeding initiation, prevent and reduce difficulties associated with breastfeeding (Chaput et al., 2015). In addition, breastfeeding support provided in the postpartum prepares mothers for breastfeeding after discharge. Every mother-baby couplet is different, so breastfeeding support should be optimized and based on each couplet's need. Professional support that is based on the need of the couplet is bound to be acceptable to the mother, perceived as effective, positive, and increases maternal satisfaction (Renfrew et al., 2012). The need of the mother may determine whether support should be individualized (Pannu et al., 2011), provided in groups (Chen et al., 2012), or as a combination of both. Some mothers benefit from individualized support (Pannu et al., 2011), while others have found group support to be beneficial (Schmied et al., 2015). While breastfeeding support should be offered to mothers, it is particularly essential for primiparas because it fosters communication between mothers and clinicians, supports mothers emotionally, and increases mothers' confidence with breastfeeding (Chaput et al., 2015). Most primiparas may not have adequate breastfeeding knowledge and preparation for optimal breastfeeding (Lewallen & Street, 2010; Hinsliff-Smith et al., 2013). Thus, immediate postpartum period is crucial in advancing breastfeeding outcomes in primiparas. Breastfeeding support provided in the immediate post-partum period and within 24 hours after childbirth, is critical to increasing exclusive breastfeeding rate (Fu et al., 2014). Chen et al. (2012) found that physicians and physician assistants were not the best providers of breastfeeding instructions and support, and negatively impacted breast pump use. This quality

improvement project focused on the effectiveness of nurses and ancillary support staff in providing breastfeeding support to new mothers.

Strength of Evidence

All studies used in this literature review, addressed breastfeeding support in the postpartum period, and were applicable to this quality improvement project. The studies evaluated breastfeeding interventions/support on either breastfeeding initiation, duration, or both. Breastfeeding initiation and duration impact breastfeeding rates. Half of the literature sources were either systematic reviews or randomly controlled studies which were of higher level of evidence. These studies had strong reliability and validity. The characteristics of the samples used in the studies are comparable to those in the project and included adolescents, primiparas, and multiparas (Lewallen & Street 2010; Wambach et al., 2011; Haroon et al., 2013). Majority of the studies evaluated breastfeeding support on breastfeeding or exclusive breastfeeding rates with strong association, or statistically significant results (Wambach et al., 2011; Fu et al., 2014; Pannu et al., 2011; and Haroon et al., 2013).

Applying the Evidence

The literature indicates a need for breastfeeding support at the postpartum period because of its impact on either breastfeeding initiation, duration, both, or on maternal satisfaction and confidence with breastfeeding. Ten out of the twelve articles reviewed, emphasize the need for breastfeeding support, at a point after childbirth, to promote breastfeeding initiation and sustenance. When breastfeeding support is individualized (Pannu et al., 2011), or grouped (Chaput et al., 2015; Haroon et al., 2013), and consistently provided (Chaput et al., 2015), it impacts breastfeeding knowledge (Khresheh et al., 2011; Lewallen & Street, 2010). Professional breastfeeding support is crucial in resolving breastfeeding-related issues, and therefore, should

be based on need (Chaput et al., 2015; Haroon et al., 2015; Lewallen & Street, 2010; Wambach et al., 2011). However, breastfeeding support and education provided by physicians was found to negatively impact breastfeeding outcomes (Chen et al., 2012). On the other hand, support from family and friends significantly advanced breastfeeding rates (Chen et al., 2012). Nevertheless, healthcare providers are in better positions to provide to support because they are in constant touch with mothers in early postpartum. Inability of healthcare providers to effectively impact breastfeeding outcomes maybe results of inadequate breastfeeding knowledge and skills, attitude to breastfeeding, and time constraint.

From the literature reviewed, gaps exist on who best should provide professional breastfeeding support; nurses, physicians, midwives, nursing support staff, or all (Chen et al., 2012). Lactation consultants are prepared to advance breastfeeding outcomes ((USDHHS, 2011; Wambach et al., 2011). However, with the dearth of lactation consultants in many states and hospitals, the responsibilities of providing breastfeeding support rests on nurses and nursing support staff who are primarily attending to the mothers' needs. Chaput et al. (2015), recognized the need for providing support, consistently and regularly, for effective outcomes. Apart from studies that used lactation consultants, no other study was identified that have regularly designated health care providers to attend to breastfeeding needs of mothers.

This quality improvement project therefore, focuses on breastfeeding knowledge level, skills, and attitude of nurses and support staff. In addition, the project focuses on availability of BFSC to cover 12-hour shifts, ensuring that mothers breastfeeding needs are consistently met.

Theoretical Framework

Two theoretical frameworks are utilized for this project; Pender's Health Promotion Model (HPM), and Kotter and Cohen's Model of Change. In addition, *Breastfeeding Best*

Practice Guidelines for Nurses (Registered Nurses Association of Ontario [RNAO], 2007) provided guidance in developing study protocol for breastfeeding support. The breastfeeding practice guideline recommendations 3.2, 7.0, and 8.0, address components of breastfeeding assessment at postpartum period, and the importance of identifying the breastfeeding needs of mothers. The recommendations highlight the need for nurses, with expertise in breastfeeding, to provide such support (RNAO, 2007).

The HPM

HPM incorporates four concepts of the meta-paradigm namely; person (mother), health (newborn), environment (hospital), and nursing. The central concept and focus is on health promotion to achieve positive health outcomes (McEwen & Wills, 2011). HPM emphasizes three constructs; person's characteristics and experiences, behavior-specific cognitions and affect, and behavioral outcomes. The model highlights the uniqueness of an individual's characteristics and experiences, in impacting subsequent actions the individual takes, towards wellness. An individual's behavior- specific knowledge and affect, can be modified, using nursing therapeutic actions, to produce health-promoting behavior. However, there are mitigating and influencing factors in one's environment which could impact attaining the desired outcome. Health promoting behavior is the endpoint, the goal, and the desired behavioral outcome.

The HPM has four assumptions:

- An individual will actively regulate his/her behavior.
- An individual interacts with the environment, gradually influencing the environment and being influenced by the environment over time.
- Clinicians including nurses are part of one's environment, exerting influence on people at various stages of their lives.

- Behavior change is a result of self-initiated and directed interaction (s) with the environment.

The support provided by BFSC is a therapeutic intervention promoting positive behavior (breastfeeding) in mothers. The HPM model (Figure 2) guided BFSC in providing support, education and counseling for positive outcomes (Pender, Murdaugh, & Parsons, 2011).

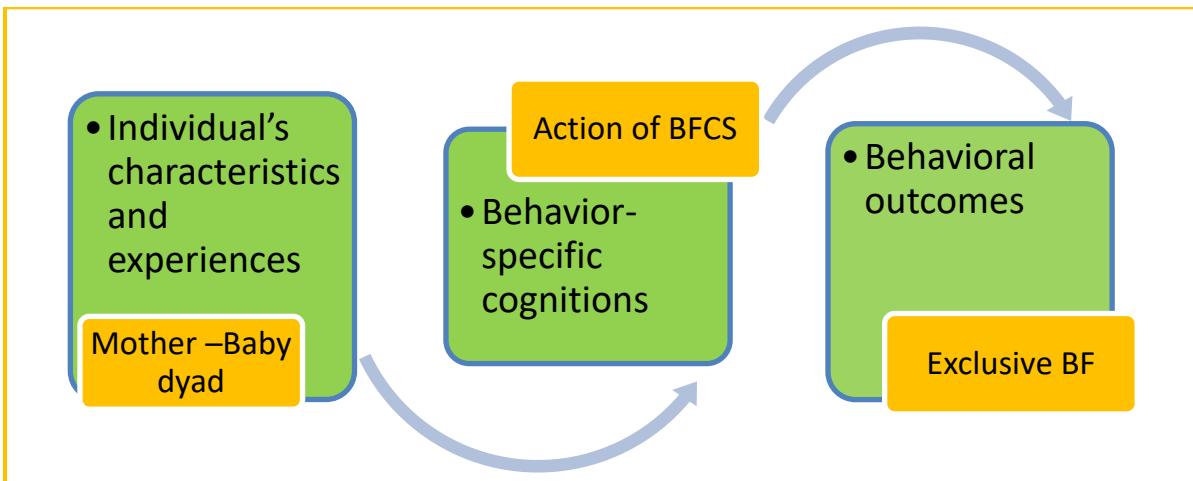


Figure 2. Health Promotion Model for breastfeeding support of new mothers

Kotter and Cohen's Model of Change

Kotter and Cohen (2002) outlined an eight-step change theory which underlines elements that drive organizational change. The steps include; creating a sense of urgency, building a guiding team, getting the vision right, communicating for “buy-in”, empowering action and removing barriers, creating short-term wins, avoiding let up, and making the change stick (Kotter & Cohen, 2002). The change model inspires front line staff to lead change. In this quality improvement project, the model is used to guide the initiation and management breastfeeding practice change. The model provided a step-by-step approach to the introduction of shift champions and helps keep both the leader and team on track. The urgency of increasing breastfeeding scores and meeting breastfeeding goals to maintain the baby friendly designation is

paramount. Though the model encouraged participation of frontline staff, it prompted a top-led initiative which places the leader at an advantage in building coalition and buy-in from various stakeholders (Pollack & Pollack, 2015). In recognition that this is a quality improvement project necessitating change, Kotter and Cohen's change model (Figure 3), provides the framework for the change implementation.

