The Effects of Anticipatory Guidance on the Initiation of Breastfeeding the Preterm Infant

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Abstract

Numerous policy statements have been issued to guide healthcare professionals on the initiation and maintenance of breastfeeding. However, mothers of preterm infants have additional challenges regarding breastfeeding initiation and many do not continue breastfeeding when their infants are discharged home. A review of the literature suggested that clinicians and other healthcare providers can play an influential role in breastfeeding initiation and duration. Breastfeeding support during pregnancy and early postpartum period has also been associated with successful breastfeeding. The purposes of this scholarly project were to describe the implementation and to evaluate the outcomes of a program to promote breastfeeding for mothers of late preterm infants. We examined the effects of anticipatory guidance related to breastfeeding provided to expectant women hospitalized during their high-risk pregnancies. The Modified Breastfeeding Self-Efficacy Scale (Short Form) Among Mothers of Ill or Preterm Infants (BSES) was used to measure the effects of anticipatory guidance by comparing maternal confidence and self-efficacy before and after the anticipatory guidance intervention. Twenty expectant women participated in this pilot study. Wilcoxan Rank Sums Test was used to assess rank differences between pre and post intervention. Study outcomes included participants' perceived self-efficacy and confidence in their ability to provide breastmilk or to breastfeed their preterm infant. There were more positive rank scores (13) than negative (4), which indicates that significantly more participants had improved BSES scores than those who had a tie, or had lower scores after the intervention (p value 0.019). This work suggests that an individualized educational anticipatory guidance intervention can improve maternal confidence and may result in positive breastfeeding outcomes.

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I. Introduction and Research Question

Breastfeeding rates have been steadily improving each year with more new mothers in the United States (U.S.) starting to breastfeed in the hospital. Mothers are encouraged to provide skin-to-skin contact and start breastfeeding soon after delivery once both mother and infant are stable. In addition, mothers are encouraged to keep their infants with them so they can identify their infant's hunger cues and respond by breastfeeding. Mothers of preterm infants have unique challenges in being able to participate in these activities, and many have to delay the initiation of breastfeeding and other caregiving activities.

Breastfeeding the Preterm Infant

Good nutrition is crucial to an individual's health, well-being and survival. For newborns, their nutrition consists of breastmilk or infant formula. The benefits of breastfeeding and the use of human breastmilk for the infant, the mother and the community have been studied and documented by national and international health advocacy organizations. The American Academy of Pediatrics (AAP) published policy statements to guide healthcare professionals on the initiation and maintenance of breastfeeding that are also consistent with the goals and objectives of Healthy People 2010 and 2020. Healthy People goals were developed as a collaborative effort between the U.S. Department of Health and Human Services, advisory committees, public stakeholders and other federal agencies to provide measureable objectives and goals to reduce or eliminate illness, disease, or disability. These ten-year national objectives for improving the health of all people throughout their lifespans are applicable at the local, state and national levels. In 2012, the AAP reaffirmed and endorsed the U.S. Surgeon General's Call to Action and declared that breastfeeding should not be a lifestyle choice, but considered a public health concern that must be addressed by all healthcare providers and institutions that provide

maternity care (AAP, 2012). The Joint Commission (TJC) has also endorsed exclusive breastfeeding as one of the Perinatal Core Measures for healthcare facilities that provide maternity care (Meek, 2010; United States Breastfeeding Committee, 2013).

Data from the Breastfeeding Report Card 2016, published by the U.S. Department of Health and Human Services (DHHS) Centers for Disease Control and Prevention (CDC), reported that 81.1% of new mothers in the U.S. started breastfeeding in the hospital. Although this meets the Healthy People 2020 objective for breastfeeding initiation, the breastfeeding rates for six and twelve months as well as rates for exclusive breastfeeding at three and six months remain stagnant and low. The intended target for six months was 60.6%, for twelve months 34.1%; the exclusive rate at three months was 46.2% and the exclusive rate at six months was 25.5%. The national average rates were reported as 51.8%, 30.7%, 44.4% and 22.3% respectively (CDC, 2016).

Sources for breastfeeding initiation rates among late pre-term mother-infant dyads are limited, and usually reported by the number of infants receiving human breastmilk feedings at discharge from the Neonatal Intensive Care Unit (NICU). However, these rates are estimated to range from 48%–98%, and the duration and exclusivity is less than that of term infants (Merewood, Brooks, Bauchner, MacAuley & Mehta, 2006; Radtke, 2011; Wheeler & Dennis, 2012). The rates for breastfeeding at discharge are even lower among infants admitted to the NICU due to the additional barriers to successful breastfeeding. These barriers include maternal separation, neurological immaturity and medical fragility of mother or infant that interferes with initiating breastfeeding after birth (Hallowell et al., 2016; Pineda, Foss, Richards & Pane, 2009; Purdy et al., 2012; Smith, Durkin, Hinton, Bellinger & Kuhn, 2003).

Obstacles to Initiation, Duration and Exclusivity of Breastfeeding

Obstacles to successful breastfeeding initiation, duration and exclusivity are multifaceted and include; lack of prenatal education about breastfeeding, inappropriate interruption or delay of breastfeeding, early hospital discharge, lack of timely routine follow-up care, and lack of family and community support (AAP, 2005; Taveras et al., 2003). The use of pacifiers and early formula supplementation has also been noted to influence breastfeeding initiation, duration and exclusivity by decreasing the number of successful breastfeeding sessions and delaying the progress of lactation after delivery (AAP, 2005; Declerq, Labbok, Sakala, & O'Hara, 2009). Although the benefits of prolonged breastfeeding have been published, the breastfeeding rates for exclusive and prolonged breastfeeding remain below the Healthy People 2020 goal, and the greatest decrease in breastfeeding rates occur during the first four weeks after delivery (Labarere et al., 2005; Taveras et al., 2003). Contributing factors to early discontinuation of breastfeeding include; maternal lack of confidence in their ability to breastfeed, infant latching or sucking difficulties, breast soreness or pain, maternal perceptions of insufficient milk supply and lack of individualized encouragement from their providers after discharge (Bernaix, Schmidt, Arrizola, Iovinelli & Medina-Poelinez, 2008; Gagnon, Dougherty, Jimenez & Leduc, 2002; Labarere et al., 2005; Lavendar et al., 2005; Mass, 2004; Su et al., 2007; Taveras et al., 2003). Women returning to work after maternity leave also have challenges balancing motherhood, family and work (AAP, 2005; Fein, Mandal & Roe, 2008; Johnston & Esposito, 2007; Taveras et al., 2003).

Prematurity

Prematurity is the leading cause of death in the newborn population. An estimated 12.7% or more than a half million of live births are premature each year (CDC, 2012). Infants born before 37 completed weeks gestation are referred to as "preterm" and those born between 34–37

weeks gestation are considered “late preterm” (Ahmed & Sands, 2010; Engle, Tomashek & Wallman, 2007). In the U.S., late preterm infants represented 72% of the 12.7% of premature infants born in 2005 (Meir, Furman & Degenhardt, 2007). The AAP Committee on Nutrition recommends breastfeeding and human breastmilk as the optimal method of infant feeding in the first year of life for all healthy, premature, and high risk infants unless specifically contraindicated (AAP, 2012; Hurst, 2007; Pineda et al., 2009; Zukowsky, 2007). For mothers of preterm infants, there are additional challenges regarding breastfeeding. According to Zukowsky (2007), only one third of mothers who deliver low birth weight infants (LBW)—those weighing less than 2500 grams—initiate breastfeeding, and less than half of these mothers continue breastfeeding until their infants are discharged from the hospital (Zukowsky, 2007). In the U.S., mothers of very low birth weight infants (VLBW)—those weighing less than 1500 grams—are the least likely to initiate and maintain lactation (Hallowell et al., 2016; Meir, Engstrom, Mingolelli, Miracle, & Kiesling, 2004; Pineda et al.,2009; Sisk, Lovelady, Dillard, & Gruber, 2006; Smith et al., 2003).

Depending on the infant’s gestational age and condition, mothers may be separated from their infant for varying amounts of time. They may have to initiate and maintain a pumping routine for at least eight pumping sessions per day, for several weeks or months before they can put their babies to the breast (Boies,Vaucher & Academy of Breastfeeding Medicine, 2016; Hurst, 2007; Meir et al., 2007; Spatz et al, 2015). In addition, there may be a delay in achieving full oral feedings, including spoon, syringe, cup or bottle. This delay can affect the infant’s ability to latch properly and influence the mother’s perception of her breastfeeding ability (Callen & Pinelli, 2005). Supplementation with formula may be necessary, which affects a mother’s milk supply due to decreased breast stimulation and ineffective emptying of the breast.

The use of supplemental formula can also affect a mother's confidence in her ability to breastfeed.

In addition to the physiological and medical condition of the infant, mothers who deliver preterm infants are more likely to have medical complications that could lead to delayed or decreased milk production (Ahmed, 2010; Purdy et al., 2012). Infant and maternal health status, maternal exhaustion, the stress of being in a Neonatal Intensive Care Unit (NICU) environment, and healthcare professionals' lack of knowledge about breastfeeding and the benefits of breastmilk have been noted in the literature as contributing to the challenges of breastfeeding in this neonatal population (Bernaix et al., 2008; Pineda et al.,2009; Zukowsky, 2007). For mothers of severely ill infants, it has been suggested that their concern over their infant's illness and survival may outweigh their concern to provide breastmilk and contribute to reluctance to initiate pumping or breastfeeding, and to continue through to infant's discharge from the NICU (Purdy et al., 2012). It has also been suggested that the healthcare provider's reluctance to actively encourage breastfeeding or milk expression may be based on their concern that mothers would feel coerced, guilty or experience increased stress or anxiety if they did not plan to breastfeed or offer expressed breastmilk to their infants (Sisk, Lovelady, Dillard, & Gruber, 2006).

The importance of human milk for LBW premature infants has been extensively documented (Zukowsky, 2007). Low birth weight and VLBW premature infants who have been fed human milk gain immunological and developmental benefits, such as lower incidences of nosocomial infections, necrotizing enterocolitis, retinopathy of prematurity, shorter duration of parenteral nutrition, shorter hospital stays, and decreased feeding intolerances. These infants also show more progress in developmental and motor attainment testing, and in their cognition (AAP, 2005; Bernaix et al., 2008; Johnson, Patel, Bigger, Engstrom & Meier, 2013; Sisk et al., 2006;

Struebe, 2009). Infants born prematurely are at risk for developmental delays and infection and therefore breastfeeding and expressed milk feedings should be encouraged in order to promote these positive outcomes in development (Bernaix, et al., 2008; Struebe, 2009; Zukowsky, 2007).

There are health and financial burdens associated with not breastfeeding. Bartick et al., (2013) conducted a cost analysis of maternal disease associated with sub-optimal breastfeeding practices and concluded that shorter duration of lactation was associated with an increase in breast and ovarian cancer, hypertension, type 2 diabetes mellitus, myocardial infarction, and a cost to society of over $17 billion including 911 child deaths (Bartick et al., 2013). For infants, not being breastfed has been associated with an increase in otitis media, gastroenteritis, pneumonia, risk of developing childhood obesity, type 1 and type 2 diabetes, leukemia and Sudden Infant Death Syndrome (SIDS) (AAP, 2012; Bartick & Reinhold, 2010; Stuebe, 2009). The use of human breastmilk in the NICU can provide a cost savings to the family and birth facility by reducing the incidence and/or severity of prematurity related morbidities and chronic conditions resulting in rehospitalizations (Johnson, Patel, Bigger, Engstrom & Meir, 2013).

Link to Healthy People 2020

Healthy People goals provide healthcare professionals with objectives for improving the health of all people in the United States. Breastfeeding promotion and exclusivity have been included as objectives for Maternal, Infant and Child Health for 2010 and continue to be included for 2020. The Healthy People 2020 goals for Maternal, Infant and Child Health address the individual and her environment for the attainment of the goals for increasing breastfeeding proportions. The new goals for breastfeeding for Healthy People 2020 include:

- MICH 21 - Increasing the proportion of infants who ever breastfed to 81.9% as well as increasing rates for six months to 60.6% and one year to 34.1%., exclusively through three months to 46.2% and exclusively through six months to 25.5 %.
- MICH 22 - Increasing the proportion of employers that have worksite lactation support programs to 38%.
- MICH 23 - Reducing the proportion of breastfed infants who receive formula supplementation within the first two days of life to 14.2%.
- MICH 24 - Increasing the proportion of live births that occur in facilities that provides recommended care for lactating mothers and their babies to 8.1%.

Purpose of This Project

The purposes of this scholarly project were to describe the implementation and to evaluate the outcomes of a program to promote breastfeeding for mothers of late preterm infants.

Theoretical Frameworks

The Ecological Model (Edberg, 2007) was used to interpret the influence of a woman's social, cultural, and environmental circumstances on breastfeeding decision and experiences. The Breastfeeding Self-Efficacy Theory (Dennis, 2006) was incorporated into the Ecological Model to provide the structure for the intervention to increase the duration of breastfeeding.

Ecological Model

The Ecological Model describes factors at the individual, group and societal levels that influence breastfeeding practice. Individual factors include the mother, infant and the mother-infant couplet. Therefore, maternal knowledge about breastfeeding and parenting, intent to breastfeed, the birthing experience, parenting experience and skills, maternal and infant health

status, early interactions between mother and infant, and attachment each influence the initiation of breastfeeding (Hector, King, and Webb, 2005).

