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Improving Breastfeeding Knowledge, Self-Efficacy and Intent through a Prenatal Education Program

Kelli Marie Damstra
Grand Valley State University

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IMPROVING BREASTFEEDING KNOWLEDGE, SELF-EFFICACY AND INTENT
THROUGH A PRENATAL EDUCATION PROGRAM

Kelli Marie Damstra

A Dissertation Submitted to the Faculty of
GRAND VALLEY STATE UNIVERSITY

In
Partial Fulfillment of the Requirements
For the Degree of
Doctor of Nursing Practice

Kirkhof College of Nursing

December 2012
Dedication

For B.J., my husband. Thank you for your love and for being a constant source of strength. I am incredibly appreciative of all of the sacrifices you have made in order to help me achieve my educational and professional goals. I am so grateful to have you by my side as we continue through life’s journey together.
Acknowledgements

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Abstract

The numerous health benefits of breastfeeding have been widely acknowledged. Evidence from the literature overwhelmingly indicates that breastfeeding is the optimal form of feeding and is globally accepted as the gold standard for infant nutrition.

Focusing on efforts to support and promote breastfeeding through following recommendations of evidence-based practices such as the Baby-Friendly Hospital Initiative (BFHI) is an effective way to target the existing low breastfeeding rates and improve health outcomes.

The purpose of this practice dissertation project was to work in collaboration with a community hospital on the BFHI designation pathway by specifically implementing breastfeeding education (Step three of the guidelines). Program goals included improving breastfeeding knowledge, self-efficacy, and intent among the targeted population. Using the conceptual frameworks of both Donabedian and Breastfeeding Self-Efficacy Theory, a multi-faceted approach was implemented targeting all pregnant women in this organization’s affiliated prenatal clinic. Helping to create transformational change in organizational culture at the system level resulted in the development of the prenatal educational program (PEP). Healthcare providers and office staff delivered breastfeeding education and support to patients as a component of their routine care.

Preliminary evaluation of the PEP did not indicate that there was a difference in the short-term outcomes of breastfeeding knowledge, self-efficacy, and intent. However, significant differences in breastfeeding knowledge and self-efficacy were found between women who planned to breastfeed when compared to women who were undecided or did not intend to breastfeed. These significant differences in breastfeeding knowledge and
self-efficacy were found in both the pre-intervention and post-intervention assessments. Practice implications exist related to implementation science, systems change and addressing breastfeeding barriers. Healthcare providers must have the necessary skills to provide breastfeeding education and support, and to improve health outcomes at the community level. A doctorally prepared nurse can have an integral role in achieving these outcomes.
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CHAPTER 1

INTRODUCTION

The recognition of breastfeeding as the most favorable method of infant feeding has spread worldwide (Godfrey & Lawrence, 2010). The numerous maternal and child health benefits of breastfeeding have been widely acknowledged, with an increase in the awareness of the advantages of breast milk over formula (American College of Obstetricians and Gynecologists [ACOG], 2007; Racine, Frick, Guthrie, & Strobino, 2009). Yet breastfeeding rates continue to be unsatisfactory despite the known advantages of breastfeeding. Evidence from the literature overwhelmingly indicates that this optimal method of infant feeding should be encouraged in order to ensure the best possible health outcomes for women and their children (ACOG, 2007; Racine, Frick, Guthrie, & Strobino, 2009). Moreover, breastfeeding is now globally accepted as the gold standard for infant nutrition. The current recommendations are exclusive breastfeeding for the first six months of the newborn’s life, and then continued breastfeeding at least through the first year (American Academy of Pediatrics [AAP], 2005; Labbok & Taylor, 2008).

**Benefits of Breastfeeding**

According to a recent policy statement released by the AAP (2005), there are numerous health, nutritional, immunologic, developmental, psychologic, social, economic, and environmental benefits to mothers, infants, families, and society that result from breastfeeding. It has been found that the benefits of breastfeeding increase with exclusivity and duration (Wright, Parkinson, & Drewett, 2004). Among infants, breastfeeding is associated with decreased incidence and/or severity of bacterial
meningitis, bacteremia, diarrhea, respiratory tract infection, necrotizing enterocolitis, otitis media, sudden-infant death syndrome (SIDS), and late-onset sepsis in late preterm infants (AAP, 2005). Breastfeeding also has been found to be associated with childhood benefits such as decreased incidence of urinary tract infection, asthma, obesity, Type I and Type II diabetes, and childhood leukemia (AAP, 2005; United States Department of Health and Human Services [USDHHS], 2011). Some maternal health benefits associated with breastfeeding include decreased risk of breast and ovarian cancers, Type II diabetes, cardiovascular disease, postpartum depression, rheumatoid arthritis, and decreased risk of hip fractures and osteoporosis in the postmenopausal period (AAP, 2005; Godfrey & Lawrence, 2010).