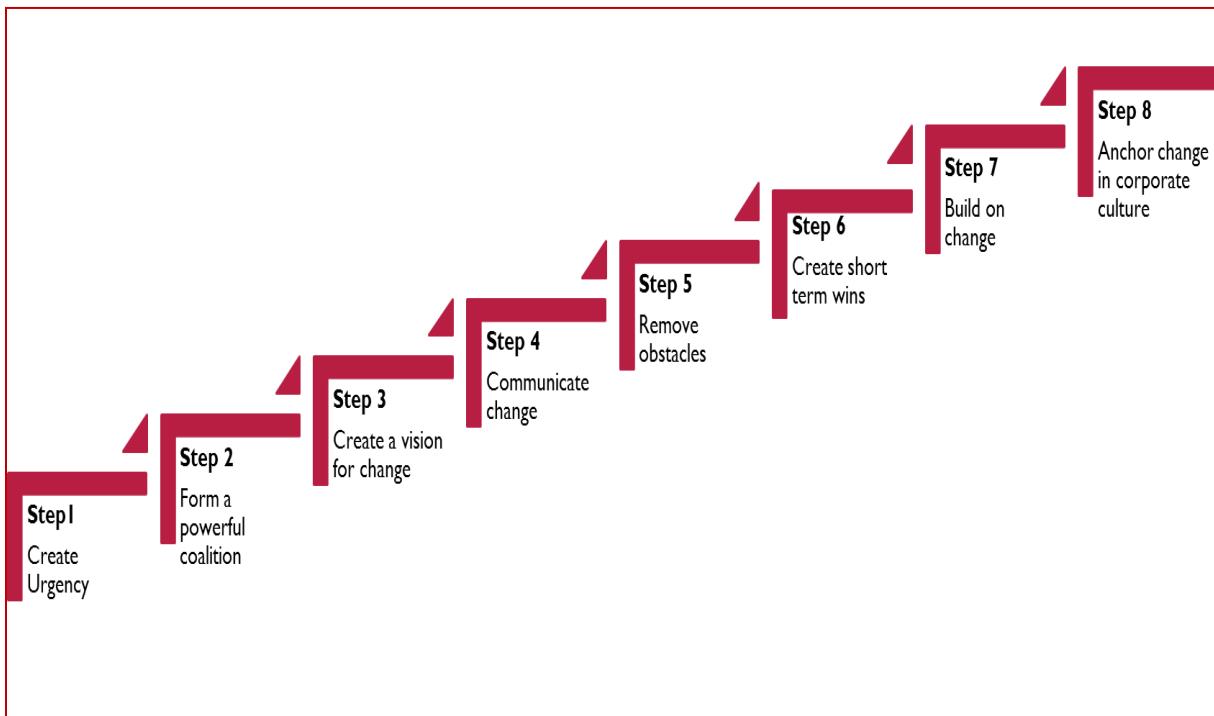


Figure 3. Kotter and Cohen's Change Model on Breastfeeding Support Implementation

Exclusive breastfeeding scores are regularly posted on the unit. The results are discussed during shift huddles and staff meetings. In creating urgency to carry out this project to remedy declining scores, the principal investigator (PI) used the first meeting with BFSC to revisit the breastfeeding scores. Consequences of not meeting exclusive breastfeeding goals were outlined as well as the dependency on BFSC activities in bringing up the scores. The PI shared an urgent need to implement this project to maintain the baby-friendly designation. During this meeting, discussion was held on the feedback from the needs assessment survey. Addressing the concerns

and barriers identified, fostered confidence of BFSC and provided the climate to build coalition with BFSC. A breastfeeding support protocol (Appendix A), designed to guide shift activities was discussed and provided to each BFSC so that roles and expectations were clarified.

Chapter III

Project Design

This quality improvement project used pre- and post- intervention strategy to evaluate BFSC breastfeeding knowledge and readiness to provide breastfeeding support to new mothers. In addition, the study evaluated breastfeeding and exclusive breastfeeding rates of new mothers before and after the intervention. Breastfeeding practices of mothers pre- and post-intervention were compared for clinical and statistical significance. Consent to conduct the study was obtained from Georgia College and State University's Institutional Review Board (IRB), prior to the recruitment of participants for this study. *Memorandum of Understanding*, and site approval were also obtained from the clinical setting where the study was conducted.

Sample

A convenience sample of BFSC who are nurses, patient care technicians, and/or certified nursing assistants, who regularly work on Mother Baby Unit, and may possess state-issued certification as lactation counselors, was recruited. A list of staff that possessed breastfeeding preparation, notably CLC, was obtained and compiled. Ten staff members were eligible for participation however; nine were approached because the tenth staff member was unavailable. The staff was recruited through e-mails and face -to-face. Eight out of the nine eligible staff, agreed to participate and consents were obtained from each participant. The ninth person gave no reason for non-participation. The participants were given pre-intervention surveys to complete with instructions.

Setting

The setting is a large acute care, academic institution situated in Atlanta, Georgia. The health system has approximately 953 inpatient beds at its main campus, several hospital-based clinics, six neighborhood health centers, a children hospital, and the largest long-term care/rehabilitation facility in the state of Georgia. The hospital serves as Regional Perinatal Center supporting 32 hospitals with obstetrics care. The perinatal department is made up of five units, Women's Ambulatory Clinic, Antepartum/ Gynecology, Mother Baby, Family Birth Center, and the Neonatal Intensive Care Unit (NICU). Approximately, 2,500 to 3,000 births occur yearly.

Variables

The primary outcome variables were breastfeeding knowledge and readiness of the BFSC to provide breastfeeding support. These were determined from responses on the pre- and post -intervention surveys, completed by each BFSC, using same set of tools. The baseline and post-intervention breastfeeding knowledge and skills were measured and compared. The secondary outcome variables were exclusive breastfeeding and breastfeeding rates. Baseline or pre-intervention rates were obtained from medical records of mothers and infants prior commencement of the intervention and recruitment of the BFSC. Post-intervention rates were obtained after the completion of breastfeeding support provided new mothers by BFSC. Data was extracted from the medical records of the mothers and babies at hospital discharge. Charts excluded from data analyses were medical records of mothers with contra-indication for breastfeeding and/or if the newborn was admitted to NICU.

At the commencement of the project, breastfeeding and exclusive breastfeeding rates from the hospital's quarterly performance quality data were 79 and 22 percent, respectively. The

goal for exclusive breastfeeding was 30 percent. The project evaluated the association of the independent variable, breastfeeding support, on breastfeeding. An average of 220 deliveries occurred monthly. A priori analysis was therefore performed to determine the minimum number of medical records for chart audit. For level of significance of .05 and power of .80, a total of 102 charts was required. Nevertheless, 100 percent of medical records were reviewed, and infant feeding data, and the new mothers' demography and delivery information, were extracted.

Project Phases

The project is divided into three phases; planning/pre-intervention phase, intervention, and post-intervention.

Planning/Pre-intervention Phase

The planning phase involved development of the need assessment questionnaire, and testing the questionnaire using an independent group unrelated to the study participants. Modifications to the need assessment survey were made as appropriate. Approvals for the study were obtained from the college and clinical study site. During this phase, the PI met with the executive director at the study site to discuss the study. A list and contacts of possible participants, based on pre-established criteria, was obtained. Potential participants were recruited using email request and face -to- face meetings. Discussions were held with potential participants to elicit their consents for participation. Forms, paperwork for use in the study, including questionnaires were created and printed. The pre-intervention medical chart audit was performed to extract delivery and infant feeding data.

Intervention Phase

The intervention phase consisted of three stages; completion of baseline survey, staff education and breastfeeding support implementation.



Completion of baseline survey. The *Need Assessment Survey* was given to participants for completion. The survey was designed to obtain demographic data from BFSCs and their perceptions of breastfeeding activities, barriers (if any), and opportunities for improvement of the practices.

BFSC Education. Following the completion of the survey, a four-hour class on breastfeeding management was held for BFSCs. The class provided opportunity to address concerns identified from the need assessment survey. In addition, BFSC completed two pre-class questionnaires to measure BFSCs baseline breastfeeding knowledge and skills, attitude, and belief towards breastfeeding support. The average time for completion of the two questionnaires was 45 minutes. Following the completion of the two questionnaires, a two-hour class was conducted. Course content and lesson plan (Appendix B) included review of national and states' latest breastfeeding report card, BFHI, infant feeding policy, common breastfeeding problems, mother-baby separations, and *the Code*. Feedback from the need assessment survey was discussed and concerns of BFSC addressed. Immediately after the class, the BFSC completed post -class surveys using the same two tools as in pre-class, to measure breastfeeding knowledge. Both sets of questionnaires were coded as in pre-class using the same identification. Identifier codes were a mix of the first letter of BFSCs mother's name, followed by two digits of the BFSC's birth month, and first letter of the last name. To differentiate the pre-class questionnaires from the post-class, the digit '1' preceded the identifier code in the pre-class set of questionnaires, while the digit '3' preceded the post class set of questionnaires. After completion of the post-class questionnaires, the protocol for providing breastfeeding support to mothers was discussed. The *Protocol for Breastfeeding Champions* (Appendix A) was a guide for interaction with breastfeeding mothers. Each champion was given a pocket card of this protocol. BFSCs

were given breastfeeding logs (Appendix C) to document breastfeeding encounters with mothers. Instructions on how to complete the logs were discussed. Instructions included where to deposit completed logs to ensure confidentiality. It was not possible to have all the BFSCs attend one class because of shift differences, so class was held three times to accommodate BFSC preferences.