Group level factors that influence a mother's breastfeeding duration include environmental aspects that encourage mothers to breastfeed, such as: the birthing facility or hospital routines, family and peer support, and public health policies such as defined maternity or paternity leave. Maternity practices such as encouragement of skin-to-skin contact, decreased separation of mother and baby, and providing breastfeeding education about the skills of latching and positioning can contribute to breastfeeding success, duration, and exclusivity (Bramson et al., 2010; Hector et al., 2005; Lavendar, et al., 2005; Meek, 2010). Adequate staffing levels in the NICU and Postpartum units can contribute to breastfeeding outcomes because of the additional time investment required to educate and support parents while their infant is in the NICU (Hallowell et al., 2016). The acceptance of breastfeeding as the norm is also influenced by a community's attitudes, the portrayal of breastfeeding or formula feeding in advertisements, as well as differing cultural practices regarding infant feeding, childrearing, and the role of women and mothers (Hector et al., 2005). For the purposes of this project, the focus was on the individual and group level factors that influence maternal breastfeeding practices.

Using the Ecological Model as mentioned above to look at the individual and her environment, a mother may have received prenatal education on breastfeeding and have a strong desire to breastfeed. However, her experience after delivery and during the postpartum recovery may interfere with her intended goals of initiation of breastfeeding. Furthermore, if after discharge the mother experienced breastfeeding difficulty and does not have family or community support for continued breastfeeding, it will affect her desire to continue to breastfeed. In addition, mothers who are able to overcome early breastfeeding challenges may, if faced with

returning to work, encounter difficulty with maintaining milk supply while balancing family, work, and school. Therefore, there are many times during a mother's breastfeeding journey where one or more of these factors can influence breastfeeding outcomes.

Breastfeeding Self-Efficacy Theory

Breastfeeding Self-Efficacy Theory refers to a mother's perceived ability to breastfeed her infant and can be used to predict whether a mother decides to breastfeed, how much she will try to overcome challenges, whether she uses positive affirming or negative thought patterns, and how she will respond to breastfeeding challenges that arise. As a result, mothers who are confident will more likely choose to breastfeed, work through challenges and use positive self-talk to continue breastfeeding (Avery, Zimmermann, Underwood, & Magnus, 2009; Blyth, et al., 2002; Dennis, 2006). Breastfeeding self-efficacy is influenced by performance accomplishments such as past breastfeeding experiences, and verbal persuasion and encouragement from influential contacts such as family, friends, and lactation consultants. Observing other women breastfeeding, and physiological responses such as fatigue, stress and anxiety also influence self-efficacy (Blyth, et al., 2002; Dennis,2006).

The Breastfeeding Self-Efficacy Scale (BSES) was developed as a measure to assess breastfeeding confidence and guide interventions that may increase breastfeeding duration (Blyth et al., 2002; Dennis, 2006; Kingston, Dennis, & Sword, 2007; McQueen, Dennis, Stremler & Norman, 2011; Pollard & Guill, 2009). The Breastfeeding Self-Efficacy Scale (BSES) is used to measure breastfeeding confidence—the higher the scores, the higher the level of breastfeeding self-efficacy, and the better the breastfeeding outcome.

Research Question

The objective for this project was to answer the following question: Does a hospital-based antepartum anticipatory guidance breastfeeding (AAGB) program increase the mothers' breastfeeding confidence as measured by the Breastfeeding self-Efficacy Scale?

II. Review of the Literature

Search Strategy

The studies for this review were identified from searches conducted in PubMed, CINAHL, Google Scholar, the Cochrane Database, and from a survey of bibliographies from the articles collected. Abstracts were reviewed for relevance to topic of interest. Keywords used individually as well as in combination included: "breastfeeding initiation," "breastfeeding interventions," "exclusive breastfeeding," "random controlled trials," "premature," "preterm infants," "maternal confidence," and "breastfeeding expectations." The literature was searched for peer-reviewed full text articles on randomized controlled trials available in electronic or in print form, published in English from 2000 to 2010. Articles discussing multiple gestations, critically ill infants or critically ill mothers, or discussing a subject not relevant to the topic of interest, non-published studies and unpublished theses were excluded. A total of 16 articles were reviewed. See Table of Studies in Appendix A.

In the literature, breastfeeding was primarily discussed as it relates to the initiation, duration and exclusivity, thus studies on initiation alone in the preterm population were limited. The findings of the literature review are organized within the following topics: prenatal education, Healthcare Provider knowledge and support, and anticipatory guidance.

Prenatal Education

Pregnancy is a time for physiological and psychological preparation for childbirth and parenting. Education provided during this preparatory timeframe can dispel myths and replace inaccurate information with appropriate information about breastfeeding, and has the potential to increase maternal confidence and breastfeeding initiation rates.

Avery, Zimmermann, Underwood, and Magnus (2009) conducted a focus group study to gain an understanding about the processes that contribute to breastfeeding decisions among Caucasian and African-American pregnant women, and between breastfeeding and formula feeding mothers. They found that successful breastfeeding was associated with "confident commitment," a term they used to describe the integration of both components: maternal confidence in the process of breastfeeding and their ability to breastfeed, and also their commitment to work through obstacles to continue to breastfeed. Those women who lacked both confidence and commitment were more likely to formula feed. The authors concluded that the attitudinal process of maternal commitment to breastfeed occurred during pregnancy and that prenatal education can play a role in reframing breastfeeding as a learned experience for both mother and her baby (Avery et al., 2009).

Noel-Weiss, Rupp, Cragg, Bassett and Woodend (2006) conducted a study to determine the effects of a prenatal workshop on maternal breastfeeding self-efficacy and breastfeeding duration. Participants (n=92) who volunteered for this study were randomized into either a control (n=45) or intervention (n=47) group. While both groups received standard care during their pregnancies, the intervention group attended a 2.5-hour prenatal breastfeeding workshop, utilizing a variety of teaching tools such as dolls, videos and discussions to deliver the information and solicit active participation (Noel-Weiss et al., 2006). The Breastfeeding Self-

Efficacy Scale (Short Form) (BSES) was used initially to establish a baseline and at 4 weeks and 8 weeks postpartum to measure maternal breastfeeding self-efficacy, which is defined as the confidence a women has in her ability to breastfeed her infant (Blyth et al., 2002). The findings demonstrated that the prenatal workshop was effective in increasing the average self-efficacy scores for the mothers who participated. Additionally noted was the positive influence the workshop had on mothers and their confidence in their ability to assess if their infants were getting enough milk. The longer the first breastfeeding session was delayed and the more formula used, the less likely the mother was to continue to breastfeed. At week eight, the interventional group had a higher rate of exclusive breastfeeding than the control group (70% compared to 58%). The authors concluded that prenatal breastfeeding workshops are valuable tools that can have a positive effect on maternal confidence and increase breastfeeding rates. They recommended that prenatal workshops be integrated as a perinatal support program from early pregnancy through to the postpartum period and include professional as well as peer support.

Forster et al. (2004) also investigated the influence of prenatal education on the breastfeeding initiation and duration rate. They developed a three-armed random controlled trial with 981 participants, comparing a Practical Skills intervention, to an Attitudes intervention. The Practical Skills intervention included a 90-minute class discussing the practical aspects of breastfeeding; the Attitudes intervention included two 60-minute classes that discussed the family and community attitudes and experiences with breastfeeding. Both interventions were compared to standard care and conducted in interactive groups during mid-pregnancy. Breastfeeding initiation was assessed during interviews at two and four days after delivery and

duration was assessed at six months during telephone interviews. The participants were first time mothers, between 16-24 weeks pregnant at the time of recruitment.

The Practical Skills intervention focused on the proper technique of latching and positioning and also the prevention and management of breastfeeding complications. This 90-minute class used dolls and breast props for demonstration. Partners were not included in this class. The Attitudes intervention included discussions about the advantages of breastfeeding. The participants were encouraged to bring their partners or significant other and discuss their views, expectations and attitudes about breastfeeding as well as their perceptions about their family, friends and community attitudes about breastfeeding. During these two 60-minute classes, participants were encouraged to develop a breastfeeding plan. Standard care included formal breastfeeding classes, lactation consultant support, peer support, 24-hour telephone support, and postpartum visit by a midwife. Women in the Practical Skills group and Attitudes group were also able to access the resources available to the control group.

The authors found that neither of these interventions increased the initiation or duration breastfeeding rates compared to standard care. For the Practical skills groups the initiation rate was 97% (296/306), for the Attitudes group the initiation rate was 95% (291/308), and for the control group 96% (297/310). The rates of duration at six months for each group were 55% (162/297), 50% (146/293) and 54% (162/299) respectively. They concluded that the women in this study were from disadvantaged, low-income and culturally diverse backgrounds, who were already motivated to breastfeed compared to nonparticipants. In addition, the study was conducted in a Baby Friendly hospital and participants could have been further influenced to breastfeed by hospital staff. They acknowledged that in settings where there is already an interest and high breastfeeding rate, neither of the interventions tested can be recommended as effective;

however, in settings where there is a lack of breastfeeding support the results may be significant (Forster et al., 2004).

Kervin, Kemp and Pulver (2010) investigated the influence of various types and timings of breastfeeding support available and perceived by expectant and new mothers on their breastfeeding plans and behaviors after delivery. Participants (n=164) were interviewed after delivery and asked about their breastfeeding intentions and the personal and professional support they received prenatally. At two weeks, participants who were breastfeeding or indicated they intended to breastfeed were contacted by phone for a follow-up interview and asked about the support received during their postpartum period (n=107). Exclusive breastfeeding was the most common breastfeeding method reported (76.2%) with intended duration of 8.5 months. Women who participated in antenatal classes (86.8%) intended to breastfeed and 47.4% intended to breastfeed for at least one year. At discharge, 67.3% of women who intended to breastfeed were breastfeeding and 41.1% exclusively. At two weeks postpartum, 39.2% of the women breastfeeding during the initial hospital interview were formula feeding. The average length of breastfeeding among the mothers who stopped breastfeeding was 6.4 days, but 38.5% of these mothers stopped by two days postpartum (Kervin et al., 2010).

Breastfeeding help received shortly after delivery had a positive effect on exclusivity in the first 24 hours (93.1%), as well as positive attitudes of healthcare staff (47.0%). A lack of professional support after delivery, perceived unsupportive attitudes, inconsistent breastfeeding information from staff, and not having opportunities to meet with a lactation consultant were contributors to poor breastfeeding outcomes. The investigators concluded that prenatal classes were an important source of support and influenced breastfeeding behaviors in the hospital and after discharge. Professional support should be offered to all expectant women throughout the

prenatal and postpartum period in order to provide continuous encouragement, build maternal confidence, and cultivate a greater influence on breastfeeding initiation and duration (Kervin et al., 2010).

In Egypt, Ahmed (2008) conducted a study to examine the effects of a breastfeeding education program provided to mothers of preterm infants (n=60), on their breastfeeding knowledge and practices. The breastfeeding education was based on Bandura's Social Cognitive Theory which explains how new behaviors are acquired and maintained, and incorporated the modeling of behavior, rehearsal, reinforcement and self-monitoring strategies in its implementation. The educational components used for the intervention group included: individual education sessions discussing the benefits of breastfeeding, differences in breastfeeding preterm infants, teaching basic breastfeeding and pumping skills, repeated practice of skills reviewed, and the use of a breastfeeding diary as a self-monitoring tool. The control group received routine care. Prior to implementation, both the control group (n=30) and intervention group (n=30) were given a breastfeeding knowledge questionnaire to assess baseline knowledge (Ahmed, 2008).

The study revealed that breastfeeding education and ongoing support was highly successful in increasing the breastfeeding knowledge, exclusivity at discharge and duration among Egyptian mothers of preterm infants. The mothers were between 20 and 29 years of age with a mean age of 24.5 years ± 7.86, the mean gestational age of the infants was 32.2 weeks ± 6.33 weeks, and infants stayed in the NICU an average of 12 days with a range of 3–42 days length of stay. Mothers in the intervention group initiated milk expression earlier and more frequently than those in the control group. At discharge, 80% of the intervention group was exclusively breastfeeding compared to only 40% of the control group. After discharge, 40% of

mothers in the intervention group were still exclusively breastfeeding compared to only 13% of the control group at three months (Ahmed, 2008).

According to the author, this study had limitations including a small sample size due to drop out of participants, loss due to follow-up, limited supply of breast pumps and other breastfeeding supplies, and limited or lack of privacy for teaching and breastfeeding in the NICU. Even with these limitations, the study was able to illustrate that early and ongoing breastfeeding education, education about preterm infants, and anticipatory guidance about potential breastfeeding challenges empowers mothers of preterm infants and provides the motivation to initiate early milk expression and continued breastfeeding after discharge. It is not known whether the educator was nursing staff assigned to the mother or the infant, or a lactation consultant, but the implications for having a breastfeeding advocate to provide guidance in the NICU should be considered.