Breastfeeding also has economic and community benefits. According to Weimer (2001) of the United States (U.S.) Department of Agriculture, breastfeeding is associated with the potential for decreased annual healthcare costs of $3.6 billion if 50% of U.S. children were exclusively breastfed for six months. Additional economic and community benefits of breastfeeding include decreased employee absenteeism and its associated loss of family income, decreased costs associated with purchasing infant formula, and the overall improved cognitive and physical development of children which will affect their productivity as adults (AAP, 2005; Ball & Bennett, 2001; U.S. DHHS, 2011).

**Practice Problem and its Importance to Healthcare**

Breastfeeding, as described by Godfrey and Lawrence (2010), “…is far more than nutrition. It is concerned with creating a new person, establishing an effective immune system, building brain function, developing socialization, and promoting long-term health” (p. 1597). Breastfeeding promotion is essential not only because of the nutritious...
benefits for mothers and infants, but mainly because of the impact of the serious health risks and costs that are associated with not breastfeeding.

**Global Breastfeeding Rates**

Despite these known benefits, critically low breastfeeding rates persist worldwide (World Health Organization [WHO], 2003). The occurrence of suboptimal breastfeeding practices has significantly affected maternal and infant health and morbidity and mortality worldwide (Black et al., 2008; United Nations Children’s Fund [UNICEF], 2009). Among children less than five years old in developing countries, up to 1.5 million deaths per year and 10% of disease burden are attributed to lack of immediate and exclusive breastfeeding in infancy (Black et al., 2008; UNICEF, 2009). According to the WHO (2003), less than 35% of infants worldwide are exclusively breastfed during the first four months of life; supplementary feeding either begins too early or too late, and liquid and solid foods given to infants and children are often nutritionally inadequate and unsafe. Improving the global health problem of malnutrition among children can be addressed through focusing on infant nutrition and breastfeeding. Engaging in breastfeeding promotion efforts that target mothers of infants is an attempt to ensure that each child is provided with the highest standard of health (UNICEF, 2008).

**National Breastfeeding Rates**

While breastfeeding rates are a problem worldwide, breastfeeding initiation and duration rates in the U.S. have also consistently fallen well below the United States Department of Health and Human Services (U.S. DHHS) national targeted objectives (Centers for Disease Control & Prevention [CDC], 2010). The rates of breastfeeding at 3, 6, and 12 months fell well below the targeted objectives of Healthy People 2010.
regarding breastfeeding duration rates (CDC, 2010). According to the 2007 U.S. National Immunization Survey, there was a 73% breastfeeding initiation rate in the early postpartum period, whereas there were just 43% of U.S. children breastfed at six months, and only 13% of children exclusively breastfed through six months (CDC, 2007). These rates fell short of the U.S. DHHS Healthy People 2010 objectives that: 75% of women will initiate breastfeeding at any point in the postpartum period; 60% will exclusively breastfeed at 3 months, and 25% will continue to exclusively breastfeed at 6 months postpartum (CDC, 2010). Included in the Healthy People 2020 goals for maternal and child health are even higher numbers as targets for breastfeeding rates, as well as goals to: increase breastfeeding rates and reduce the use of formula supplementation; to increase the proportion of employers that have worksite lactation support programs; and to increase the proportion of live births that occur in facilities that provide recommended care for lactating mothers and their babies (U.S. DHHS, 2012).

**Barriers to Breastfeeding**

Various demographic, social, political, environmental, and intrapersonal variables have been widely identified in the literature as barriers to breastfeeding (Tenfelde, Finnegan, & Hill, 2011). However, determinants for a mother’s decision to initiate and continue breastfeeding vary across cultures. There are multiple variables that are associated with successful breastfeeding. Women who breastfeed are more likely to be: Caucasian; of higher socioeconomic status; well educated; married; older; a nonsmoker; not employed outside of the home; of increased parity; a mother of a healthy full-term infant; have attended prenatal classes; have friends or family members with breastfeeding experience; and have had successful previous breastfeeding experience (Dennis, 1999;
2002). These factors lead to increased maternal confidence to breastfeed (breastfeeding self-efficacy).