Breastfeeding support implementation. The breastfeeding support provision lasted for four weeks after class completion. The BFSC voluntarily chose the 12-hour shift each wanted to cover. Coverage was provided both on morning and night shifts, week days, and weekends. Each BFSC had a log to document breastfeeding encounters with mothers. Details of the data collected have been extensively discussed under data collection.

Post-Intervention Phase

This phase involved data entry, data analysis, report on findings, and data dissemination.

Feasibility and Needs Assessment

Technically, the hospital is designated ‘baby-friendly’ and promotes exclusive breastfeeding. All of the staff on the unit, employed for more than six months, had received breastfeeding education. The declining exclusive breastfeeding rate was observed from data extracted from the medical records of newborns. These extractions were done monthly and quarterly as part of on-going quality goal monitoring. A random audit of nurses is conducted as monthly interviews, to evaluate breastfeeding practices of staff, and identify learning needs. Economically, the project is a potential cost-saver for the hospital because the cost of hiring lactation consultants for all shifts and after hours will be reduced. Using champions will ensure 24/7 lactation services’ coverage and decrease nurses’ workload. Operationally, this project contributes to meeting one of the quality goals of the mother-baby unit and hospital. The

successful implementation helps to ensure that the hospital remains designated as a baby-friendly institution. Increasing exclusive breastfeeding rate is critical in meeting the *Healthy People 2020* goal for infant health and wellness. Legally, the study is within regulatory standards and has no anticipated or associated risks. The provision of breastfeeding support would be based on individual mother's request and need

Budget and Costs

There were no costs to either the mothers or to the hospital. Cost of stationery for printing was borne by the PI. The BFSC have already attended lactation courses. At the end of breastfeeding support implementation, each BFSC received a 'Thank you' card and a \$20-dollar gift card as incentives. The budget for the project implementation was the sum of four hundred and twenty dollars (\$420.00) which included the cost of eight gift cards, stationery, and a breastfeeding video.

Timeline

The study was conducted over an eight-week period, from April to May 2017. Baseline chart audit was performed before the study. The intervention was carried out over four weeks. The post-intervention chart review, for extraction infant feeding data, was repeated at the completion of the study.

Benefits

The project benefits the participants by increasing their competency level with breastfeeding management. For mankind, implementing this quality improvement project confers benefits to the society in general, and to the hospital, specifically. Increasing the exclusive breastfeeding rate is critical in meeting the *Healthy People 2020* goal for infant health, and in promoting infants' wellness. It contributes to the well-being of children and the society by reducing the prevalence of illnesses, including childhood obesity, and other infant diseases. In

addition, by remaining healthy, healthcare costs arising from treating chronic conditions, is reduced. Providing mothers with breastfeeding support contributes to increasing the exclusive breastfeeding rate of Georgia State which is currently below national targets. Increase in breastfeeding and exclusive breastfeeding rates improves mothers' well-being, decreases incidence of reproductive cancers in women, and decreases incidence of postpartum hemorrhage. With regards to the mother-baby unit of this hospital, breastfeeding support is guaranteed for mothers at all shifts and after hours.

Data Collection Method

Data was collected using three instruments completed by participants (BFSC), a chart extraction log for gathering infant feeding and delivery information from the medical records, and breastfeeding support log. The PI was solely responsible for distributing and collecting the surveys.

The Instruments

The three instruments used include; *Demography/Need Assessment Survey* (completed once at the beginning of the project), the *Breastfeeding Knowledge Questionnaire* (BKQ), and the *Questionnaire of Professional Breastfeeding Support* (QPBS). The BKQ and the QPBS are completed by each BFSC, pre-intervention, to measure baseline breastfeeding knowledge and skills, and post-intervention, to identify any changes from baseline. After the completion of the baseline pre-intervention survey, the BFSC received a four-hour in-service class on breastfeeding management. The post-intervention survey was conducted immediately on completion of the in-service breastfeeding class. The instruments, BKQ and QPBS, used in the pre-intervention, were utilized post-intervention. The pre- and post- intervention results were compared to determine the effectiveness of the in-service on the BFSC knowledge and practice.

Demography/Need Assessment Survey. The tool is an investigator- developed need assessment questionnaire (Appendix D). The questionnaire consists of two parts; the demography section, and the needs assessment portion. Items include professional title, ethnicity, age, length of employment in the hospital, and the year of completion of the lactation course. Other items include questions on childbearing and personal breastfeeding practices such as the number of children they have and whether their child/children were breastfed. If participants did not have children, they were asked whether they plan to breastfeed when they have children. The last question focuses on whether participants have had breast reduction.

The second portion of the need assessment survey consists of six items on professional breastfeeding practices. The items address frequency of providing breastfeeding support to mothers, confidence level with providing support, perceived level of knowledge and skills with provision of support, perceived problems with assessment of new mothers' breasts/nipples, and potential barriers encountered with providing breastfeeding support. The last item asks the participant for recommendations for improving breastfeeding support on the unit. Two lactation experts reviewed the questions for content validity. The questionnaire was also pretested using unrelated NICU lactation counselors. Results obtained were used to modify the course content of the in-service breastfeeding class.

The BKQ. The BKQ (Appendix E) is a 13-item instrument developed and used by Marie Cobb (2014) for her doctoral translational project. Of the 13 items, 12 items focus on pacifier use, formula use, and mother-baby separation. The 13th item focuses on nurses' impact on breastfeeding success and support. The tool consists of a summed scale with responses of 'true', 'false', or 'not sure'. Higher scores indicate greater knowledge of breastfeeding practice. Content validity is established by an expert opinion of a certified nurse midwife; however,

content reliability was reportedly not determined. A written permission to use the tool was sought and obtained from the author.

The QPBS. The QPBS (Appendix F) is a 49-item questionnaire developed in the Spanish language and translated into English (Bermejo, Parra-Hidalgo, Oliver-Roig, Arellano-Morata, García-de-León-González, 2016). QPBS comprises of four scales; beliefs, attitudes, subjective norms, and behavioral intentions. The ‘Belief Scale’ has 16 items with focus on breastfeeding initiation, maintenance, feeding frequency, and professional advice related to breastfeeding. The ‘Attitude Scale’ consists of 13 items emphasizing attitudes of staff towards the *Code*, and on the initiation and continuation of breastfeeding. The 12 items on ‘Subjective Norm Scale’ focus on breastfeeding support and practices limiting breastfeeding. The 8 items on the ‘Behavior Intention Scale’ focus on breastfeeding training. The items cover four breastfeeding content domains; breastfeeding practice, professional breastfeeding support style, interventions for initiation and sustenance of breastfeeding, and the *Code* (an international code of marketing of breast milk substitutes developed by the WHO). Items are scored on 5-point Likert Scale. The instrument was developed based on the BFHI (Baby- Friendly USA [BFUSA], 2012) for hospitals already designated, or aspiring to be designated as baby friendly. It measures breastfeeding knowledge and support skills of clinicians including, intention, attitude, and provider’s belief of what support constitutes. It has been tested on various cadres of staff including nursing assistants, physicians, and nurses and as such, applicable for use among various categories of staff.

For internal reliability, the authors calculated Cronbach’s alpha coefficients for each of the four scales and for the subscales. Scores ranged from 0.79 (Attitudes, and Subjective Norm scales) to 0.81 (Behavior Intention scale). Reliability of the instrument was further established

with the conduct of the pilot study testing the instrument in two settings. Measures of validity established were content, construct, and criterion-related validity. Experts, made up of several members of the team, drawn from various disciplines, reviewed the items and made recommendations with rationale, during item construction and validation. For construct validity, factor analysis was conducted for each of the scales and items. This was done to establish that the responses obtained, indicated that variables measured were associated, and had similar patterns of responses. Criterion-related validity was established through the pilot study, using the instrument on a non-baby-friendly hospital. The scores had high concurrent validity, especially the behavioral intention scale. Written permissions to use the tool were obtained from the author and from Elsevier Publishing Company.

Chart extraction log. Breastfeeding and exclusive breastfeeding rates, before and after intervention, were determined by extracting breastfeeding data from newborns' intake and output flow sheet, and mothers' postpartum flow sheets, in electronic medical records. The chart extraction log (Appendix G), was used by the PI to conduct the chart audits, Monday to Friday, using a password protected computer. Chart audit data was de-identified and reported in aggregate forms. Discs containing data were encrypted. To measure the impact of breastfeeding support on breastfeeding and exclusive breastfeeding rates, medical records extraction of two independent groups of mothers was performed, pre- and post- intervention. One month prior to the educational intervention, 100 percent of the charts for postpartum women, of all ages and ethnicities, medically eligible to breastfeed, were audited to obtain baseline breastfeeding data. The data extracted included maternal characteristics of age, race, parity, delivery method, feeding preference, feeding method adopted, and completion of breastfeeding education. Additional data extracted included whether formula was given to the infant, reason for formula

being provided, if lactation assistance was provided, and the specific reason for the assistance. Following implementation of breastfeeding support, a post- intervention data was collected within two to four weeks, from 100 percent of the charts of mothers and babies who received breastfeeding support from BFSC.