Healthcare Provider Knowledge and Support

Admission to a Neonatal Intensive Care Unit (NICU) has been cited in the available literature as a contributing factor to decreased breastfeeding rates at discharge. Admission to the NICU can be related to early gestational age, or critical illness, but it creates many barriers to successful initiation of breastfeeding. As previously mentioned, separation from their infants, delayed breastfeeding or initiation of pumping, maternal stress of being in a NICU environment, equipment around their infant's bedside as well as the infant's difficulty with coordination of feedings are contributing factors for a mother's lack of breastfeeding. Also important is staff and healthcare providers' knowledge and their attitudes about breastfeeding. Staff that have extensive breastfeeding knowledge, positive attitudes about breastfeeding, and experience with breastfeeding infants in the NICU can positively influence a mother to initiate and continue to

breastfeed until discharge and beyond (Wagner,Hulsey,Southgate & Annibale, 2002). In contrast, those that have negative attitudes or experiences about breastfeeding, and lack proper breastfeeding education will also lack encouragement that these mothers need to initiate and continue breastfeeding (Pineda et al., 2009).

Inconsistency of breastfeeding information given by healthcare providers and staff can undermine and discourage mothers from breastfeeding and being able to provide for their infants during a time when the staff is the predominant caregiver of their infants. Pineda, Foss, Richards & Pane (2009) conducted a study to evaluate the effects of an educational intervention aimed at healthcare providers in the NICU. Their breastfeeding knowledge following the education was assessed, as well as breastmilk feeding initiation rates, direct breastfeeding rates while in the NICU, and breastfeeding rates at discharge. The three-part intervention consisted of a healthcare provider initiative, which included all NICU staff that directly interact with mothers, breastfeeding materials given to mothers of infants in the NICU, and the addition of a breastfeeding pathway included in the infant's individualized care plan. A convenience sample of infants (n=82) admitted prior to the education intervention was compared with those after the education was implemented (n=82).

Topics presented to staff as self-study modules included: the benefits of breastfeeding, barriers to breastfeeding, physiology of lactation, use of breast pumps, and skin-to-skin contact. A post-test was also included in the education module. Educational materials were developed for parent education that complimented the staff education modules thus ensuring that information given to parents was consistent with the education provided to staff.

The rates of breastfeeding initiation increased from 74.1% to 85.2%. The rate of breastfeeding also increased from 25.9 % of mothers breastfeeding one or more times in the

hospital to 44.4% of mothers breastfeeding at least once in the hospital. The rate of breastfeeding at discharge increased from 35.8% to 40.7 %. Regarding healthcare provider knowledge, a score of 80% or higher was considered passing and 100% of the staff achieved a passing score. Limitations discussed by the authors included: not administering staff a pretest to provide a measure of the degree of knowledge acquisition following the education provided, small sample size for evaluation of outcome measures for post-intervention due to a slow enrollment rate, and poor representation of key decision-makers (neonatologists, and nurse practitioners) in the healthcare provider education group (Pineda et al., 2009).

Sarasua, Clausen and Frunchak (2009), surveyed 70 mothers on a postpartum unit to evaluate the patient's breastfeeding intentions, their in-hospital breastfeeding experiences, supplementation, and overall satisfaction with the breastfeeding education and support provided. Seventy-two percent of mothers intended to exclusively breastfeed and cited the health benefits for their baby as their main motivation. However, 67% of these mothers supplemented with formula and reported milk insufficiency as one of the main reasons for supplementation. Other reasons included maternal fatigue, illness, nipple or breast problems, infant staying in the Newborn nursery and infant latching or sucking problems. Mothers surveyed in this study had comments regarding the education they received and reported their dissatisfaction with inconsistent breastfeeding information. They reported receiving little information about the benefits of skin-to-skin contact, or "kangaroo care," and the association with successful initiation and duration of breastfeeding and enhanced bonding. The data collected further reinforces the need to provide advice on feeding expectations and the risks of formula supplementation, and this should be individualized to the mother's educational needs utilizing a variety of modalities to promote breastfeeding (Sarasua et al., 2009).

Grossman et al. (2009) investigated the effects of an intensive breastfeeding education program for healthcare providers on the initiation and exclusivity of breastfeeding. The curriculum for Project HELP (Hospital Education in Lactation Practices) covered relevant topics such as basic breastfeeding, practical information on problem-solving and overcoming challenges for mothers and infants, and the use of breastpumps and alternative feeding devices. The education was presented by staff from a designated Baby-Friendly Hospital, including a pediatrician, board-certified lactation consultant, public health professionals and perinatal clinicians. This program was taught at four community Massachusetts hospitals with low breastfeeding rates. The results of this project were in agreement with the results of the educational interventional study conducted by Pineda et al. (2009) that found an increase in breastfeeding initiation rates. Grossman et al. (2009) findings noted an increase in breastfeeding initiation from 58.5% to 64.7%, but did not find a statistically significant increase in the exclusive breastfeeding rate.

Several studies noted that inconsistent or conflicting information influenced a mother's decision to breastfeed as well as their initiation and duration of breastfeeding. Given the variety of healthcare staff that work with mothers during their hospital stay, it is conceivable that each person has their own teaching style and conveys messages based on their own experiences. The added concern to decrease maternal stress and anxiety during an already stressful time further complicates the issue of decreased breastfeeding in the preterm population. Sisk, Lovelady, Dillard and Gruber (2006) conducted a study (n=196) to examine the differences in maternal stress and anxiety between mothers who chose to breastfeed (n=115) and those that chose to formula feed their infants (n=81). They also tried to determine if counseling mothers who did not initially plan to breastfeed increased their anxiety, and if mothers changed their decisions about

breastfeeding based on the information they received. They used the State-Trait Anxiety Inventory, a self-evaluation tool consisting of two separate 20 item scales, to assess the level of transient stress perceived and the individual's predisposition to anxiety (Sisk et al., 2006).

The researchers found that mothers did not experience increased anxiety regardless of their initial feeding plans after they were provided with a standardized script about: the benefits of breastmilk for premature infants, pumping and storing of breastmilk, and maternal nutrition; the effects of smoking, medication, and the use of birth control on milk supply; and focusing on provision of breastmilk rather than breastfeeding. After receiving counseling, 100% of the mothers who intended to breastfeed and 85% of those that had intended to formula feed their infants had initiated milk expression with the electric breastpumps in the hospital, resulting in an overall lactation initiation rate of 94% (Sisk et al., 2006). These findings further support the importance of providing consistent evidence-based information about the benefits of breastmilk—especially for preterm infants—and providing individualized education and support in order to increase breastfeeding initiation rates.

Anticipatory Guidance

Anticipatory guidance is used in pediatrics to incorporate teachable moments and also provide parents with information about the growth and development of their child and anticipation of milestone expectations. Parents are made aware of changes that can occur in their children over time and given suggestions on how to adapt to those changes and foster development. One aspect of anticipatory guidance is to stress the interactive and reciprocal relationships between parent, child, and their environment in order to increase parental participation and skills, confidence, and competence in problem solving (Burns, Dunn, Brady, Starr & Blosser, 2004, p.78). This differs from counseling, which provides advice about specific

problems (Baker, 2001, p. 70; Nelson, Wissow, & Cheng, 2003). Several studies recommend the use of anticipatory guidance in interactions with mothers to help them learn about their infant's behaviors, address realistic expectations regarding initiation of feedings, the progression to direct breastfeeding, expectations about using breastpumps, and troubleshooting to avoid disruptions in milk supply. Addressing specific age-related barriers and challenges to breastfeeding a preterm infant at several discrete time periods has the potential to avoid further barriers and challenges in the future (Callen, Pinelli, Atkinson, & Saigal, 2005).

Summary and Key Points of Literature Review

For the childbearing woman, lactation is a process that continues after she has delivered her infant. Several studies investigating determinants of breastfeeding initiation and duration have attempted to identify strategies to increase the rates of initiation, duration and exclusivity. A Cochrane review by Lumbiganon et al. (2016) indicated that peer counseling, lactation consultation and formal breastfeeding education during pregnancy did not appear to improve breastfeeding initiation or duration. The authors concluded that there was no conclusive evidence supporting any antenatal breastfeeding education for improving breastfeeding initiation, exclusivity or duration of breastfeeding at three months or six months (Lumbiganon et al., 2016).

The determinants and challenges related to breastfeeding a preterm infant are complex and multifaceted, and require both interdisciplinary and intradisciplinary collaboration. Maternal confidence and self-efficacy has been identified in the literature as important variables in many diverse populations as well as throughout the prenatal and postpartum period on the initiation and duration of breastfeeding. Healthcare providers exert a powerful influence on patients during the course of their hospital stay and after discharge, and contribute to maternal decisions about infant feeding. Receiving consistent evidence-based breastfeeding information from a

knowledgeable and confident healthcare provider contributes to maternal breastfeeding success and increasing breastfeeding rates in facilities that provide maternity care.

Rationale for this project

Ideally, the concept of breastfeeding should be addressed during early gynecological visits and again early in the woman's pregnancy. Information such as preparation for breastfeeding, breast changes, and breast self-assessment to identify potential challenges after delivery, breastfeeding expectations for the immediate postpartum period, and expectations when returning to work can be provided in various forms such as prenatal classes, handouts, and electronic newsletters. However, when expectant women are admitted to the hospital and placed on bed rest due to pregnancy complications, they are not able to attend prenatal classes like their peers, thus missing the opportunity to share in the preparation of childbirth and breastfeeding as they may have planned.

This antepartum anticipatory guidance breastfeeding (AAGB) educational project titled "Breastfeeding MILES to Go" ("MILES" standing for "Mothers Involved in Lactation Education Study") will convey the consistent message that breastfeeding occurs on a continuum and is a natural process that evolves over time. The rational for this project is to help expectant mothers gain an understanding for how the lactation process progresses and help them prepare for potential challenges before they occur, thus enhancing maternal confidence and increasing their self-efficacy.

III. Methods

The purposes of this scholarly project were to describe the implementation and to evaluate the outcomes of a program to promote breastfeeding for mothers of late preterm infants.

Research Design

This project examined the effects of anticipatory guidance related to breastfeeding provided to expectant women hospitalized during their pregnancies on their confidence and on the initiation of breastfeeding prior to their infant's discharge from the hospital. The Modified Breastfeeding Self-Efficacy Scale (Short Form) Among Mothers of Ill or Preterm Infants was used to measure the effects of anticipatory guidance by comparing maternal confidence and self-efficacy prior to the educational intervention and after the education and prior to the infant's discharge. (See Appendix A).

Setting

The pilot study took place on the Antepartum Unit of the Hospital Corporation of America (HCA), Henrico Doctor's Hospital Forest Campus. This is a community hospital located in Western Henrico County in Richmond, Virginia. Approximately 3,600 infants are delivered at Henrico Doctor's Hospital each year. The Antepartum unit is a 23 bed unit with an average daily census of 13 patients. Patients can be admitted during the first, second, or third trimester, depending on the pregnancy concern. The most common admission diagnosis for antepartum patients on this unit include: hyperemesis gravidarum, hypertension (chronic or pregnancy related), preterm labor, premature rupture of membranes, concerns about the placenta, vaginal bleeding, intrauterine growth restriction and concerns about the level of amniotic fluid. The most common co-morbidities are gestational diabetes and gestational hypertension. Depending on the patient's medical condition, the length of stay may vary from 24 hour observation to several months. Patients may be admitted directly from their obstetrician's office, the Emergency Department or transferred from Labor & Delivery.

The population also includes patients recovering from gynecological surgery and postpartum patients whose infants are admitted to the Neonatal Critical Care Center (NCCC). The NCCC includes critically ill and premature infants (NCCC2), and the Progressive Care Nursery (NCCC3) which includes infants who are transferred from NICU, need additional observation, are transferred from Newborn Nursery, or are feeding and growing prior to discharge home. All patient rooms on Antepartum are private with personal bathrooms, and include a television with DVD player and refrigerator and freezer.

Data collected from October 1, 2016 to September 30, 2017 showed the overall breastfeeding rate for infants over 37 weeks was 80.3%. This rate included breastfeeding and formula supplementation. The exclusive breastfeeding rate was 58.6%. In the NCCC the rate for any breastmilk fed either directly at the breast or by feeding expressed breastmilk (EBM) was 32.6% and exclusive breastmilk feeding rate was 4.3%. The national rates reported on the Vermont Oxford Network for 2016 for any human milk was 57.5% and exclusive rate was 11.2%

Description of the Sample

Study participants included English-speaking women over 18 years of age who were pregnant with a single gestation, were admitted patients on the Antepartum unit for at least 1 day, and delivered between 33 and 37 weeks. Participants also did not have any medical conditions that would contraindicate breastfeeding consistent with the AAP recommendations, such as: testing positive for HIV, human T-cell lymhotrohic virus type I or II or untreated brucellosis, active untreated tuberculosis, active herpes simplex lesions on her breast, cocaine, heroin or any other illicit drug, and whose infants are in either the NICU or Progressive Care Nursery for at least 1 day. In addition, women whose infants have neurological, cardiac, respiratory,

craniofacial abnormalities, or medical conditions that would preclude them from breastfeeding; women who intend to put their infants up for adoption; or whose infants are critically ill were excluded from this study.