Conversely, women who do not have these factors that are associated with successful breastfeeding have been found to have lower breastfeeding initiation, duration, and exclusivity rates (Dennis, 1999; 2002). Decreased breastfeeding rates, particularly among vulnerable populations (e.g. teenage mothers, minorities, unemployed, low socioeconomic status), can contribute to the perpetuation of the cycle of social inequalities in health disparities (Renfrew et al., 2007). Low breastfeeding rates are negatively linked to the economic status of families and communities, and therefore have poor outcomes for mothers, infants, and overall national public health (Johnston & Esposito, 2007).

The alarmingly low breastfeeding duration rates in the U.S. have resulted in an important public health issue, making it a priority among many health organizations. Recently, there has been a Call to Action issued by the U.S. Surgeon General (U.S. DHHS, 2011) urging clinicians, employers, communities, researchers, and government leaders to commit to providing necessary support for mothers and children in order to protect, promote, and support breastfeeding. Support for intervention strategies to increase breastfeeding initiation and duration rates has become a national priority (Taveras et al., 2003).

**An Initiative to Increase Breastfeeding Rates**

**The Baby-Friendly Hospital Initiative (BFHI)**

The BFHI was launched in 1991 by the WHO and UNICEF to address the international problem of low breastfeeding rates (Baby-Friendly USA, 2010). The BFHI
is a global program that encourages and recognizes hospitals and birthing centers when they have successfully implemented the Ten Steps to Successful Breastfeeding (UNICEF, 2005). Evidence supports that the BFHI is the best practice standard for hospitals providing maternity care to improve practices, and thus to improve breastfeeding rates across diverse populations (Merewood, Mehta, Champerlain, Philipp, & Bauchner, 2005; Philipp & Radford, 2005).

However, when examining national maternal-infant care practices, the latest findings from the CDC (2011) indicate that only 5% of U.S. babies are born in hospitals that provide the optimal level of care for breastfeeding (i.e. designated Baby-Friendly®). It is imperative that hospitals make a commitment to improving breastfeeding practices to create a supportive environment by implementing the Ten Steps to Successful Breastfeeding (see Table 1). Hospitals and healthcare providers have an important opportunity to help mothers start and continue breastfeeding. Increasing the number of Baby-Friendly® hospitals will ensure better maternity care practices towards breastfeeding support, and will result in improved breastfeeding rates nationwide (ACOG, 2007; Baby-Friendly USA, 2010; United States Breastfeeding Committee, 2009).

Baby-Friendly® hospitals have the highest breastfeeding rates. It has been found that increased breastfeeding duration rates are positively correlated with the number of the Ten Steps that hospitals have in place (CDC, 2011). Current recommended national standards for breastfeeding urge all hospitals to implement the Ten Steps to Successful Breastfeeding by becoming Baby-Friendly® (CDC, 2011; U.S. DHHS, 2011). The promotion of maternity care policies and practices resulting from implementation of the
BFHI will lead to increased breastfeeding rates, and ultimately improved health outcomes for mothers, children, communities, and the overall population.

Table 1

*BFHI Ten Steps to Successful Breastfeeding*

<table>
<thead>
<tr>
<th>Every facility providing maternity services and care for newborn infants should:</th>
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<tbody>
<tr>
<td>1. Have a written breastfeeding policy that is routinely communicated to all healthcare staff.</td>
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<tr>
<td>2. Train all healthcare staff in skills necessary to implement this policy.</td>
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<tr>
<td>3. Inform all pregnant women about the benefits and management of breastfeeding.</td>
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<tr>
<td>4. Help mothers initiate breastfeeding within one hour of birth.</td>
</tr>
<tr>
<td>5. Show mothers how to breastfeed and how to maintain lactation even if they should be separated from their infants.</td>
</tr>
<tr>
<td>6. Give newborn infants no food or drink other than breast milk, unless medically indicated.</td>
</tr>
<tr>
<td>7. Practice rooming-in: allow mothers and infants to remain together 24 hours a day.</td>
</tr>
<tr>
<td>8. Encourage breastfeeding on demand.</td>
</tr>
<tr>
<td>9. Give no artificial nipples or pacifiers to breastfeeding infants.</td>
</tr>
<tr>
<td>10. Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or clinic.</td>
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**Purpose of the Scholarly Project**