Breastfeeding Support Log. This log was used by BFSC, each shift, to collect data on breastfeeding support provided. The type of support provided and length of time taken to provide such support were documented. A key of various types of support was listed on the log as a guide for BFSCs. Some of the support-types listed include; positioning, latch, management of breast/nipple problems, breast pump use, hand expression, or how to handle fuzzy or sleepy infants. BFSC completed the log every shift and indicated whether follow-up support was needed.

Potential Risks, Benefits, and Human Participants Protection

Approval for the study was obtained from the hospital's Research and Oversight Committee, and from Georgia College's institution review board. To ensure respect for patients' autonomy and privacy, breastfeeding support was provided to mothers based on individual's need and request. All chart audit data were de-identified and reported in aggregate form. BFSC were each assigned a unique identification number to maintain confidentiality. The identifier log was locked all the time and the PI was the only person with access to the lock. Discs containing data were encrypted, and log-in to designated computer, was through password protection. Back - up files and data were also password protected. All patient data were kept and securely stored. The stored data would be kept for three years following the project, after which the data would be deleted and destroyed.

There were no risks associated with the project. No pressure or harm was observed in the person who did not eventually participate in the study. The champions were informed that they had the right to change their mind and withdraw at any time, with no penalty. The champions exhibited pride of job and satisfaction because of the opportunity of participation in change project on the unit. Direct staff on the unit who had prior breastfeeding training received the four-hour long educational intervention and they were informed that participation in the study was optional and voluntary.

Data Analysis Plan

Descriptive and inferential statistics including frequency distributions tables, figures, parametric, and non-parametric data analyses were performed. Data entry was completed using IBM Statistical Package for the Social Sciences version 23. Data cleaning was performed. Outliers and missing data were identified from the frequency distribution tables. Decision was made to assign the neutral/average score to those items required for pairing. Missing data that would result in identifying the participant, was not used in the analysis. Descriptive statistics were used for the demographics of BFSC and the mothers. These included frequencies for ethnicity, length of employment, number of children and/or parity, and type of delivery. Inferential statistics used were parametric and non-parametric tests including paired t-test, chi-square, and Mann-Whitney U tests. The test used depended on the sample size and normality.

Chapter IV

Results

In this chapter, the results of the data analysis are presented. This chapter contains the description of the BFSCs, results obtained from comparing BFSCs breastfeeding knowledge and readiness level, pre- and post- breastfeeding class. In addition, the chapter contains the analysis of the chart audit completed before and after the implementation of the use of BFSC. Reported in this chapter are descriptive statistics of the BFSCs and new mothers, and data addressing the study questions. All continuous variables were examined for evidence of normal distribution or skewness. Nonparametric tests; Chi-square, Wilcoxon Signed Ranks, and Mann Whitney U, were used for the categorical variables while parametric dependent test was used as appropriate.

Reliability

The internal consistency of BKQ was conducted. A Cronbach's alpha coefficient of 0.323 was obtained. It was not possible to compare this score with that of the previous study by Cobb (2014) because there was no documented reliability score. For the QPBS tool, the Cronbach's alpha coefficient for each of the four sub-scales, Belief, Attitude, Subjective Norm, and Behavior Intention, was performed. The coefficients; Belief Scale (0.16), Attitude (0.54), Subjective Norm (-.18), and Behavior Intention (0.14). These varied from scores obtained by Bermejo et al. (2016) which ranged from 0.79 to 0.81. The difference may be result of small sample size utilized in this project. However, the responses of the BFSC to the questions on both tools, BKQ and QPBS, were identical to those obtained in the two previous studies, respectively.

Demography of Participants

Characteristics of the Breastfeeding Shift Champions. The convenience sample consisted of a total of eight registered nurses and ancillary nursing staff. Nine employees were approached for

the study but eight responded and were consented. No reason was provided by the ninth person on the reason for not participating. The participants completed a *Demographic and Needs Assessment Survey* which consisted of questions about participants' characteristics and perceptions of their breastfeeding practice. All eight participants started and completed the study. Data and responses from the participants were analyzed. The participants' characteristics are displayed in Table 1. The sample is unique, an older group, with age range of 39 to 56 years ($M = 49.63$, $SD = 5.449$). All eight are classified as African Americans. Most of the participants (75%) had more than ten years of experience working with mothers and babies. Majority of the participants have children and have personally breastfed before.

Table 1

Characteristics of Breastfeeding Shift Champions

	N= 8 Frequency (%)	M (SD)
Race		
African Americans	8 (100%)	
Other races	0 (0%)	
Age		49.63 (5.449)
Length of Employment		4.50 (1.069)
1-5 years	1 (12.5%)	
5-10 years	1 (12.5%)	
More than 10 years	6 (75%)	
Parity		
Have children	7 (87.5%)	
No children yet	1 (12.5%)	
Previous breastfeeding	7 (100%)	
No Breast Reduction	8 (100%)	

With regards to breastfeeding practice, the participants self-reported their perception of and experience with breastfeeding support, and these are displayed in Table 2. All the participants reported that they provide breastfeeding support to mothers more than twice a week. Majority (75%) classified themselves as 'very confident' with providing breastfeeding support. Most (62.5%) regard themselves as 'very knowledgeable' with breastfeeding. With regards to

prevailing barrier (s) experienced in providing breastfeeding support, staffing was identified as the foremost obstacle. Participants remarked that poor staffing often hindered the ability to provide breastfeeding support. Maternal barriers to breastfeeding identified by BFSCs included mothers' complaints of painful nipples and shoulders. BFSCs who responded to this question recommended a lower nurse to patient ratio as a measure to facilitate adequate breastfeeding support. Another opportunity for improvement recommended by BFSCs involve the provision of breastfeeding education to mothers especially in the prenatal period.

Table 2

Self-Reported Breastfeeding Practices of Breastfeeding Champions

Variable	Frequency (n = 8)
Frequency of breastfeeding support	
More than twice weekly	8 (100%)
Once a week or less	0 (0%)
Confidence with breastfeeding support	
Confident	2 (25%)
Very Confident	6 (75%)
Level of breastfeeding Knowledge/Skill	
Knowledgeable	3 (37.5%)
Very Knowledgeable	5 (62.5%)
Problem assessing breasts/nipples	
Yes	1 (12.5%)
No	7 (87.5%)
Barriers Providing Breastfeeding Support	
Yes	1 (12.5%)
No	7 (87.5%)

Chart Audit Results

Characteristics of the new mothers. Two independent groups of mother-baby charts, 197 in the pre- and 165 in the post-intervention, were audited for inclusion in the study. Of the 259 mother-baby charts that were available, only 197 mother-baby charts in the pre-intervention group met the set criteria for inclusion. Those excluded were the mother-baby charts of 62

mothers whose babies were admitted in NICU, and mothers with contraindication to breastfeeding. In the post-intervention group, 230 mother-baby charts were available for possible inclusion; however, only 165 mother-baby charts were eligible and were included. A total of 65 mother-baby charts did not meet the criteria and were excluded. Charts were audited to retrieve maternal demographic and infant feeding information. The characteristics of the mothers are displayed on Table H 1 in the *Appendix*.

Mothers in both groups have similar characteristics. The mothers' ages ranged from 16 to 43 years ($M = 28.01$) among the pre-intervention group, and 17 to 47 years in the post-intervention group ($M = 27.32$). Majority of the participants in both groups fell within the age group 21-30 years; 57.7 percent (114) for the pre-intervention, and 61.2 percent (101) in the post-intervention group. With regards to race and ethnicity, African-American mothers were the dominant group comprising 70 percent in the pre- intervention group, and 69.1 percent in the post-intervention group. A large proportion of mothers in both groups delivered vaginally, 73.1 percent (144) and 79.4 percent (131) in the pre- and post- intervention groups, respectively. The proportion of primiparas in the pre-intervention group was 32.5 percent (64), while in the post-intervention group, primiparas and those with two previous deliveries constituted 26.7 percent (44), respectively. With regards to feeding babies with both breastmilk and breastmilk substitute (formula) after childbirth, 27.3 percent (54) of mothers in the pre- intervention group preferred this feeding against 29.4 percent (49) in the post-intervention group.

Clinical Questions

Clinical Question 1. *Does breastfeeding class increase champions' breastfeeding knowledge level?* The BKQ instrument was used to measure knowledge level of BFSC particularly with mothers' use of pacifiers, formula, and management of mother-baby separation.

A paired-t test was used to compare and test the difference in breastfeeding knowledge scores of BFSCs, before and after class. Details of the tests are displayed in Table 3. A significant increase was found in BFSC knowledge level of mothers' use of pacifiers ($M = -1.25$, $SD = 1.16$) $t(7) = -3.035$, $p = .01$. There were no changes in knowledge level related to formula use and separation of couplets, respectively. There was a significant increase in overall knowledge from baseline ($M = 22.25$, $SD = 1.832$), to post-class ($M = 24.50$, $SD = 1.069$) $t(7) = -3.473$, $p = .01$.