Measures

The Modified Breastfeeding Self-Efficacy Scale (Short Form) Among Mothers of Ill or Preterm Infants was used to measure the effects of anticipatory guidance by comparing maternal confidence and self-efficacy before and after the Anticipatory Guidance intervention. Permission was granted to use this form by the developer, Cindy-Lee Dennis. The Cronbach's alpha coefficient for internal consistency for this assessment tool was 0.88 (Wheeler and Dennis, 2012). This instrument is an 18 item self-report questionnaire developed to measure breastfeeding self-efficacy. All questions are presented positively with question stems "I can" or "I will." The responses provided are in a Likert Scale with 1 = not at all confident ranging to 5= very confident. The scores are summed to produce a range from 18–90 if all questions are answered. The higher scores indicating higher levels of breastfeeding self-efficacy (Dennis, 2006).The original Breastfeeding Self-Efficacy Scale included 33 questions, and was refined due to redundancy of some items (Dennis, 2003). The Breastfeeding Self-Efficacy Scale (Short Form) has been used to identify mothers of full term infants at risk for premature discontinuation of breastfeeding. The modified scale was further developed to include mothers of ill or preterm infants because of the lack of published studies examining self-efficacy in these mothers. The modification in items addressed the special needs of these mothers who may have to delay breastfeeding and have to pump until they can transition to breastfeeding. Some items asked the mother to predict what her future ability would be (Wheeler & Dennis, 2012).

Procedure

Prior to conducting this pilot study, Institutional Review Board approval was obtained under the University of Virginia, Institutional Review Board (IRB) – Health Services Research (HSR). Approval was also obtained from Henrico Doctor's Hospital. Potential study participants were identified during daily unit rounding and weekly Interdisciplinary Rounds on the Antepartum Unit. One research assistant worked on this project. The assistant was a Master's prepared Perinatal Social Worker assigned to the Antepartum unit. The assistant screened eligible participants and referred them to the Study Coordinator, who then provided informed consent for those who were interested in participating. Once enrolled, the participant's maternal history was obtained and discussed with them including any prior breastfeeding education or experience, as well as their breastfeeding goals or expectations. Participants were asked to complete two questionnaires and also meet with a Lactation Consultant before delivery for 15–20 minutes and at least once before her baby were discharged. Participants were offered up to four visits with the Lactation Consultant. The first visit took 30-45 minutes. In addition, information was discussed in a variety of ways to suit the participant's learning needs, and if the participant preferred to consolidate the separate sessions into one, accommodations were made to suit her learning preferences. The first questionnaire was given at the end of the first session to establish a baseline score.

Educational Intervention and Data Collection Procedures:

Each session occurred in the participant's room during a mutually agreed appointment time when the participant had no other distractions. The pages in the resource publication given were tabbed for easy reference for each session. By the end of the intervention the entire publication was reviewed. Each participant was given a folder for her to store the resource

publication, a copy of her informed consent and any other breastfeeding information she wanted to keep. The main topics that were discussed at each visit are described in the following sections.

First session:

- Obtaining maternal history (see Appendix B).
- Discussion of expectant mother's breastfeeding expectations and goals.
- Given "Your Guide to Breastfeeding" publication from U.S. Department of Health and Human Services, Office of Women's Health with assigned readings. http://www.womenshealth.gov/publications/our-publications/breastfeeding-guide/BreastfeedingGuide-General-English.pdf
- Discuss the benefits of breastfeeding and providing breastmilk for both mother and infant.

Second session:

- Discuss expectations if infant is delivered prematurely.
- Discuss the initiation of milk expression within 6 hours of delivery.
- Provide link for Stanford University video.
- http://newborns.stanford.edu/Breastfeeding/ See: Hand Expressing Milk — video

Third session:

- Discuss the expectant mother's expectations about breastfeeding and milk expression.
- Answer questions and review information
- Preparation for baby-breastfeeding supplies (pump, bra fitting, etc.).
- Nutrition and breastfeeding

After delivery

- Initiate pumping within 6 hours of delivery.
- Discuss the importance of keeping logs for milk volume.
- Assist with breastfeeding sessions as requested.
- Review Discharge Checklist (see Appendix C).
- Complete Breastfeeding Self-efficacy questionnaire before infant is discharged.

Protection of Human Rights

This was an educational intervention and the anticipated risk to participants was minimal. Participants were given information about the educational intervention and offered the opportunity to consent or decline. (See Consent Form in Appendix D.) Participant information was coded using consecutive ordinal numbers. This new ID code was used on all patient forms and questionnaires pertaining to this project. The hospital policy regarding patient confidentiality was followed. All information related to this project—questionnaires, patient information, and consent forms—were kept in a locked file in the researcher's office. Patient charts remained in the appropriate chart racks.

Data Analysis

In order to comply with Henrico Doctor's Hospital Breastfeeding Policy (See Appendix E), all patients on Antepartum received breastfeeding education; however, data was only collected and analyzed on those participants who met eligibility criteria. Consultation with the course Statistical Consultant was requested to discuss sample size and data analysis. A sample size table representing Cohen's convention with an expected medium effect size and alpha set at 0.05 was used to determine the needed sample size (Cohen, 1992). Since participants were asked to complete the same questionnaire at two different points; pre-intervention and post-intervention prior to discharge, a paired *t*-test was suggested. In order to get a standard 0.80 power to detect a medium effect size (d=0.5), at an alpha of 0.05, a total sample size of at least 64 participants was recommended to meet the standards for a paired *t*-test as well as an independent *t*-test (Cohen, 1992). However, since this was designed to be a pilot, feasibility study, only 25 participants were enrolled.

A Test for Normality was done by applying the Shapiro-Wilk Normality test due to the small sample size (Ghasemi & Zahediasl, 2012; Razali & Wah, 2011) Numerical and visual outputs were investigated for skewness and kurtosis Z values.

For the pre-intervention BSES:

z = .111, kurtosis = -1.105, p = .55

For the post-intervention BSES:

z = -.842, kurtosis = -1.105, p =.132

Since the $p > .05$ the assumption was made that the data were approximately normally distributed. Since the z- value is within +/- 1.96, the data are a little skewed for both the pre-test and post- test, but it does not differ significantly from normality. Given the small sample size, the Wilcoxan Signed Rank Test was used rather than the paired sample *t* test. Descriptive statistics were used to further describe the data including breastfeeding initiation rates prior to discharge.

Analysis of the data was carried out using IBM SPSS Statistics Version 24 with descriptive mean statistics and the Wilcoxan Signed Rank Test used to summarize the data. The data were used to compare the before and after anticipatory guidance intervention to determine if there was a statistically significant change in maternal confidence and self-efficacy related to breastfeeding their preterm infant prior to their infant being discharged.

IV. Results

Population Demographics

Twenty-five participants were enrolled, however, five were excluded because they delivered full term and their infants did not go to the NICU. The study population consisted of 20 participants (Black n=9, Indian n=3, White n=8) admitted to the Antepartum unit of Henrico

Doctor's Hospital during their pregnancies. The participants' age range was from 21-37 years of age with a mean age of 29.75 years (SD=4.898). Gravida described the number of times a participant was pregnant. There were seven participants who were pregnant for the first time, or primigravida, and 13 participants for whom this was a subsequent pregnancy, or multigravida. Among the multigravidas, only nine reported that they had any prior breastfeeding experience. Among the study participants only five reported that they had received any previous breastfeeding education prior to admission to the unit.

The study participants were admitted to antepartum between 29.3 weeks and 35.6 weeks gestation and had a mean Length of Stay (LOS) of 14.9 days. The admission diagnoses for these participants were as follows: Pregnancy Induced Hypertension (PIH) (n=6), Hypertension (HTN) (n=4), Preterm labor (PTL) (n=4), Premature Rupture of Membranes (PROM) (n=3), Previa (n=2), Intrauterine Growth Restriction (n=1). Hypertension either as a chronic pre-existing condition or associated with the current pregnancy was the most common reason participants were admitted. Diabetes either as a chronic pre-existing condition or associated with the current pregnancy was the most common co-morbidity. Diabetes mellitus (n=3), gestational diabetes (n=5), other associated conditions such as polyhydramnios or oligohydramnios (n=1), no other co-morbidities (n=11).

Participants delivered between 33.1 weeks and 37 weeks with a mean gestational age at delivery of 35.09 weeks (SD=1.17). The most common mode of delivery was via Cesarean section (n=14) and vaginal (n=6). The infant's weight in grams ranged from 1300 grams to 3581 grams with a mean weight of 2317 grams. The mean LOS for the infant was 14.60 days. See Table 2. Participant Characteristics

Table 1

Participant Characteristics

Variable	Minimum	Maximum	Mean	Std Deviation
Maternal				
Age (years)	21	37	29.75	4.898
Gravida	1	5	2.15	1.268
Para	0	4	.85	.988
Adm (weeks)	29.3	35.6	33.125	2.007
Previous BF experience (Y/N)	0	1	.45	.510
LOS (days)	5	44	14.95	11.33
Infant				
Gestational Age (weeks)	33.1	37	35.085	1.174
Birth weight (grams)	1300	3581	2317.41	495.567
LOS (days)	2	95	14.60	19.87

After delivery the time of pumping initiation or breastfeeding was noted. Five started pumping within the first 6 hours after delivery, 14 started pumping after 6 hours, and one did not start pumping but breastfed exclusively; two began breastfeeding within 6 hours, three breastfeed at 24 hours, two breastfed at 48 hours, and seven began to breastfed >96 hours after delivery. Six participants pumped exclusively and did not breastfeed directly.

At the time of the infants discharge from the hospital, 18/20 had received some amount of Expressed Breast Milk (EBM), or had started breastfeeding during their stay, and 15/20 infants were still receiving EBM or breastfeeding.

A Wilcoxan Sign Rank Test using the total scores for the Breastfeeding Self-Efficacy Scale for the pre-test (BSES 1) and post-test (BSES 2) was conducted to evaluate the impact of anticipatory guidance provided to these participants on maternal self-confidence and self-efficacy. The results showed that the BSES 2 mean scores were statistically significantly higher

(mean=77.65), than the BSES 1 (mean=71.65), after receiving the anticipatory guidance intervention (Z=-2.350, p< .019, r=-.37) (See Table 2 and Table 3).

Table 2

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
BSES #1	20	71.65	10.494	54	89
BSES #2	20	77.65	9.230	61	90

Table 3

Wilcoxon Signed Ranks Test

		N	Mean Rank	Sum of Ranks
BSES #2 - BSES #1	Negative Ranks	4[a]	6.75	27.00
	Positive Ranks	13[b]	9.69	126.00
	Ties	3[c]		
	Total	20		

a. BSES #2 < BSES #1
b. BSES #2 > BSES #1
c. BSES #2 = BSES #1

From the data there were more positive ranks (13) than negative (4), which indicates that significantly more people had improved BSES scores than those who had a tie (3), or had lower scores after the intervention.

V. Discussion

This pilot study demonstrated a statistically significant increase in maternal breastfeeding self-efficacy scores after participating in the anticipatory guidance intervention during their stay and until their infants were discharged from the hospital. This pilot study provides evidence that reinforces previously published research that demonstrated the impact of educational interventions on maternal breastfeeding confidence and resulting positive breastfeeding outcomes (Blyth et al., 2002; Dennis, 2006; Kingston, Dennis, & Sword, 2007; McQueen,

Dennis, Strembler, & Norman, 2011; Noel-Weiss et al., 2006; Pollard & Guill, 2009; Su et al., 2007; Ahmed, 2008). The studies reviewed for this project examining the effects of antenatal education and maternal confidence and the effects on breastfeeding outcomes had larger sample sizes than this pilot study. The results demonstrated that providing expectant women with breastfeeding information was beneficial and increased the likelihood that the participants would imitate breastfeeding after delivery. Similarly, this AABG "MILES to Go" project demonstrated that given individualized anticipatory guidance, participants were better prepared and able to initiate breastfeeding or expression of their breastmilk and continue to do so until their infants were discharged.

These positive findings are in contrast to the findings of Forster et al. (2004) and Wong, Fong, Lee, Chu and Tarrant (2014), who reported that there was no significant difference between the antenatal breastfeeding support and education interventions on the initiation or duration of breastfeeding. Each research group suggested that in settings with high breastfeeding initiation rates, there was no increase in exclusivity or duration rates.

Implications for Nursing

Breastfeeding initiation, duration, and exclusivity involve a multitude of factors. While a mother may be strongly committed to achieving her breastfeeding goals, her environment also influences the outcome of her decisions. Interventions aimed at building a mother's confidence and breastfeeding self-efficacy should also take into account the factors in her environment that can also exert an influence on her and eventually on her breastfeeding decisions. Providing mothers with anticipatory guidance and information during the most vulnerable time periods along her breastfeeding journey—when she is most likely to discontinue breastfeeding or

expressing her breastmilk—can help to overcome barriers and increase breastfeeding duration and success.

Nurses are taught to advocate for their patients. However, in a hospital setting where mothers and infants may be separated either due to physical layouts on maternal and infant units or because of illness of either mother or infant, it is easy to fragment care when it relates to breastfeeding. The question of "Who is responsible to help a mother with breastfeeding?" can be received with hesitation if staff is not knowledgeable and comfortable with breastfeeding and especially with preterm infants. As mentioned earlier, The Joint Commission (TJC) added Exclusive Breastfeeding as the latest Perinatal Core Measure, now recommending that it is the responsibility of all healthcare providers caring for mothers and infants to be actively involved in the promotion of successful breastfeeding (Rosen-Carole, Hartman, & the Academy of Breastfeeding Medicine, 2015; United States Breastfeeding Committee, 2013). In addition, breastfeeding as the preferred form of infant nutrition for all infants should be discussed across a continuum from early pregnancy throughout an infant's first year of life, thus making breastfeeding promotion and support an ongoing team effort.

Implications for Scholarly Project

A review of the literature suggests that clinicians and other healthcare providers can have an influential role in breastfeeding initiation and continuation. Health systems support of breastfeeding during postpartum hospitalization and the early postpartum discharge period has also been associated with successful breastfeeding (Tavares et al., 2003). The Baby-Friendly Hospital Initiative is an international program established by The World Health Organization (WHO) and United Nations Children Fund (Unicef) to encourage and support birthing facilities to implement policies that will promote, support and protect breastfeeding and the mother-infant

relationship (Baby Friendly USA, 2016). There are indications in the available literature that the more steps implemented in a birth facility and experienced by a new mother, the greater likelihood that she will be breastfeeding at discharge (Baby Friendly USA, 2016; United States Breastfeeding Committee, 2013). The guidelines and evaluation criteria for this initiative include the "Ten Steps to Successful Breastfeeding" and recommend that facilities seeking The Baby Friendly Designation have the following;

1. A written breastfeeding policy that is routinely communicated to all staff.
2. Train all healthcare staff in the skills needed to implement this policy.
3. Inform all pregnant women about the benefits and management of breastfeeding.
4. Help mothers initiate breastfeeding within 30 minutes after birth.
5. Show mothers how to breastfeed and maintain lactation even if they are separated from their infants.
6. Give infants no food or drink other than breastmilk, unless medically indicated.
7. Practice rooming in to allow mothers and infants to remain together 24 hours a day.
8. Encouraged breastfeeding on demand.
9. Give no artificial teats or pacifiers to breastfeeding infants.
10. Foster the establishment of breastfeeding support groups and refer mothers to them at discharge.

The studies reviewed confirmed that the more interaction mothers have with someone knowledgeable in breastfeeding and management of challenges, the more likely she will be to continue breastfeeding. In order for mothers to initiate breastfeeding, they need support prenatally, during their hospital stay, and in the postpartum period (AAP, 2005; Rosen-Carole, Hartman, & the Academy of Breastfeeding Medicine, 2015). Although this project was not

conducted in a Baby Friendly Designated Hospital, there is a written policy and work has been started to put measures in place to achieve more of the steps noted in the guidelines.

Mothers admitted to the hospital with complications during their pregnancies and placed on bed rest often are not able to attend prenatal classes and therefore are not prepared for breastfeeding a preterm infant. Being born early can have a profound impact on the establishment of a successful breastfeeding relationship for the mother and her infant. The goal of exclusive direct breastfeeding may have to be delayed and the focus instead is placed on establishing and adequate milk supply through hand expression or mechanical expression of breastmilk until the infant is ready to transition to full breastfeeding. The transition from gavage feedings and supplementation to full direct breastfeeding takes time and mothers should be educated and supported to develop realistic expectations with regard to breastfeeding their preterm infant (Bois, Vaucher & Academy of Breastfeeding Medicine, 2016). It is also important that mothers are educated about the changes in feeding behaviors she may observe as her infant matures and grows.

This project used the available time that expectant mothers were in the hospital to introduce breastfeeding topics for discussion, in addition to discussing their concerns and expectations. Inconsistent information was a recurrent theme in the literature, and therefore having an Internationally Board Certified Lactation Consultant (IBCLC) meet with expectant mothers to provide information in a variety of formats (such as verbal, printed or electronic materials) to suit the individual patient was a key component of this project. The Breastfeeding Self-Efficacy Scale was used to identify mothers who were at risk for premature discontinuation of breastfeeding or expressing breastmilk for their infants, and mothers who may require

additional breastfeeding support after discharge to assist them in achieving their breastfeeding objectives.

The results of this pilot can be used to develop a standard education module for all lactation consultants and staff to use. Identifying mothers who are most at risk for early discontinuation of breastfeeding or expressing their breastmilk can provide useful information that can then be used to individualize the discharge teaching as well as early follow-up after discharge.

Strengths and Weaknesses of the Design

An inherent strength to this design was the accessibility to the patients for this project. A weakness of this design was that the same Lactation Consultant/DNP student provided the information; this was not a blinded study and there was no randomization.

Nursing Practice Implications

The implications of this educational project include increased knowledge about the use of anticipatory guidance and strategies to increase breastfeeding initiation in the late preterm infant population. Clearly this is an important role for Lactation Consultants, Advanced Practice Nurses and frontline staff who have most of the contact with the expectant mother when they are hospitalized. Having the available time to meet with expectant mothers as well as a guided script to help facilitate discussion and reduce inconsistent information will be useful in providing support and guidance to expectant and new mothers as they make their breastfeeding journey.

In addition to identifying those mothers at risk for early discontinuation having a baseline BSES score can be used similarly to a staff acuity assignment plan, to make appropriate staffing assignments so that those mothers who are in most need of support have a staff member to help them. Collecting data on the initiation of skin- to- skin, breastfeeding, hand expression or

pumping, and volumes of milk collected, along with cost data could be useful in evaluating the program and potential cost savings. Future projects could include examining the Breastfeeding Self-Efficacy Scores of mothers who have elevated BMI's, or are obese, have a history of depression or have chronic medical issues and the effects of the AAGB on their breastfeeding initiation and duration. Future projects should include more participants and longer follow-up to see if there is a lasting effect after receiving anticipatory guidance.

Products of this Scholarly Project

At the completion of this Scholarly project, the final product will be submitted to the journal, *Clinical Lactation* for publication (See Appendix F). In addition, the results of this of this project will be shared at the local Association of Women's Health Obstetric and Neonatal Nurses (AHWONN) chapter meeting and the Virginia Breastfeeding Task Force quarterly meeting as an educational offering. An application for poster presentation will be submitted to the Virginia Nurses Association (VNA) for the annual education conference. The results of this Scholarly project will be presented at the Henrico Doctor's Hospital Nursing Congress session as well as an educational offering for units in the Women's Hospital of Henrico Doctor's Hospital.

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Appendix A

Table 1 Table of Studies

Prenatal Education

Author(s)	Aim/Hypothesis	Design	Subjects and Setting	Intervention	Control	Outcomes and study Critique
Forster et al. (2004)	Determine the influence of mid pregnancy breastfeeding education on the proportion of breastfeeding women and the duration of breastfeeding	RCT with 3 arms 1.Practical skills 2.Attitudes 3. Control	Primigravidas n=981	Practical skills Attitudes group. n=327 Each group also received standard care	n=327 received standard care which included formal breastfeeding education sessions, lactation consultant support, peer support, 24 hour telephone counseling and home visit.	Neither intervention increased breastfeeding initiation or duration. Study was conducted in a Baby Friendly hospital and therefore this setting was already supportive of breastfeeding which could explain the results.

Author(s)	Aim/Hypothesis	Design	Subjects and Setting	Intervention	Control	Outcomes and study Critique
Lavendar et al (2005)	To evaluate the effects of antenatal education on breastfeeding experience and fulfillment of feeding expectations.	Cluster randomized controlled trial Unit of randomization was the ward and the unit of analysis was the woman. Educational intervention provided by lactation consultant to pregnant women and their midwives.	Women who expressed their desire to breastfeed at the beginning of their pregnancies. (n=1312) Completed questionnaires before discharge and again at 2,4,and 6 weeks and 4,6 and 12 months after delivery. Women asked to maintain a feeding diary about their feeding experiences.	Standard antenatal care (n=679) Invited to also attend a single educational support session with their midwives during the third trimester. Midwives attended an additional training workshop.	Standard antenatal care that included breastfeeding advice from midwives and information about hospital parenting classes. (n=633)	The provision of a single educational group session provided by a lactation consultant failed to increase the proportion of women achieving their breastfeeding. expectations. Control group, 252 (41.7%) and 286 (44.4%); intervention group achieved their expected breastfeeding goals.

Author(s)	Aim/Hypothesis	Design	Subjects and Setting	Intervention	Control	Outcomes and study Critique
Noel-Weiss,Rupp, Cragg,Bassett and Woodend (2006)	To determine the effects of a prenatal breastfeeding workshop on breastfeeding self-efficacy and duration. Prenatal workshops based on adult learning principles and self-efficacy theory increase maternal confidence in the early postpartum period. Increased maternal breastfeeding self-efficacy results in increased breastfeeding duration.	RCT	Primiparous women (n=110) Workshops offered after 34 weeks gestation After delivery mothers & infants had to have been discharged at the same time & breastfeeding without any restrictions.	2.5 hour prenatal breastfeeding workshop using adult learning and self- efficacy theory Also received standard care	Standard care (choice of providers, frequency of prenatal visits, attendance at prenatal classes)	Maternal confidence and exclusive breastfeeding was higher in women who attended the workshops compared to those that did not attend workshops, indicating that this could be a useful strategy to use to increase breastfeeding rates. Groups compared with two tailed *t*-tests with α level set at .05

Author(s)	Aim/Hypothesis	Design	Subjects and Setting	Intervention	Control	Outcomes and study Critique
Su et al (2007)	Compare routine hospital care with antenatal breastfeeding education and postnatal education in improving exclusive breastfeeding	RCT	Women with uncomplicated pregnancies in a tertiary hospital in Singapore (n=450)	Antenatal group received breastfeeding information then received routine intrapartum and postpartum care (n=150) Postnatal group attended 2 session postpartum lactation support program, and were visited by lactation consultant within the first 3 postpartum days prior to discharge. They also received a postpartum visit 1-2 weeks after discharge. (n=149)	Mothers received routine antenatal, intrapartum & postpartum care without any special interventions. (n=151)	Exclusive breastfeeding as well as any breastfeeding, rates at discharge, 2, weeks, 6 weeks, 3 months & 6 months after delivery. Both antenatal breastfeeding education & postnatal lactation support as single interventions improved exclusive breastfeeding up to 6 months postpartum.

Author(s)	Aim/Hypothesis	Design	Subjects and Setting	Intervention	Control	Outcomes and study Critique
Ahmed, (2008)	Examine the effects of breastfeeding education on breastfeeding practices of mothers of preterm infants.	Experimental, random assignment. Five part education program with 3 month follow up.	Convenience sample n=60 mothers and their preterm infants, born <37 weeks gestation Mothers between 20-29 years of age mean age 24.5 years Infants mean gestational age 32.2	n=30 80% breastfeeding at discharge	n=30 40% breastfeeding at discharge	Breast knowledge questionnaire, observation of maternal practice, and breastfeeding diary. Increase in maternal knowledge in the intervention group, not in control group. Breastfeeding educational program was effective in increasing knowledge and breastfeeding practices.

Author(s)	Aim/Hypothesis	Design	Subjects and Setting	Intervention	Control	Outcomes and study Critique
Avery, Zimmermann, Underwood & Magnus, (2009)	Increase breastfeeding rates particularly in African American women	Qualitative study design using 24 Focus groups with 4-11 participants to explore the decision making process that breastfeeding mother's use.	Pregnant women (n=12 groups), breastfeeding (n=6 groups) and formula feeding mothers (n-6 groups) Groups divided by race and pregnancy/feeding status			Lack of confidence and commitment comments of formula feeding mothers and pregnant women. A positive correlation between confidence and breastfeeding . Breastfeeding decisions are made during pregnancy and prenatal education can play a part in reframing breastfeeding as a learned experience.

Author(s)	Aim/Hypothesis	Design	Subjects and Setting	Intervention	Control	Outcomes and study Critique
Ahmed & Sands, (2010)	Investigate pre & post discharge interventions on breastfeeding outcomes & weight gain among preterm infants	Systematic review	RCT's, and clinical trials conducted with infants born ≤ 37 weeks gestation with breastfeeding and weight gain outcomes 310 studies reviewed with 8 RCT's identified. Gestational age range from 26-37 weeks			Findings support the need for breastfeeding interventions for preterm infants before and after hospital discharge. No significant effect on infant weight gain noted with interventions.

Appendix B

Breastfeeding Self-Efficacy Scale for Mothers of Ill and/or Preterm Infants

For each of the following statements, please choose the answer that best describes how confident you are about breastfeeding your new baby. Please mark your answer by circling the number that is closest to how you feel. There are no right or wrong answers.