Table 3

Comparison of the Pre- and Post-Intervention Breastfeeding Knowledge Levels using BKQ

	Paired Differences							Sig.(2-tailed)
	Mean	Std. Deviation	S. E. Mean	95% Confidence Interval		t	df	
				Lower	Upper			
Pacifier Use	-1.25	1.16	.41	-2.22	-.28	-3.04	7	.01*
Formula Use	-.36	.74	.26	-.99	.25	-1.43	7	.19
Separation of couplets	-.63	1.69	.60	-2.03	.78	-.05	7	.33
Total Pre-test/Post-test	-2.25	1.83	.65	-3.78	-.72	-3.47	7	.01*

* Significance set at $p < \leq 0.05$

Clinical Question 2. Does breastfeeding class increase champion's readiness to provide breastfeeding support to mothers? QPBS was used to measure readiness to support new mothers, BFSC responses were scored on four scales of QPBS, Belief, Attitude, Subjective norms, and Behavior Intention Scales. Items eliciting correct but negative responses were reverse-coded. Test for normality revealed a skewed distribution and thus, Wilcoxon Signed Ranks Test was used. Participating in the breastfeeding class did not increase the champion's readiness to provide support, except for scores in the Belief Scale which showed significant increase from baseline ($Z = -2.214$, $p = .027$). Other results are displayed in Table 4.

Table 4

Wilcoxon Signed Ranks Tests of Statistics for BFSCs readiness for breastfeeding support

	Pre/Post-Belief	Pre/Post-Attitude	Pre/Post-Subjective	Pre/Post-Behavior
Z	-2.214 ^b	-1.364 ^b	-.14 ^b	-.58 ^c
Asymp. Sig. (2-tailed)	.027*	.172	.89	.56

* Significance set at $p < / \leq 0.05$ a. Wilcoxon Signed Ranks Test b. Based on negative ranks. c. Based on positive ranks.

Clinical Question 3. Does breastfeeding support provided by breastfeeding champions increase breastfeeding rates? Breastfeeding rate was analyzed and compared using information on breastfeeding practices of mothers in the pre-and post -intervention groups. This information was obtained through chart audit of the mothers-babies' records.

Table 5 displays the comparison of breastfeeding practices collected in both groups. Mothers in the pre-intervention group who fed with both breast milk and formula was 74.6 percent (147). Another 16.2 percent (32) engaged in breastfeeding only. In the post-intervention group, 65.5 percent (108) of mothers used both breastmilk and formula, while 25.5 percent (42) of mothers, breastfed only. Mothers who engaged in no form of breastfeeding and fed their babies with formula only, accounted for 9.1 percent of pre- and post-intervention groups, respectively.

Table 5

Infant feeding Practice of Mothers

	Breast Milk	Formula	Both
Pre- Chart Audit	32 (16.2%)	18 (9.1%)	147 (74.6%)
Post-Chart Audit	42 (25.5%)	15 (9.1%)	108 (65.5%)
Total	74 (20.4%)	33 (9.1%)	255 (70.4%)

Chi-square analysis of infant feeding pattern of mothers in both groups was used to determine if breastfeeding support increased breastfeeding rate. Results are displayed in Table 6. No

significance was found $\chi^2 (2, n=362) = 4.79$, $p=.09$. The clinical question was therefore not supported. Provision of breastfeeding support did not result in increased breastfeeding rates.

Table 6

Chi-square test of infant feeding practices of mothers

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	4.79	2	.09
Likelihood Ratio	4.78	2	.09
Linear-by-Linear Association	4.59	1	.03
N of Valid Cases	362		

* Significance set at $p < \leq 0.05$

Clinical Question 4. Does provision of breastfeeding support to new mothers result in increased exclusive breastfeeding rate? The proportion of mothers who exclusively breast fed their babies was 16.2 percent (32), in the pre-intervention group compared to 25.5 percent (42) in the post-intervention group (Table 7). Further analysis involved test for any significance.

Table 7

Frequency of Exclusive Breastfeeding among groups

	Exclusively breastfeeding		
	Yes	No	Total
Pre-Chart Audit	32 (16.2%)	165 (83.8%)	197(100%)
Post-Chart Audit	42 (25.5%)	123 (74.5%)	165(100%)

For the analysis of the study question, Mann-Whitney U test was used because exclusive breastfeeding was not normally distributed. The results are displayed in Tables 8 and 9, respectively. The post-intervention group had a higher rate of exclusive breastfeeding (mean rank 172.43), than those in the pre-intervention group (mean rank 189.10), $U = 14755$, $p=.03$.

The research question was therefore supported. There was a statistically significant increase in exclusive breastfeeding rate in the post-intervention group.

Table 8

Mann-Whitney U Test (Ranks) on Exclusive Breastfeeding

	Chart Audit	N	Mean Rank	Sum of Ranks
Exclusively Breastfeeding	Pre-Chart Audit	197	189.10	37252.50
	Post-Chart Audit	165	172.43	28450.50
	Total	362		

Table 9

Mann-Whitney Test of Statistics on Exclusively Breastfeeding

Mann-Whitney U	14755.500
Wilcoxon W	28450.500
Z	-2.161
Asymp. Sig. (2-tailed)	.03*
Exact Sig. (2-tailed)	.03*
Exact Sig. (1-tailed)	.02
Point Probability	.01

* Significance set at $p < /=0.05$

Type of Breastfeeding Support Provided

Over a period of four weeks following the educational intervention, BFSC provided 269 incidences of breastfeeding support to a total of 139 of the 165 mothers in the intervention group, who indicated that they needed breastfeeding support. The BFSC support requirements were roughly equal for day shifts (137 incidences) versus night shifts (132 incidences). The predominant type of breastfeeding support provided on day shift was supporting mothers to understand ‘feeding on cue’ ($n = 34$, 24.8%). Other types of support; ‘positioning/latch’, and ‘benefits of breastfeeding’, tied for the second most frequent support provided ($n=33$, 24.1%) respectively. On the night shift, ‘benefits of breastfeeding’, and ‘positioning/latch’ were the two

predominant types of breastfeeding support reported (n=33 [25%]), respectively, followed by ‘feeding on cue’ (n = 32 [24.2%]). The time required for breastfeeding support ranged from two minutes, to explain the benefits of breastfeeding, to 45 minutes to explain the benefits of breastfeeding, and feeding on cue, in addition to assisting mothers with positioning and latch. The average length of time the BFSCs spent providing support on day shift was 13 minutes versus 18.6 minutes on night shift

Examination of Relationships between Characteristics of mothers and Breastfeeding

Additional analyses were performed to examine correlation between several variables such as race/ethnicity, age, and mode of delivery on exclusive breastfeeding.

Race/ethnicity and exclusive breastfeeding. In the pre-intervention group, 9.6 percent of African-American mothers indulged in exclusive breastfeeding followed by Latinas (4.6% [9]). In the post-intervention group, 18.2 percent (30) of African-Americans, and 4.8 percent (8) Latinas exclusively breastfed their babies. The result obtained are displayed in Table 10.

Table 10.

Comparison of Exclusive Breastfeeding Rates among the groups

	Pre- Intervention (n=197)		Post-Intervention Group (n=165)	
	EBF	No EBF	EBF	No EBF
Race/Ethnicity				
Whites	2 (1.0%)	4 (2.0%)	0 (0%)	2 (1.2%)
Blacks	19 (9.6%)	119 (60.4%)	30 (18.2%)	84 (50.9%)
Latinas	9 (4.6%)	30 (15.2%)	8 (4.8%)	24 (14.5%)
Others	2 (1.0%)	12 (6.1%)	4 (2.4%)	13 (7.9%)
Mode of Delivery				
Vaginal	25(12.7%)	119 (60.4%)	32(19.4%)	99 (60.0%)
Caesarean	7 (3.6%)	46 (23.4%)	10 (6.1%)	24 (14.5%)

To determine if these scores were significant, non-parametric chi-square test, was used for the analysis because the variables were not normally distributed. Results obtained are displayed

in as Table I 1 in the *Appendix*. A statistical significance was found between race/ethnicity and exclusive breastfeeding among African-Americans, $\chi^2 (1, n=252) = 6.23, p=.01$. In addition, there was a statistical significant association in overall between race/ethnicity and exclusive breastfeeding rate, $\chi^2 (1, n=362) = 4.68, p=.03$

Mode of Delivery and Exclusive Breastfeeding. Twenty-five (12.7%) mothers in the pre-intervention group who delivered vaginally, exclusively breast fed their babies (Table 10). Those who had caesarean section and breastfed exclusively, were 3.6 percent (7). In the post-intervention group, 19.4 percent (32) of mothers who delivered vaginally, breastfed exclusively, while 6.1 percent (10) with cesarean section, breast fed exclusively. With further analysis using chi-square test (Table 11), no association was found between mode of delivery and exclusive breastfeeding, $\chi^2(1, n=275) = 2.09, p=.15$ (vaginal), $\chi^2(1, n=87) = 3.46$ for cesarean section

Table 11

Mode of Delivery and Exclusive Breastfeeding

Mode of Delivery		Value	df	Asymptotic Signif (2-sided)	Exact Sig. (2-sided)
Vaginal	Pearson Chi-Square	2.09	1	.15	.18
	Continuity Correction	1.68	1	.19	
	Likelihood Ratio	2.09	1	.15	
	Fisher's Exact Test				
	Linear-by-Linear Assoc.	2.08	1	.15	
	N of Valid Cases	275			
C/Section	Pearson Chi-Square	3.46	1	.07	.09
	Continuity Correction	2.51	1	.11	
	Likelihood Ratio	3.39	1	.07	
	Fisher's Exact Test				
	Linear-by-Linear Assoc.	3.42	1	.06	
	N of Valid Cases	87			

* Significance set at $p < \leq 0.05$

Summary

The following four clinical questions were addressed in this chapter; *Does breastfeeding class increase champions' breastfeeding knowledge level? Does breastfeeding class increase champion's readiness to provide breastfeeding support to mothers? Does breastfeeding support provided by breastfeeding champions increase breastfeeding rate? and Does provision of breastfeeding support to new mothers, result in increased exclusive breastfeeding rate?* Data collected from the sample, BFSC, and from chart audits of two independent groups of mothers and babies, were analyzed. Results obtained supported research question one, indicating a statistically significant increase in the champions' breastfeeding knowledge level after a breastfeeding class. The class did not statistically increase the champions' readiness to provide breastfeeding support, and so clinical question two was not supported. However, a statistically significant increase in the champions' Belief in breastfeeding support was found. In relation to question three on the effect of breastfeeding support on breastfeeding rate, no statistical increase in breastfeeding rate was found. Contrarily, the provision of breastfeeding support resulted in a statistically significant increase in exclusive breastfeeding rate.

Chapter V

Discussion

This quality improvement project was designed to evaluate the effectiveness of breastfeeding shift champions (BFSC) in increasing breastfeeding and exclusive breastfeeding rates among new mothers. The overarching clinical question for the project that was addressed was, *will the use of BFSC over a period of four weeks, versus none use of champions, increase breastfeeding and exclusive breastfeeding rate at hospital discharge among postpartum women?*

There were two specific aims of the project: To increase the champions' breastfeeding knowledge level and the ability to provide breastfeeding support to new mothers, and to increase breastfeeding and exclusive breastfeeding rates among new mothers.

This project explored the feasibility of utilizing breastfeeding champions; nurses, patient care technicians, and nursing assistants, who have received the basic lactation course, to provide breastfeeding support to new mothers. These breastfeeding support sessions provided an opportunity for mothers to ask questions and be offered individualized breastfeeding care.

This chapter will discuss the data analysis and overall effectiveness of the clinical project in addressing the specific aims and answering the clinical research questions in the context of the existing body of literature and implications for nursing.

Research Question One. *Does a breastfeeding class increase the champions' breastfeeding knowledge level?* A statistically significant increase was found in the overall breastfeeding knowledge of champions following a four-hour breastfeeding in-service ($t = -3.473$, $p = 0.001$). Similar result was obtained by Cobb (2014) using same instrument (BKQ). In the Cobb study (2014), a larger sample of 41 postpartum nurses was used. In comparison, the pre-intervention breastfeeding knowledge scores of participants in the Cobb study ranged from

16-20 against BFSC's range of 20-25. The pre-intervention scores validated the BFSC's self-report of being 'very knowledgeable' with breastfeeding (62.5%), obtained from the *Need Assessment Survey*, the champions had a statistically significant increase in knowledge related to pacifier use, but only an increase in knowledge of separation of mothers and formula use that was not statistically significant as in the study by Cobb (2014). The statistically significant increases in overall breastfeeding knowledge and in knowledge of pacifier use could indicate that though the champions have high breastfeeding knowledge, putting this knowledge into practice during mother baby separation might be problematic.

Research Question Two. *Does breastfeeding class increase the champions' readiness to provide breastfeeding support to mothers?* Readiness of the champions was evaluated using the QPBS tool. This tool measured items on Belief, Attitude, Subjective Norm, and Behavior Intention sub-scales. Results obtained were not statistically significant, except for the Belief Scale which showed significant increase from baseline ($Z = -2.214$, $p=.027$). Bermejo et al. (2016) using the same tool for their study, found statistically significant results in the four areas. Bermejo (2016) had a larger sample of 189 which may have accounted for the difference in the findings in the two studies. The Belief Scale addressed information on how to maintain breastfeeding and professional advice to mothers related to breastfeeding. The Attitude Scale addressed practices facilitating initiation and continuation of breastfeeding, and attitude towards breastfeeding substitutes (formula use). Subjective Norm covered norms and expectations related to breastfeeding support, while the Behavior Intention emphasized continuation of breastfeeding. A statistically significant result pertaining to Belief Scale alone could be sign that the champions, in this study, possess adequate breastfeeding knowledge and skills, but have questionable attitude and perception towards providing breastfeeding support and the use of breastmilk substitutes.

This could impede BFSC readiness to support breastfeeding mothers. This result therefore, validates the same findings from the BKQ tool.

Research Question Three. *Does breastfeeding support provided by breastfeeding champions increase breastfeeding rate?* The breastfeeding rate was measured by comparing information obtained through chart audit of breastfeeding practices of mothers in pre-and post - intervention groups. Data depicting any form of breastfeeding, including feeding with breastmilk only, and in conjunction with breastmilk substitutes, was included in the analysis. Provision of breastfeeding support was found to not significantly impact breastfeeding rate. The percentage of mothers in the pre-intervention group who chose breastmilk only (16.2%) was less than their counterpart in the post-intervention group (25.5%). In contrast, the pre-intervention group had higher number of mothers who combined breastfeeding with breastmilk substitute (74.6% versus 65.5% in the post-intervention group). The higher number of post-intervention mothers, who indulged in feeding with breast milk only, was not enough to significantly impact breastfeeding rate.

Research Question Four. *Does provision of breastfeeding support to new mothers, result in increased exclusive breastfeeding rate?* A comparative analysis of breastfeeding practices was conducted to measure the effect of breastfeeding support on exclusive breastfeeding rate was measured among the two groups. There was a significant increase in exclusive breastfeeding in the post-intervention group (mean rank 172.43) when compared with pre-intervention group (mean rank 189.10), $U = 14755$, $p=.036$. The increase could be result of consistency of breastfeeding support the mothers received. Another possible factor contributing to the significant increase in exclusive breastfeeding rate could be the timely initiation and availability of breastfeeding support every shift. Some of the mothers, who would have

ordinarily given up on breastfeeding and chosen formula feeding, initiated and sustained breastfeeding.

Limitations

This project is limited by the use of a purposeful, small sample size which focused on the breastfeeding needs on a specific unit in a specific hospital. The hospital has very few staff members (less than ten) on the Mother-Baby unit who underwent additional 40-hours of state-recognized breastfeeding counseling course. The type and size of the sample limits the ability to generalize the findings and inadequate power size increases the risk for a type1 error. The inability to detect differences could have affected some of the results.

A second limitation of this project was the only four weeks duration of data collection. Four weeks may have not been long enough to study and analyze the effectiveness of the breastfeeding support. A one-time measurement of breastfeeding and exclusive breastfeeding rates on discharge from the hospital, is inadequate to determine sustained outcome. The short time did not allow for the follow-up of mothers after discharge. A time-series measurement allows for periodic evaluation and extended monitoring of outcomes to determine effectiveness of the intervention both on the knowledge level of the staff, and on exclusive feeding rate.

Strengths

Few studies have focused on evaluating breastfeeding knowledge and readiness to provide support of nurses and ancillary nursing staff. However, no known study has evaluated breastfeeding knowledge level and readiness to provide lactation support among this group of health workers who received additional lactation counseling course. Most other studies focused on breastfeeding knowledge of students (nursing and/or midwifery), and/or physicians. Another strength of this project is the focus on provision of breastfeeding support on shift basis rather

than daily or on ‘as needed’ basis. Scheduling staff to provide breastfeeding support on shift basis ensures consistency and makes it readily available to mothers.

Implication for Practice

Breastfeeding support and healthy behavior. Pender’s HPM (Pender et al., 2011) provided the conceptual framework for this study. Per the model’s assumptions, an individual actively regulates his/her behavior especially as the individual interacts with the environment. During this interaction, the environment gradually influences or is influenced by the individual, resulting in self-initiated and self-directed behavior change. The behavior changes result in the acquisition of healthy behaviors. In this study, new mothers entered the therapeutic relationship, during hospitalization, with pre-determined perception and preference for infant feeding. As each mother interacted with the environment, people in the immediate environment, BFSC, provided breastfeeding support. The action of BFSC influenced more mothers to indulge in breastfeeding (healthy behavior) as evidenced by the statistically significant increase in exclusive breastfeeding rate in the post-intervention group. The HPM model facilitated the use of therapeutic measures (breastfeeding support), provided by people in the environment (BFSC), in promoting healthy behavior (breastfeeding) among mothers. Breastfeeding support should therefore, be an integral part of the postpartum care.

Change Management Model and the project. Implementing this project increased the breastfeeding knowledge of staff, and increased both the lactation services in this facility, and the exclusive breastfeeding rate. Based on the impact of this project on lactation services, the breastfeeding knowledge of staff, and the exclusive breastfeeding rate among mothers, this facility will benefit tremendously, if this project is adopted and incorporated into patient care. Introducing a change in practice is not always easy. As a result, the PI recommends the use of

Kotter's eight step change management model (Kotter & Cohen, 2002) as a guide for the future implementation of this project. The eight steps involve creating a sense of urgency, building a guiding team, getting the vision right, communicating for "buy-in", empowering action and removing barriers, creating short-term wins, avoiding let up, and making the change stick (Kotter & Cohen, 2002). Each of these steps is important however, creating urgency is most critical and involves obtaining the approval and 'buy-in' from the hospital's top leadership. The PI will seek a meeting with the top leaders to share findings of the result. The meeting will also provide opportunity to discuss the benefits of implementing the project which include providing lactation services round -the-clock, every day including weekends, and maintaining requirements for lactation services especially, with shortage of lactation staff. Discussion will also center on the impending application for re-designation of the facility as "Baby-Friendly". The re-designation comes up in less than two-year's time. Baby-Friendly designations lasts five years after which the designated facility applies for re-designation. The designated facility is required to maintain its status by completing and submitting annually, performance improvement data (BFUSA, 2012).