1 = not at all confident 2 = not very confident 3 = sometimes confident 4 = confident 5 = very confident

1. I can pump enough milk for my baby	1 2 3 4 5
2. I can deal with the fact that breast pumping and breastfeeding can be time consuming	1 2 3 4 5
3. I can successfully cope with the breastfeeding situation (pumping and actual breastfeeding) like I have with other challenging tasks	1 2 3 4 5
4. I can manage the breastfeeding situation to my satisfaction	1 2 3 4 5
5. I can keep wanting to breastfeed	1 2 3 4 5
6. I can be satisfied with my breastfeeding experience	1 2 3 4 5
7. I can get help with breastfeeding if and/or when I need it	1 2 3 4 5

When my baby is ready to actually breastfeed:

8. I will be able to determine when my baby needs to be fed	1 2 3 4 5
9. I will be able to ensure that my baby is properly latched on for the whole feeding	1 2 3 4 5
10. I will be able to determine that my baby is getting enough milk	1 2 3 4 5
11. I will be able to manage to breastfeed even if my baby is crying	1 2 3 4 5
12. I will be able to breastfeed my baby without using formula as a supplement	1 2 3 4 5
13. I will be able to comfortably breastfeed with my family members present	1 2 3 4 5
14. I will be able to finish feeding my baby on one breast before switching to the other breast	1 2 3 4 5
15. I will be able to breastfeed my baby for every feeding	1 2 3 4 5
16. I will be able to manage to keep up with my baby's breastfeeding demands	1 2 3 4 5
17. I will be able to tell when my baby is finished breastfeeding	1 2 3 4 5
18. I will be able to switch from mostly pumping to mostly or completely breastfeeding my baby	1 2 3 4 5

Appendix C

Breastfeeding Miles to Go Maternal Assessment

Gestation	Vaginal/Cesarean delivery			date/time		male	female
Gravida/Para	P	L	D	Age	Race/ethnicity		
Location of Infant	NBN			PCN	NICU		
Siblings							
Breastfeeding?	1st time			Bottlefeeding			
Admission assessment:							
Nipple assessment:							
Medications:							

Breastfeeding information discussed (check all that apply)

Positioning	Nipple care/sore nipples	Kangaroo Care/ Skin to skin
C-hold	Engorgement	Rest/diet
Proper latching	EBM/lanolin	Breastfeeding video
Checking for swallow	Use of breast pump	Breastfeeding Book
Hunger cues/signs of satiety	Frequency of feedings/pumping	Medications
LATCH score	Collection & storage of EBM	Sleepy baby
Diaper logs	Return to work	Other

Breastfeeding Self-efficacy Questionnaire:

#1 completed Yes No

#2 Completed Yes No

Appendix D

Breastfeeding Miles 2 Go

Discharge Checklist

I have read *Your Guide to Breastfeeding*

I have watched the video on Hand Expression of Breastmilk

I have watched the video on Skin to skin/kangaroo care

I have attended the Antepartum breastfeeding class prior to delivery.

After delivery:

I have attended the Breastfeeding Class/support group

I am pumping at least 8 times in 24h

I have a plan for maintaining my milk production until my baby is able to breastfeed.

I have had the opportunity to breastfeed my baby before I bring baby home.

I am producing enough milk for my baby.

Appendix E

Consent of an Adult to Be in a Research Study

In this form "you" means a person 18 years of age or older who is being asked to volunteer to participate in this study.

Participant's Name_____

Principal Investigator: Pamela Kulbok , DNSc, RN
PO Box 800826
School of Nursing, Academic Divisions
Charlottesville, VA 22908

Telephone: (434) 924-0128
Email: pk6c@virginia.edu

What is the purpose of this form?

This form will provide you with information about this research study. You do not have to be in the study if you do not want to. You should have all your questions answered before you agree to be in this study.

Please read this form carefully. If you want to be in the study, you will need to sign this form. You will be given a signed copy of this form.

Who is funding this study?

There is no funding for this study.

Why is this research being done?

The purpose of this study is to learn whether it is helpful to provide education about breastfeeding before delivery, instead of waiting until after delivery for breastfeeding education to occur. We would like to know whether providing patients with information about their babies' feedings, and discussing breastfeeding goals and expectations influence how prepared mothers are for breastfeeding or providing breastmilk to their baby.

You are being asked to be in this study, because you plan on breastfeeding, or providing breastmilk to your baby after delivery.

Up to 30 people will be in this study at Henrico Doctor's Hospital.

What will happen if you are in the study?

If you agree to be in this study, you will sign this consent form before any study related procedures take place. Then, the following will occur:

- Arrangements will be made for the Lactation Consultant to meet with you in your room, to provide you with education and find out what your breastfeeding goals are. You may meet with the Lactation Consultant up to 3 times before you deliver to discuss any concerns you have about breastfeeding your baby. The education you receive will be the same as the usual education given, and will be tailored to meet your goals and individual concerns you may have.

- You will be given a questionnaire to complete after you have received the education. This questionnaire asks how you feel about breastfeeding and providing breastmilk to your baby. It will take about 10 minutes of your time. After you deliver your baby, you will meet with the Lactation Consultant at least once before your baby is discharged home to assist with a breastfeeding session or answer your questions.

You will be given the same questionnaire to complete a second time before you take your baby home from the hospital.

The questionnaires are included for research purposes so we may understand the effectiveness of the timing of when this education is provided.

WHAT ARE YOUR RESPONSIBILITIES IN THE STUDY?

If you agree to be in this study, we ask that you attend all of the education sessions and complete the questionnaires, as described in the "What Will Happen if you are in this Study?" section of this protocol.

How long will this study take?

Your participation in this study will require up to 4 visits. Each visit will last about 20-30 minutes.

If you want to know about the results before the study is done:

The final results of the research will not be known until all the information from everyone is combined and reviewed. At that time you can ask for more information about the study results.

What are the risks of being in this study?

There is a very small risk that someone might see your private information.

It is possible that you may find a question uncomfortable. If this happens, you are free to skip that question and go to the next item.

Other unexpected risks:

You may have side effects that we do not expect or know to watch for now. Call the study leader if you have any symptoms or problems.

Could you be helped by being in this study?

You may or may not benefit from being in this study. Possible benefits include: gaining increased knowledge about breastfeeding and how to provide breastmilk to your baby, before your baby is born. In addition, information researchers get from this study may help others in the future.

What are your other choices if you do not join this study?

You do not have to be in this study to be treated for your illness or condition. You can get the usual treatment even if you choose not to be in this study. The usual treatment would include meeting with a Lactation Consultant **after** you have your baby to review breastfeeding information and answer questions and address your concerns about breastfeeding your baby.

If you are an employee of UVa your job will not be affected if you decide not to participate in this study.

If you are a student at UVa, your grades will not be affected if you decide not to participate in this study.

Will you be paid for being in this study?

You will not get any money for being in this study.

Will being in this study cost you any money?

All of the procedures in this study will be provided at no cost to you or your health insurance. You will be responsible for the cost of travel to come to any study visit and for any parking costs.

What if you are hurt in this study?

If you are hurt as a result of being in this study, there are no plans to pay you for medical expenses, lost wages, disability, or discomfort. The charges for any medical treatment you receive will be billed to your insurance. You will be responsible for any amount your insurance does not cover. You do not give up any legal rights, such as seeking compensation for injury, by signing this form.

What happens if you leave the study early?

You can change your mind about being in the study any time. You can agree to be in the study now and change your mind later. If you decide to stop, please tell us right away. You do not have to be in this study to get services you can normally get at Henrico Doctor's Hospital. Even if you do not change your mind, the study leader can take you out of the study. Some of the reasons for doing so may include:

a) You do not follow instructions.

b) The study is closed for safety, administrative or other reasons.

How will your personal information be shared?

The researchers are asking for your permission to gather, use and share information about you for this study. If you decide not to give your permission, you cannot be in this study, but you can receive/continue to receive regular medical care at Henrico Doctor's Hospital and the University of Virginia.

If you sign this form, we may collect any or all of the following information about you:

- Personal information such as name, address and date of birth
- Your health information if required for this study. This may include a review of your medical records and test results from before, during and after the study from any of your doctors or health care providers. This may include mental health care records, substance abuse records, and/or HIV/AIDS records.

Who will see your private information?

- The researchers to make sure they can conduct the study the right way, observe the effects of the study and understand its results
- People or groups that oversee the study to make sure it is done correctly
- Insurance companies or other organizations that may need the information in order to pay your medical bills or other costs of your participation in the study
- If you tell us that someone is hurting you, or that you might hurt yourself or someone else, the law may require us to let people in authority know so they can protect you and others.

Some of the people outside of UVa who will see your information may not have to follow the same privacy laws that we follow. They may release your information to others, and it may no longer be protected by those laws.

The information collected from you might be published in a medical journal. This would be done in a way that protects your privacy. No one will be able to find out from the article that you were in the study.

What if you sign the form but then decide you don't want your private information shared?

You can change your mind at any time. Your permission does not end unless you cancel it. To cancel it, please send a letter to the researchers listed on this form. Then you will no longer be in the study. The researchers will still use information about you that was collected before you ended your participation.

Please contact the researchers listed below to:

- Obtain more information about the study
- Ask a question about the study procedures or treatments

- Report an illness, injury, or other problem (you may also need to tell your regular doctors)
- Leave the study before it is finished
- Express a concern about the study

Principal Investigator: Pamela Kulbok DNSc, RN
UVA School of Nursing, Academic Divisions
PO Box 800826
Telephone: (434)924-0128
pk6c@virginia.edu

Study Coordinator: Denise DiCicco MSN, RNC, CPNP, IBCLC
(804) 289-4977
dd7yb@virginia.edu

What if you have a concern about this study?

You may also report a concern about this study or ask questions about your rights as a research subject by contacting the Institutional Review Board listed below.

University of Virginia Institutional Review Board for Health Sciences Research
PO Box 800483
Charlottesville, Virginia 22908
Telephone: 434-924-9634

When you call or write about a concern, please give as much information as you can. Include the name of the study leader, the IRB-HSR Number (at the top of this form), and details about the problem. This will help officials look into your concern. When reporting a concern, you do not have to give your name.

Signatures

What does your signature mean?

Before you sign this form, please ask questions about any part of this study that is not clear to you. Your signature below means that you have received this information and all your questions have been answered. If you sign the form it means that you agree to join the study. You will receive a copy of this signed document.

Consent From Adult

_____	_____	_____
PARTICIPANT (SIGNATURE)	PARTICIPANT (PRINT)	DATE

To be completed by participant if 18 years of age or older.

Person Obtaining Consent

By signing below you confirm that you have fully explained this study to the potential subject, allowed them time to read the consent or have the consent read to them, and have answered all their questions.

_____	_____	_____
PERSON OBTAINING CONSENT (SIGNATURE)	PERSON OBTAINING CONSENT (PRINT)	DATE

Consent from Impartial Witness

If this consent form is read to the subject because the subject is blind or illiterate, an impartial witness not affiliated with the research or study doctor must be present for the consenting process and sign the following statement. The subject may place an X on the Participant Signature line above.

I agree the information in this informed consent form was presented orally in my presence to the **identified individual(s)** who has had the opportunity to ask any questions he/she had about the study. I also agree that the **identified individual(s)** freely gave their informed consent to participate in this trial.

Please indicate with check box the identified individual(s):

☐ Subject

_____	_____	_____
IMPARTIAL WITNESS (SIGNATURE)	IMPARTIAL WITNESS (PRINT)	DATE

Appendix F

Henrico Doctors' Hospital
Forest, Parham & Retreat Campuses
HCA Virginia Health System
An HCA affiliate

Women's/Obstetric Department
Policy and Procedures

Title: Breastfeeding Policy	
Effective Date: 1/12	**Page Numbers:** 7
Approvals: N/A	
Origination Date: 3/96	**Review Date(s):** 2/98, 5/03, 3/04, 8/08, 4/10, 1/12,3/13,8/16

Purpose Statement:

To promote a philosophy of maternal/infant care that advocates breastfeeding and supports the normal physiological functions involved in the establishment of this maternal/infant process.

To assist families choosing to breastfeed with initiating and developing a successful and satisfying experience.

This policy is based on the breastfeeding policy statements published by:

The Office on Women's Health of the US Department of Health and Human Services

The American Academy of Pediatrics

The American College of Obstetrics and Gynecology

The American Academy of Family Physicians

The World Health Organization

The American Dietetic Association

The Academy of Breastfeeding Medicine

The UNICEF/WHO evidence-based "Ten Steps to Successful Breastfeeding."

Responsible Persons:

RN, LPN, PCT (Patient Care Technician), IBCLC or IBCLC candidate, or any healthcare provider in an area of the hospital caring for breastfeeding patients.

III. Definitions:

IBCLC: A Lactation Consultant who meets the requirements for certification by the International Board of Lactation Consultant examiners.

Lactation: The human biological system of milk production and infant feeding from the breast.

Nutritive suck: Infant suckling that results in milk ingestion.

Latch on: Action by the infant to grasp mother's nipple inside his/her mouth, flange both lips outward against areola, and remain firmly attached to the breast between suckling bursts.

Feeding cues: Infant behaviors that indicate feeding readiness (e.g., alertness, increased physical activity, mouthing, rooting. *Note: Crying is a late feeding cue.*).

Policy Statements:

Perinatal staff will actively support breastfeeding as the preferred method of providing nutrition to infants unless medically contraindicated.

This breastfeeding policy will be communicated to all nursing staff in the Women's Pavilion at Henrico Doctors' Hospital.

All pregnant women, and their support people as appropriate, will be provided with information on breastfeeding and counseled on benefits and contraindications.

The woman's desire to breastfeed will be documented in her medical record. The method of feeding will be documented in the medical record of every infant

Mothers who choose to breastfeed will be encouraged to breastfeed exclusively unless medically contraindicated. Exclusive breastfeeding will be defined as providing breastmilk as the sole source of nutrition. Exclusively breastfed infants will receive no other liquids or solids.

If baby and mother are stable, infant will be placed skin-to-skin with the mother – and given the opportunity to breastfeed - as soon as possible after delivery. *(See Kangaroo Care P&P.)*

Breastfeeding mother-infant couples will be encouraged to remain together throughout their hospital stay, including at night (rooming-in). Skin-to-skin contact will be encouraged as much as possible.