Recommendation for Future Study

The sample was made up of an older staff with age range of 39 to 56 years ($M = 49.63$, $SD = 5.45$). This group of staff possessed more than ten years of working experience in the Mother-Baby setting, and are of same race and ethnicity. Future study should be designed to include a larger sample with members of other ethnic groups. In addition, the sample should be intergenerational to include staff in productive years of life, and varying years of working experience. The length of data collection should be taken into consideration in future study. Data collection should last a minimum of three months. A longer period of data collection, allows for

evaluation of breastfeeding knowledge periodically, such as six months, twelve months, and /or eighteen months, respectively. Knowledge tapers off over time, so a time-series study will provide a more accurate analysis of breastfeeding knowledge of participants. It will also facilitate the measurement and monitoring of the impact of breastfeeding support on breastfeeding and exclusive breastfeeding rates, over time.

Conclusion

Breastfeeding support is crucial in initiating and sustaining breastfeeding among new mothers. To effectively support the new mother, clinicians providing the breastfeeding support should be adequately prepared. They should possess in-depth breastfeeding knowledge, skills, and a willingness to support mothers. Because knowledge tapers off over time, hospital management should provide regular and periodic in-service education to staff to facilitate supporting breastfeeding mothers adequately. This is inclusive of those staff who possess lactation certification. Up-to-date knowledge and skills alone, will not guarantee that new mothers will receive effective breastfeeding support. Clinicians in the immediate environment of new mothers, should demonstrate readiness to provide breastfeeding support. Readiness of clinicians, has a positive impact on the effectiveness of breastfeeding support. To address clinicians' readiness, the period in-service program should include opportunities to discuss barriers, perception, and attitude towards breastfeeding, on one hand, and obtain clarity on the other hand. If properly implemented, the use of lactation experts, other than lactation consultants, cost effective, and will save hospitals money. In addition, the use of frontline staff in providing breastfeeding support is an innovative approach to effectively reach more mothers, ensuring availability of lactation services always. It is a measure crucial facility's effort to meets one of its quality goals, remain baby-friendly, and advance the well-being of mothers and their babies.

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Appendix A

Protocol for Breastfeeding Shift Champions (BFSC)

Steps:

1. On arrival at beginning of shift (0700 or 1900), the assigned BFSC introduces self to the charge nurse and the unit clerk as the BFSC for the shift
2. BFSC obtains shift census and an ASCOM phone from the unit clerk
(The ASCOM phone is for easy reach and communication with mothers and other staff).
3. Obtain shift hand-off from outgoing BFSC.
4. From the census, identify mothers who are eligible to breastfeed
5. Conduct round on each mother as follows:
 - a. Knock before entering room
 - b. On entering each mother's room, initiate interaction with new mother acknowledging her by name and introducing self
 - c. Explain purpose of visit and find out infant feeding practice from mother
 - d. Identify if there is need to provide support and type of support the mother needs
 - e. Provide the support mother needs
 - f. Thank the mother for her time
 - g. Update the mother's white board with BFSC's name and assigned telephone number
6. Complete log of each mother who received support and the type of support provided (See *Breastfeeding Support Log* under *Document Section*)
7. Complete documentation in EPIC on lactation and postpartum flowsheet
8. Identify mothers who need follow-up
9. Follow-up as appropriate or hands-off to next BFSC
10. Follow-up as appropriate or hands-off to next BFSC
11. Submit completed log at end of shift to locked drop box provided by the principal investigator. Log should have type of support, length of time, patient's signature/initials

Appendix B

Lesson Plan for Breastfeeding In-service for Breastfeeding Champions

1 st hour	Time allotted	2 nd hour	Time allotted
1. Introduction: Breast feeding Reports <ul style="list-style-type: none"> • Breastfeeding Report Card • Hospital Breastfeeding Report card 	5 minutes	8. Newborn-related breastfeeding problems <ul style="list-style-type: none"> • Inadequate milk supply • Failure to latch • Sleepy, fuzzy infant 	15 minutes
2. Ten Steps of Successful Breastfeeding	7 minutes	9. Maternal Infant separation and breast pump assembly/use	15 minutes
3. Physiology of milk production Mechanism of milk transfer	8 minutes	10. Breast Care and Hand expression	10 minutes
4. Benefits of breastfeeding and exclusive breastfeeding	7 minutes	11. Contraindications to breastfeeding <ul style="list-style-type: none"> • HIV and breastfeeding • Medications and breastfeeding 	5 minutes
5. Hospital practices that impact breastfeeding <ul style="list-style-type: none"> • Skin-to-skin • Rooming –in • Feeding cues 	10 minutes	12. Community Resources	3 minutes
6. Supporting breastfeeding <ul style="list-style-type: none"> • Assessing LATCH • Optimal positioning 	10 minutes	13. Formula Feeding	5 minutes
7. Common problems associated with breastfeeding	3 minutes		

<ul style="list-style-type: none"> • Breast engorgement • Nipple problems • Mastitis <p>Questions Break</p>	5 minutes	<ul style="list-style-type: none"> • Safe preparation and handling of formula <p>14. International code of marketing breast milk substitutes</p> <p>Questions</p>	3 minutes
			4 minutes

Appendix C

Date..... Shift Completed by.....

Key

1. Benefits of BF
 2. Feeding of cue
 3. Equipment use
 4. Positioning/Latch
 5. Problems with nipples/breast
 6. low milk supply
 7. Pacifier use
 8. Fuzzy/sleepy infant
 9. Others (specify)

Appendix D

Demographic and Need Assessment Survey

You are being invited to participate in a research study about the effect of breastfeeding support on breastfeeding and exclusive breastfeeding rates among postpartum mothers.

OPTIONAL: You were selected as a possible participant in this study because of your preparation as a lactation counselor. Your participation in this study is voluntary.

This survey is confidential. Do not indicate your name on the survey. Your address, telephone number, e-mail address, name of work unit is NOT required. No one will be able to identify you or your answers.

The questionnaire is two (2) parts. Part I questions are demography while Part II addresses lactation. The questionnaire(s) will take about 10 minutes to complete.

Thank you for completing this survey and please note that all responses are confidential.

PART I. Demographics

1. Title RN PCT Nsg. Asst.
 Other (please specify) _____

2. Race/Ethnicity: African American/African descent Asian
 American Indian/Native America Caucasian
 Other (Please specify) _____

3. Age in years _____

4. How long have been employed in this hospital?
 Less than 1 year 1-3 years 3-5 years
 5-10 years More than 10 years

5. What year did you obtain your lactation counselor' certification? _____

6. Have you had children? Yes (answer question 7)
 No (Skip question 7 and answer 8)

7. If you had children before:
 - a) did you breastfeed? Yes No
 - b) If "Yes", describe your experience?

 If "No", why did you not breastfeed? Medical Other (please specify) _____

8. If you do not have children yet, do you plan to breastfeed when you do?
 Yes No

9. Have you ever had a breast reduction?

Yes No

PART II. Lactation

1. How often do you utilize your knowledge of lactation in providing lactation support/breastfeeding tip for the mothers?

<input type="checkbox"/> Seldom	<input type="checkbox"/> Few times in a month	<input type="checkbox"/> Every other week
<input type="checkbox"/> Once a week	<input type="checkbox"/> More than twice a week	

2. How confident are you with providing support to mothers?

<input type="checkbox"/> Not Confident	<input type="checkbox"/> Somehow Confident
<input type="checkbox"/> Confident	<input type="checkbox"/> Very Confident

If not confident what areas do you need assistance with?

3. Rate your level of knowledge and skills for providing lactation support to mothers

<input type="checkbox"/> No knowledge	<input type="checkbox"/> Somehow knowledgeable
<input type="checkbox"/> Knowledgeable	<input type="checkbox"/> Very knowledgeable

If ‘not knowledgeable’ or ‘somehow knowledge’, please list areas where you need assistance

4. Do you have problems assessing new mothers; nipples?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
------------------------------	-----------------------------

If “yes”, why? _____

5. Do you foresee any barriers that prevent you from providing lactation support to mothers?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
------------------------------	-----------------------------

If ‘Yes,’ what are 3 top barriers that you know?

I. _____
 II. _____
 III. _____

6. What recommendations do you have for improvement?

Thanks

Appendix E

Breastfeeding Knowledge Questionnaire (BKQ)

Please base your answers on your current clinical practice and breastfeeding knowledge.

Circle True, if you agree; Circle False if you disagree. Circle Not Sure, if you do not have enough information on which to base your answer. Please return to the project coordinator before the sessions begins. Thank you!

- | | |
|--|---------------------------|
| 1. Use of pacifiers can improve latch and suckling at the breast. | True False Not sure |
| 2. Full term newborns have a stomach size of a gumball/marble
(5–7 ml) the first 24 hours of life. | True False Not sure |
| 3. Exposure to cow's based formula (non-breastmilk) can cause sensitivity and allergy to cow's milk protein. | True False Not sure |
| 4. Frequent breastfeeding (8–12 times in 24 hours) helps bring in breast-milk sooner. | True False Not sure |
| 5. Mothers should only use pacifiers after breastfeeding is established. | True False Not sure |
| 6. Newborns use the same facial muscles when sucking at the breast or on an artificial nipple/pacifier. | True False Not sure |
| 7. Mother's should be encouraged to sleep through the night the first few days. | True False Not sure |
| 8. It is important for mothers to “get good nights” sleep before she goes home. | True False Not sure |
| 9. Formula (non-breastmilk) changes the intestinal flora of the newborn. | True False Not sure |
| 10. Babies in the nursery experience less quiet sleep and cry more. | True False Not sure |

11. Newborns suck on pacifiers the same way as they suck on the
human nipple.

True False Not sure

12. A mother gets the same amount of sleep with the baby in the
room as she would with the baby in the nursery.

True False Not sure

13. Nurses are influential in supporting mothers who breastfeed
and their breastfeeding success.

True False Not sure

Appendix F

Questionnaire of Professional Breastfeeding Survey (QPBS)* XXXX

Instruction: Please rate your knowledge level of the questions below. Your feedback is vital in determining your basic breastfeeding knowledge. Circle the number beside each statement that best reflects the extent of your agreement. Thank you.

I. Beliefs Scale Item

Factor I: How to maintain breastfeeding over time	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Exclusive breastfeeding is recommended up to 6 months.	5	4	3	2	1
Efforts should be made to maintain breastfeeding even when infants are separated from their mothers	5	4	3	2	1
Expressed breast milk can be frozen	5	4	3	2	1
Information on how to express milk is necessary when breastfeeding mothers are separated from their infants.	5	4	3	2	1
Breastfeeding support groups play an important role in maintaining breastfeeding	5	4	3	2	1
Factor II: Limiting breastfeeding					
Bottle-feeding is the best way to administer formula supplements to infants that need them.	5	4	3	2	1
Infants should not feed for more than 10 minutes on each breast per session.	5	4	3	2	1
Exclusively breastfed infants should also drink water	5	4	3	2	1
As a general rule, every 3 hours is a good breastfeeding schedule.	5	4	3	2	1
Scheduled breastfeeding limits breast milk production.	5	4	3	2	1
Factor III: Professional advice related to breastfeeding					

Breastfeeding is beneficial to maternal health.	5	4	3	2	1
Breastfed infants tend to enjoy better health than those fed formula.	5	4	3	2	1
Mother and newborn skin-to-skin contact immediately after birth is important to establish breastfeeding.	5	4	3	2	1
Breastfeeding should be maintained until at least 2 years of age.	5	4	3	2	1
The presence of infant formula advertising in health care centers does not influence a mother's decision to breastfeed	5	4	3	2	1
Health care professionals should avoid giving mothers gift packs containing pacifiers or infant formula.	5	4	3	2	1

II. Attitude Scale Item

Factor I: Attitudes toward practices facilitating establishment and continuation of breastfeeding	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I think it is unnecessary to discuss the benefits of breastfeeding with pregnant women	5	4	3	2	1
I think it is over the top for a mother to initiate breastfeeding immediately after birth	5	4	3	2	1
I think that mother and newborn skin-to-skin contact is unnecessary in first half hour after caesarean section	5	4	3	2	1
I feel uncomfortable seeing a woman breastfeeding a child more than 1 year old.	5	4	3	2	1
I think it is unrealistic to recommend that a mother breastfeed on demand.	5	4	3	2	1

I am not sure about expressed milk.	5	4	3	2	1
I like talking to mothers about breastfeeding problems.	5	4	3	2	1
I would not mind working with support groups.	5	4	3	2	1
Factor II: Attitudes toward The Code of Marketing of Breast Milk Substitutes					
I think it is over the top to use a cup or glass to give formula supplements to breastfeeding infants	5	4	3	2	1
I think it is excessive to prohibit infant formula advertising in health care centers.	5	4	3	2	1
I think it is acceptable to give mothers gift packs containing pacifiers.	5	4	3	2	1
I do not like seeing infant formula advertising in my health center.	5	4	3	2	1
I think it is excessive to prohibit professionals from giving free samples of infant formula to breastfeeding mothers.	5	4	3	2	1
III. Subjective Norm Scale Item					
Factor I: Norms related to breastfeeding support	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
We are all expected to give similar information on breastfeeding.	5	4	3	2	1
A mother's informed choice about child care is respected.	5	4	3	2	1
The work of mothers' support groups is appreciated.	5	4	3	2	1
Formula samples are given to breastfeeding mothers.	5	4	3	2	1

Breastfeeding training is considered important	5	4	3	2	1
Besides information, mothers are given practical help with breastfeeding.	5	4	3	2	1
Factor II: Limiting Breastfeeding					
Pacifiers are recommended to calm babies.	5	4	3	2	1
We recommend supplementing breastfeeding with formula or other foods from 4 months	5	4	3	2	1
We recommend adhering to an infant feeding schedule	5	4	3	2	1
We recommend bottle-feeding when mothers encounter difficulties with breastfeeding (the infant cries a lot or is not stated; the mother is very tired).	5	4	3	2	1
In the case of mastitis, we recommend suspending breastfeeding until the infection has gone.	5	4	3	2	1
Infant formula advertising (calendars, stationery, stadiometers, etc.) is permitted	5	4	3	2	1
IV. Behavior Intention Scale Item					
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Inform mothers about the benefits of breast milk.	5	4	3	2	1
Encourage mothers to breastfeed their babies for as long as possible.	5	4	3	2	1
Show mothers how to recognize and respond to signs of hunger in an infant.	5	4	3	2	1

Inform mothers how to continue breastfeeding when they return to paid work.	5	4	3	2	1
Participate in training activities to update my knowledge on breastfeeding.	5	4	3	2	1
Support mothers' decisions about breastfeeding	5	4	3	2	1
Facilitate contact between mothers and peer support groups.	5	4	3	2	1
Avoid the presence of formula advertisements in my workplace.	5	4	3	2	1

*Tool used per permission from Dr Bermejo- Development and Assessment of a Questionnaire to Study Protection, Promotion, and Support of Breastfeeding (QPBS-EMCA).

Appendix G

Chart Audit Log for Breastfeeding /Exclusive Breastfeeding

MONTH/YEAR

Appendix H

Table H 1

Characteristics of New Mothers

	Pre-Intervention Group N = 197 n (%)	Post -Intervention Group N =165 n (%)
Race		
Whites	6 (3.0)	2 (1.2)
African Americans	138 (70.1)	114 (69.1)
Latina	39 (19.8)	32 (19.4)
Other races	14 (7.1)	17 (10.3)
Age (in years)		
16-20	21 (10.7)	24 (14.5)
21-30	114 (57.7)	101 (61.2)
31-40	55 (27.9)	33 (19.8)
>40	7 (3.5)	7 (4.5)
Parity (previous births)		
0	64 (32.5)	44 (26.7)
1	44 (22.3)	32 (19.4)
2	45 (22.8)	44 (26.7)
3	22 (11.2)	22 (13.3)
4 & above	22 (11.2)	23 (13.9)
Mode of Delivery		
Vaginal	144 (73.1)	131 (79.4)
Caesarean	53 (26.9)	34 (20.6)
Feeding Preference		
Breast Milk	54 (27.4)	49 (29.7)
Formula	26 (13.2)	17 (10.3)
Both	117 (59.4)	99 (60.0)
Actual Feeding		
Breast Milk	32 (16.3)	42 (25.5)
Formula	18 (9.1)	15 (9.0)
Both	147 (74.6)	108 (65.5)
BF Education		
Yes	197 (100%)	164 (99.4)
No	0 (0)	1(0.6)

Appendix I

Table I 1

Chi-square Statistics of Race/Ethnicity and Exclusive Breastfeeding

		Asymptotic Significance			
		df	(2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Race/Ethnicity	Value				
White	Pearson Chi-Square	.89	1	.35	
	Continuity Correction	.00	1	1.00	
	Likelihood Ratio	1.36	1	.24	
	Fisher's Exact Test				1.000 .536
	N of Valid Cases	8			
Black	Pearson Chi-Square	6.23	1	.01*	
	Continuity Correction	5.50	1	.01*	
	Likelihood Ratio	6.27	1	.01	
	Fisher's Exact Test				.016 .010
	N of Valid Cases	252			
Latina	Pearson Chi-Square	.04	1	.85	
	Continuity Correction	.00	1	1.00	
	Likelihood Ratio	.04	1	.85	
	Fisher's Exact Test				1.000 .534
	N of Valid Cases	71			
Others	Pearson Chi-Square	.42	1	.52	
	Continuity Correction	.04	1	.85	
	Likelihood Ratio	.43	1	.51	
	Fisher's Exact Test				.664 .429
	N of Valid Cases	31			
Total	Pearson Chi-Square	4.68	1	.03*	
	Continuity Correction	4.14	1	.04	
	Likelihood Ratio	4.67	1	.03	
	Fisher's Exact Test				.036 .021
	N of Valid Cases	362			

* Significance set at p < />=0.05

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