- If infant is taken to the central nursery, he/she will be taken to mother for feeding as soon as feeding cues are observed - at least every 3 hours.

Breastfeeding assessment, teaching and documentation will be done each shift and whenever possible with each staff contact with the mother. After each feeding, document information about the feeding in the infant's medical record. This documentation may include the latch, position, and any problems encountered. For feedings not directly observed, maternal report may be used. A L.A.T.C.H. assessment will be performed and documented at least once every 8 hours (see L.A.T.C.H. policy).

Guidelines:

Procedure:

Encourage all breastfeeding mothers to use available breastfeeding resources including classes, written materials and video presentations as appropriate. If clinically indicated, the clinician or nurse will make a referral to a lactation consultant or specialist.

Instruct all breastfeeding mothers about:

- Proper positioning and latch on;
- Nutritive suckling and swallowing;
- Milk production and milk ejection reflex (milk release);
- Frequency of feeding/feeding cues;
- Expression of breast milk and use of a pump if indicated;
- How to assess if infant is adequately nourished; and
- Reasons for contacting the clinician

Prior to discharge, parent(s) should be given information including – but not limited to – the following:

- Teach parents that breastfeeding infants, including cesarean-birth babies, should be put to breast at least 8-12 times each 24 hours. Infant feeding cues (such as increased alertness or activity, mouthing, or rooting,) indicate their baby's readiness for feeding.

- Avoid setting strict time limits for breastfeeding on each side. Infants can be offered both breasts at each feeding; at times they may only be interested in feeding on one side.

- No supplemental water, glucose water or formula will be given, unless specifically ordered by a physician or nurse practitioner, or by the mother's documented and informed request. Prior to non-medically indicated supplementation, inform mothers of the risks of supplementing. The supplement may be fed to the baby by bottle or alternative feeding methods, if possible and with no more than 10-15 cc for a term baby. Bottles should not be routinely placed in a breastfeeding infant's bassinet.

Minimize pacifier use during the initiation of breastfeeding and use only after breastfeeding is well established. In some infants, early pacifier use may interfere with establishment of good breastfeeding practices, whereas in others it may indicate the presence of a breastfeeding problem that requires intervention. *This recommendation does not contraindicate pacifier use for nonnutritive sucking and oral training of premature infants and other special care infants." (AAP 2005)*

- Avoid routine use of nipple creams, ointments, or other topical preparations.

- Mothers with sore nipples need to be instructed on correct latch-on techniques. Refer to Lactation Specialist, as necessary.

- If nipple shields are used, a lactation consult needs to be ordered to followup. (See Nipple Shield policy). Bottle nipples are never to be used as a substitute for a nipple shield.

- After 12 hours of life, if the infant has not latched on or fed effectively, encourage skin-to-skin contact. Instruct parents to watch closely for feeding cues and whenever these are observed to awaken and feed the infant. Instruct mother to begin breast massage and hand expression of colostrum into the baby's mouth during feeding attempts.

- After 24 hours of life, if the baby continues to feed poorly, initiate breast stimulation with skilled hand expression or a double set-up electric breast pump and continue approximately every three hours or a minimum of 8 times per day. Inform the mother that she may obtain more milk initially with hand expression. Feed any expressed colostrum or mother's milk to the baby. Until the mother's milk is available, a collaborative decision will be made between the mother, nurse, and physician/clinician regarding the need to supplement the baby. Review the feeding plan each day and adjust as necessary. In cases of problem feeding, consult the Lactation Specialist.

- If the baby is still not latching-on well or feeding well when going home, provide a written feeding plan, in addition to routine breastfeeding instructions. A follow-up visit or contact within 24 hours is recommended (physician office or lactation consultant). If an infant is not feeding well, the physician/clinician must be consulted prior to discharge.

For mothers who are separated from their sick or premature infants:

- Instruct on the double set up electric breast pump. (See Breast Pump policy.)
  Inform mother that she may obtain more milk initially with hand expression.
- Teach proper storage and labeling of human milk.
- Assist in obtaining a double set up electric breast pump prior to going home.
- Encourage mother to begin kangaroo care/breastfeed as soon as infant's condition permits.

Before leaving the hospital, breastfeeding mothers should be able to:

- Position the baby correctly at the breast
- Latch the baby to breast properly
- State when the baby is swallowing milk
- State that the baby should be nursed approximately 8 to 12 times every 24 hours until satiety
- State age-appropriate elimination patterns (at least six urinations per day and three to four stools per day by the fourth day of life)
- List indications for calling a physician/clinician.
- Manually express milk from their breasts.

Prior to discharge, provide each breastfeeding mother with the names and telephone numbers of community resources to contact for help with breastfeeding.

To enhance breastfeeding success and duration, it is recommended that discharge bags offered to mothers will not contain infant formula or formula company advertisements.

Note: Educational sessions on lactation management and breastfeeding promotion should be offered annually to health professionals to ensure that correct, current, and consistent information is provided to all mothers wishing to breastfeed.

Documentation:

L.A.T.C.H. score is documented on the nursery flow sheet.

Education is documented on the education flow sheet.

Lactation consultants chart in progress notes, nursery flow sheet and/or education sheet; as well as meditech maternal kardex (postpartum)

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Appendix G

Author Guidelines for Clinical Lactation

Author Guidelines for *Clinical Lactation*

Clinical Lactation is a peer–reviewed journal summarizing recent advances in clinical care in the field of human lactation, and is the official journal of the United States Lactation Consultant Association. The aim of the journal is to advance clinical practice for lactation specialists who work in a variety of settings: hospital, private practice, WIC, and mother–to–mother–support organizations. The articles being solicited for Clinical Lactation are concise, readable reports that summarize issues related to clinical care, treatment innovations and applications. All articles should contain specific implications and suggestions for clinical practice. Suitable topics for submission include, but are not restricted to:

Treatment innovation
Treatment dilemmas
Case presentations
Implementation of specific programs
Outcomes of policies or programs

Papers should be consistent with the current evidence base (if applicable), and should constitute a substantive contribution to the professional literature on clinical lactation. All articles can be hyperlinked to videos, websites, PowerPoint slides, or other ancillary sources of information.

Types of Contributions

Articles on Clinical Practice. These articles include process and program descriptions, clinical audit and outcome studies, and the presentation and description of original clinical practice ideas. These articles should generally not exceed 2,000 words (approximately 8 pages of double–spaced text), not including references, and should be written in a readable, user–friendly style.

Brief Reports of Research Findings. Brief reports of research findings are concise reports of new research. These articles are limited to 2,000 words, not including references and must have direct clinical relevance. These reports can be hyperlinked to other documents or websites with additional information.

Brief Literature Reviews. Brief literature reviews are concise articles on a highly specific topic related to clinical practice, ending with applications for practice. These manuscripts are also limited to 2,000 words (8 pages of double–spaced text).

Case Reports. Case reports offer clinicians a forum to share an interesting case, with the implications for broader clinical practice. These reports will typically range from 3–5 manuscript pages (750–1250 words).

Letters to the Editor. Letters and responses pertaining to articles published in *Clinical Lactation* or on issues relevant to the field, brief and to the point, should be prepared in the same style as other manuscripts (250–300 words).

Manuscripts and Other Requirements

1. Authors should submit their manuscript and supporting files (tables, figures) using Editorial Manager at www.editorialmanager.com/clinlact.
2. Place authors' names, positions, titles, place of employment, mailing addresses, and email addresses on the cover page so that the manuscripts may be reviewed anonymously, and ensure that the manuscript uploaded to the Editorial Manager site is blind.
3. Manuscripts should be professionally prepared in accordance with the *Publication Manual of the American Psychological Association*, 6th edition.
4. An abstract of approximately 125 words should be included.
5. Authors should also supply a list of four to six keywords, not appearing in the title, which will be used for indexing. Terms from the medical subject headings (MeSH) list of Index Medicus should be used, if at all possible.
6. Double-space everything, including references, quotations, tables, and figures.
7. Leave generous margins (at least one inch all around) on each page.
8. Type should not exceed 18 characters per inch.
9. Avoid footnotes whenever possible.
10. Quotations of 300 words or more from one source require written permission from the copyright holder for reproduction. Adaptation of tables and figures also requires reproduction approval from the copyrighted source. It is the author's responsibility to secure such permission, and a copy of the publisher's written permission must be provided to the publisher immediately upon acceptance of the manuscript for publication.
11. All figures must be submitted in camera-ready form. TIFF should be 300 ppi, EPS at 800 ppi.

Note: Authors bear full responsibility for the accuracy of references, quotations, tables, and figures. Upon acceptance of the article, authors are expected to fill out the copyright agreement form and mail it to the publisher at mlarkin@springerpub.com.

Appendix H (Manuscript)

Effects of Anticipatory Guidance on the Initiation of Breastfeeding the Preterm Infant

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Gratefully acknowledge the assistance of Anna Harris MSW for her assistance on this project. This manuscript is based on data also used in a Scholarly Practice Project presented to the Graduate Faculty of the University of Virginia in Candidacy for the Degree of Doctor of Nursing Practice.

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Abstract

Mothers of preterm infants face challenges initiating breastfeeding, and many infants are discharged home without ever breastfeeding. This pilot study examined the effects of anticipatory guidance related to breastfeeding provided to expectant women hospitalized during their pregnancies on their self-confidence related to the initiation of breastfeeding. The Modified Breastfeeding Self-Efficacy Scale was used to measure the effects of anticipatory guidance. Wilcoxan Signed Rank Test was used to assess rank differences between pre and post intervention Breastfeeding Self-Efficacy Scale (BSES) scores. There were more positive rank scores (13) than negative (4), indicating that significantly more participants had improved BSES scores than those who had a tie, or had lower scores after the intervention (N=20) (Z=-2.350, p value 0.019, r=-.37).

Key Words: Anticipatory guidance, maternal confidence, breastfeeding self-efficacy

The positive impact that exclusive breastfeeding and the use of human milk has on the infant, mother, and community has been studied, documented, and endorsed by national and international health advocacy organizations. Sources for breastfeeding initiation rates among late pre-term mother-infant dyads are limited, and usually reported by the number of infants receiving human breastmilk feedings at discharge from the Neonatal Intensive Care Unit (NICU). These rates are estimated to range from 48%–98%, and the duration and exclusivity is less than that of term infants (Merewood, Brooks, Bauchner, MacAuley & Mehta, 2006; Radtke, 2011; Wheeler & Dennis, 2012). Barriers such as maternal separation, neurological immaturity, and medical fragility of mother or infant that interferes with initiating breastfeeding after birth contribute to the low rates (Hallowell et al., 2016; Pineda, Foss, Richards & Pane, 2009; Purdy et al., 2012; Smith, Durkin, Hinton, Bellinger & Kuhn, 2003).

Premature infants who have been fed human milk experience lower incidences of nosocomial infections, necrotizing enterocolitis, retinopathy of prematurity, shorter duration of parenteral nutrition, shorter hospital stays, decreased feeding intolerances, and more progress in developmental and motor attainment testing, and in cognition (AAP, 2012; Bernaix et al., 2008; Johnson, Patel, Bigger, Engstrom & Meier, 2013; Sisk et al., 2006; Struebe, 2009).

There are health and financial burdens associated with not breastfeeding. Bartick et al., (2013) conducted a cost analysis of maternal disease associated with sub-optimal breastfeeding practices and concluded that shorter duration of lactation was associated with an increase in breast and ovarian cancer, hypertension, type 2 diabetes mellitus, myocardial infarction, and a cost to society of over $17 billion including 911 child deaths (Bartick et al., 2013). For infants, not being breastfed has been associated with an increase in otitis media, gastroenteritis,

pneumonia, risk of developing childhood obesity, type 1 and type 2 diabetes, leukemia, and Sudden Infant Death Syndrome (SIDS) (Bartick & Reinhold, 2010; Stuebe, 2009).

Obstacles to Initiation, Duration and Exclusivity of Breastfeeding

Obstacles identified in the literature include; lack of prenatal education, timely follow-up, family and community support, inappropriate interruption or delay of breastfeeding, and early hospital discharge (American Academy of Pediatrics, [AAP], 2012; Taveras et al., 2003). Contributing factors to early discontinuation of breastfeeding include; maternal lack of confidence in their ability to breastfeed, infant latching or sucking difficulties, breast discomfort, perceptions of insufficient milk supply and lack of individualized encouragement from their providers after discharge (Bernaix, Schmidt, Arrizola, Iovinelli & Medina-Poelinez, 2008; Gagnon, Dougherty, Jimenez & Leduc, 2002; Labarere et al., 2005; Mass, 2004; Su et al., 2007; Taveras et al., 2003). Women returning to work after maternity leave also have challenges balancing motherhood, family, and work (AAP, 2012; Fein, Mandal & Roe, 2008; Johnston & Esposito, 2007; Taveras et al., 2003).

Prematurity

An estimated 12.7% of live births—or more than a half-million—are premature each year. Infants born before 37 completed weeks gestation are referred to as “preterm” and those born between 34–37 weeks gestation are considered “late preterm” (Ahmed & Sands, 2010; Engle, Tomashek & Wallman, 2007). Mothers who deliver preterm infants are more likely to have medical complications that could lead to delayed or decreased milk production (Ahmed, 2010; Purdy et al., 2012). Infant and maternal health status, maternal exhaustion, the stress of being in a NICU environment, and healthcare professionals’ lack of knowledge about breastfeeding and the benefits of breastmilk have been noted by researchers as contributing to the

challenges of breastfeeding in this neonatal population (Bernaix et al., 2008; Pineda et al.,2009; Zukowsky, 2007). For mothers of severely ill infants, it has been suggested that their concern over their infant's illness and survival may outweigh their concern to provide breastmilk and contribute to reluctance to initiate pumping or breastfeeding, and to continue through to their infant's discharge from the NICU (Purdy et al., 2012).

Breastfeeding Self-Efficacy Theory

Breastfeeding Self-Efficacy Theory refers to a mother's perceived ability to breastfeed her infant and can be used to predict whether a mother decides to breastfeed, how much she will try to overcome challenges and respond to breastfeeding challenges that arise. Mothers who are confident will more likely choose to breastfeed, work through challenges and use positive self-talk to continue breastfeeding (Avery, Zimmermann, Underwood, & Magnus, 2009; Blyth, et al., 2002; Dennis, 2006**).** Breastfeeding self-efficacy is influenced by past breastfeeding experiences, verbal persuasion and encouragement from influential contacts such as family, friends, and lactation consultants (Blyth, et al., 2002; Dennis, 2006). The BSES is used to measure breastfeeding confidence—the higher the scores, the higher the level of breastfeeding self-efficacy, and the better the breastfeeding outcome.

Research Questions

The objectives for this project were to answer the following question: Does a hospital-based antepartum anticipatory guidance breastfeeding (AAGB) program increase the mother's breastfeeding confidence as measured by the Breastfeeding Self-Efficacy Scale?

Review of the Literature

In the literature, studies on initiation of breastfeeding in the preterm population were limited. A search was conducted in PubMed, CINAHL, Google Scholar, the Cochrane Database,

and from a survey of bibliographies from the articles collected. Abstracts were reviewed for relevance to topic of interest. Keywords used individually and in combination: “breastfeeding,” “ initiation,” “interventions,” “exclusive,””expectations,” “random controlled trials,” “premature,” “preterm infants,” “maternal confidence.” Findings from the literature review were organized as; prenatal education, healthcare provider knowledge and support, and anticipatory guidance.

Prenatal Education

Several studies investigating the effects of prenatal education found that workshops (Noel-Weiss, Rupp, Cragg, Bassett &Woodend, 2006); the types and timing of support (Kervin, Kemp and Pulver, 2010); and individual education sessions (Ahmed, 2008) providing information about the benefits of breastfeeding, basic breastfeeding and pumping skills, and prevention and management of breastfeeding complications had a positive effect on maternal confidence and increased breastfeeding rates.

Healthcare Provider Knowledge and Support

Pineda, Foss, Richards & Pane (2009) studied the effects of an educational intervention aimed at healthcare providers in the NICU. Breastfeeding initiation increased from 74.1% to 85.2%, direct breastfeeding increased from 25.9 %, to 44.4%, and breastfeeding at discharge increased from 35.8% to 40.7 % (Pineda et al., 2009). Grossman et al., (2009), also found an increase in breastfeeding initiation rates from 58.5% to 64.7% when education was provided to staff in hospitals with low breastfeeding rates. Sarasua, Clausen and Frunchak (2009) surveyed 70 mothers to evaluate their feeding intentions, breastfeeding experiences, and satisfaction with education they received. They found that 67% of these mothers supplemented with formula and reported milk insufficiency as one of the main reasons for supplementation. Mothers reported

they did not receive information about successful initiation and duration of breastfeeding such as skin-to-skin contact and conveyed their dissatisfaction with inconsistent breastfeeding information. These findings were in agreement with an earlier study done by Sisk, Lovelady, Dillard and Gruber (2006) that found when mothers received a standardized script about the benefits of breastfeeding and received appropriate counseling, 100% of mothers who intended to breastfeed and 85% of those that had intended to formula feed had initiated milk expression, resulting in an overall lactation initiation rate of 94% (Sisk, et al., 2006). These findings further support the importance of providing consistent evidence-based information about the benefits of breastmilk—especially for preterm infants—and providing individualized education and support in order to increase breastfeeding initiation rates.

Anticipatory Guidance

The use of anticipatory guidance in interactions with mothers to help them learn about their infant's behaviors, address realistic expectations regarding the progression to direct breastfeeding, expectations about using breastpumps, and troubleshooting to avoid disruptions in milk supply has been recommended. Addressing specific age-related barriers and challenges to breastfeeding a preterm infant at several discrete time periods has the potential to avoid further barriers and challenges in the future (Callen, Pinelli, Atkinson, & Saigal, 2005).

Methods

Research Design

This study examined the effects of anticipatory guidance related to breastfeeding provided to expectant women hospitalized during their pregnancies on their confidence and on the initiation of breastfeeding prior to their infant's discharge from the hospital. The Modified Breastfeeding Self-Efficacy Scale (Short Form) Among Mothers of Ill or Preterm Infants was

used to measure the effects of anticipatory guidance by comparing maternal confidence and self-efficacy prior to the educational intervention and after the education/prior to their infant's discharge.

Setting

The study took place on the Antepartum Unit of a community hospital that delivers approximately 3,600 infants each year. The study population included antepartum patients admitted for high risk pregnancies, and whose infants were admitted to the Neonatal Critical Care Center (NCCC). Study participants included English-speaking women over 18 years of age who were pregnant with a single gestation, admitted on the Antepartum unit for at least 1 day, who delivered between 33 and 37 weeks, did not have any medical conditions that would contraindicate breastfeeding, and whose infants were in the NCCC for at least 1 day.

Measures

The Modified Breastfeeding Self-Efficacy Scale (Short Form) Among Mothers of Ill or Preterm Infants was used and permission was granted to use this form by the developer, Cindy-Lee Dennis. The Cronbach's alpha coefficient for internal consistency for this assessment tool was 0.88 (Wheeler & Dennis, 2012). This instrument is an 18-item self-report questionnaire developed to measure breastfeeding self-efficacy with a range of scores of 18–90 if all questions are answered (Dennis, 2006). The modified BSES addressed the special needs of these mothers who may have to delay breastfeeding and have to pump until they can transition to breastfeeding. Some items asked the mother to predict what her future ability would be (Wheeler & Dennis, 2012).

Procedure

Institutional Review Board and hospital approval was obtained. Potential study participants were identified during daily unit rounding and weekly Interdisciplinary Rounds. Eligible participants were provided with informed consent prior to participation. Once enrolled, the participant's maternal history was obtained and discussed with them including any prior breastfeeding education or experience, as well as their breastfeeding goals or expectations. Participants were asked to complete two questionnaires and also meet with a Lactation Consultant before delivery for 15–20 minutes and at least once before her baby was discharged. Participants were offered up to four visits with the Lactation Consultant. The first visit took 30–45 minutes. Information was discussed in a variety of ways to suit the participant's learning needs, and if the participant preferred to consolidate the separate visits into one, accommodations were made to suit her learning preferences. The first questionnaire was given at the end of the first session to establish a baseline score. Each participant received the CDC publication "Your Guide to Breastfeeding," published from U.S. Department of Health and Human Services, Office of Women's Health, with topic areas to be discussed flagged for easy review. The topics discussed included: the benefits of breastfeeding and use of breastmilk, initiation of pumping soon after delivery, hand expression, preparation for baby and breastfeeding supplies. Infant stomach capacity at delivery, feeding behaviors of newborns and preterm infants, and expected milk volume at delivery was also discussed.

After delivery, mothers received postpartum breastfeeding education and support. Topics included: pumping frequency, pump set-up and observation during pumping session, latching and positioning, prevention and management of breastfeeding complications such as sore nipples

and engorgement and collection and storage of the expressed breastmilk. The second questionnaire was given prior to the infant's discharge.

Data Analysis

This was a pilot, feasibility study, so only 25 participants were enrolled; however, five were excluded because they delivered full term and their infants did not go to the NICU. The Shapiro-Wilk Normality test was done due to the smaller sample size (Ghasemi & Zahediasl, 2012; Razali & Wah, 2011). Numerical and visual outputs were investigated for skewness and kurtosis *Z* values. For the pre-intervention BSES: $z = .111$, kurtosis = -1.105, $p = .55$. For the post-intervention BSES: $z = -.842$, kurtosis = -1.105, $p = .132$. Since the $p > .05$ the assumption was made that the data were approximately normally distributed. Since the *Z*-value is within +/- 1.96, the data are a little skewed for both the pre-test and post- test, but it does not differ significantly from normality. Given the smaller sample size, the Wilcoxan Signed Rank Test was used. Analysis of the data was carried out using IBM SPSS Statistics Version 24 with descriptive mean statistics used to summarize the data.

Results

The study population consisted of 20 participants (Black n=9, Indian n=3, White n=8) admitted to the Antepartum unit of the hospital during their pregnancies. Primigravida, or first time mothers, (n=7), and multigravida (n=13). Among the multigravidas, (n= 9) reported that they had any prior breastfeeding experience. Among the study participants (n=5) reported that they had received any previous breastfeeding education prior to admission to the unit.

See Table 1. Participant Demographics

Table 1

Participant Demographics

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Maternal					
Age	20	21	37	29.75	4.898
Gravida		1	5	2.15	1.268
Para		0	4	.85	.988
Adm to AP (weeks)		29.3	35.6	33.125	2.0071
Previous BF (Y/N)		0	1	.45	.510
LOS Mom		5	44	14.95	11.330
Infant					
Gestational age		33.1	37.0	35.085	1.1735
BW Grams		1300	3581	2317.40	495.567
LOS baby		2	95	14.60	19.869
EBM at discharge		0	1	.75	.444
Any bf or EBM		0	1	.90	.308

The admission diagnoses for these participants were as follows: Pregnancy Induced Hypertension (PIH) (n=6), Hypertension (HTN) (n=4), Preterm labor (PTL) (n=4), Premature Rupture of Membranes (PROM) (n=3), Previa (n=2), Intrauterine Growth Restriction (n=1). Hypertension either as a chronic pre-existing condition or associated with the current pregnancy was the most common reason participants were admitted. Diabetes either as a chronic pre-existing condition or associated with the current pregnancy was the most common co-morbidity. Diabetes mellitus (n=3), gestational diabetes (n=5), other associated conditions such as polyhydramnios or oligohydramnios (n=1), no other co-morbidities (n=11).

The most common mode of delivery was via Cesarean section (n=14) and vaginal (n=6). After delivery, the time of pumping initiation or breastfeeding was noted and 5 started pumping

within the first 6 hours after delivery, 14 started pumping after 6 hours, and one did not start pumping but breastfed exclusively, breastfeeding within 6 hours (n=2), breastfeed at 24 hours (n=3), breastfed at 48 hours (n=2), breastfed >96 hours (n=7). The participants who pumped only and did not breastfeed directly (n=6). At the time of the infants' discharge from the hospital, 18/20 had received some amount of Expressed Breastmilk (EBM), or had started breastfeeding during their stay, and 15/20 infants were still receiving EBM or breastfeeding.

A Wilcoxan Sign Rank Test using the total scores for the Breastfeeding Self-efficacy Scale for the pre-test (BSES 1) and post-test (BSES 2) was conducted and the results showed that the BSES 2 mean scores were statistically significantly higher (mean=77.65), than the BSES 1 (mean=71.65), after receiving the anticipatory guidance intervention. (Z=-2.350, p< .019, r=-.37) (See Table 2: Descriptive Statistics, and Table 3: Wilcoxan Signed Ranks).

Table 2

Descriptive Statistics BSES Scores

	N	Mean	Std. Deviation	Minimum	Maximum
BSES #1	20	71.65	10.494	54	89
BSES #2	20	77.65	9.230	61	90

Table 3

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
BSES #2 - BSES #1	Negative Ranks	4[a]	6.75	27.00
	Positive Ranks	13[b]	9.69	126.00
	Ties	3[c]		
	Total	20		

a. BSES #2 < BSES #1

b. BSES #2 > BSES #1

c. BSES #2 = BSES #1

From the data there were more positive ranks (13) than negative (4), which indicates that significantly more mothers had improved BSES scores than those who had a tie (3), or had lower scores after the intervention.

Discussion

A statistically significant increase in maternal BSES scores after participating in the anticipatory guidance intervention was noted. The results of this study were in agreement with the studies reviewed and confirmed that the more interaction mothers have with someone knowledgeable in breastfeeding and management of challenges, the more likely she will be to continue breastfeeding. Having an Internationally Board Certified Lactation Consultant (IBCLC) meet with expectant mothers to provide information in a variety of formats (such as verbal, printed, or electronic materials) to suit the individual patient was a key component of this project.

An inherent strength to this design was the accessibility to the patients for this project. A weakness of this design was that the same Lactation Consultant provided the information; this was not a blinded study and there was no randomization. Although this was a pilot study, the results demonstrate the positive impact that providing individualized breastfeeding education had on the participants. Future projects could include examining the Breastfeeding Self-Efficacy Scores of mothers who have elevated BMI's, or are obese, have a history of depression or have chronic medical issues and the effects of the AAGB on their breastfeeding initiation and duration. Future projects should include more participants and longer follow-up to see if there is a lasting effect after receiving anticipatory guidance.

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