Healthcare providers are challenged to ensure best practice through breastfeeding promotion and support in order to contribute to increased initiation and duration rates (Saadeh & Akre, 1996; Zimmerman, 1999). Following the BFHI (2010) guidelines and implementing evidence-based practices to support breastfeeding will contribute to increased breastfeeding rates and ultimately improve public health (Dyson, McCormick, & Renfrew, 2005). Step three of the BFHI (2010) is to “inform all pregnant women about the benefits and management of breastfeeding” (p. 9). Evidence has demonstrated...
that education in the early prenatal period, even during one visit, can influence breastfeeding initiation (Lu, Lange, Slusser, Hamilton, & Halfon, 2001; Noble et al., 2003).

The specific area of focus for this scholarly project was to assess whether education and support from healthcare providers makes a difference in breastfeeding self-efficacy, knowledge, and intent among pregnant women when implemented with prenatal patients in a clinic setting. The aim of this practice dissertation was to work in collaboration with a healthcare organization in a rural Midwestern community on the designation pathway to BFHI by specifically implementing step three of the guidelines in its affiliated prenatal clinic. This targeted all pregnant women for whom this facility’s clinic provides prenatal care. An age-appropriate and culturally-appropriate prenatal educational program informed pregnant women about the benefits and management of breastfeeding. Immediate outcomes for this educational program included the following: increased knowledge of breastfeeding basics and management (according to the evaluation criteria for step three of the BFHI); increased breastfeeding self-efficacy; and increased breastfeeding intent. The overall goal was to implement a systems change that would ultimately improve breastfeeding rates (breastfeeding initiation, duration, and exclusivity) among the designated patient population.
CHAPTER 2
LITERATURE REVIEW

Breastfeeding Outcomes

The benefits of breastfeeding have been widely acknowledged and documented throughout the literature, with evidence that these benefits increase with exclusivity and duration of breastfeeding (Wright et al., 2004). Although breastfeeding initiation rates have started to rise in recent years, the number of women who continue to exclusively breastfeed through six months is still very low (CDC, 2010). Increasing breastfeeding duration rates can contribute to the improvement of maternal health and the reduction of child mortality (United Nations Development Programme [UNDP], 2003). Translation of evidence into practice involves addressing both barriers and support measures for all breastfeeding women in order to increase intent and duration (Pugh et al., 2010).

Breastfeeding Intent

Research has found that intent to breastfeed is a consistently strong predictor of decisions to initiate and sustain breastfeeding (Chertok, Luo, Culp, & Mullett, 2011; DiGirolamo, Thompson, Martorell, Fein, & Grummer-Strawn, 2005; Persad & Mensinger, 2008; Saunders-Goldson & Edwards, 2004). It is well known that the decision on the type of infant feeding method is often made by mothers at the beginning of their pregnancy, even before the second trimester (Arora, McJunkin, Wehrer, & Kuhn, 2000; Dix, 1991; Howard et al., 2000; Noble et al., 2003; Wells, Thompson, & Kloeblen-Tarver, 2006). Frequently, this decision is based on an individual’s personal attitudes and beliefs surrounding their perceived benefits and disadvantages of breastfeeding (Noble et
al., 2003; Shepherd, Power, & Carter, 2000). Expression of breastfeeding intent in the prenatal period is associated with increased rates of breastfeeding exclusivity and breastfeeding duration (Chezem, Friesen, & Boettcher, 2003; Scott, Landers, Hughes, & Binns, 2001; Wambach, 1997). In order to improve breastfeeding duration rates, interventions should target known predictors of breastfeeding intent through education in the prenatal period (Balcazar, Trier, & Cobas, 1995; Dubois & Girard, 2003; Wambach, 1997).

There are multiple factors that have been identified in the literature as being associated with intention to breastfeed and actual practice (Saunders-Goldson & Edwards, 2004). Known predictors of breastfeeding intent include: maternal knowledge of health benefits; maternal education; maternal age; maternal ethnicity; parity; marital status; timing of prenatal care initiation; prenatal smoking status; household income; insurance status; attendance at prenatal breastfeeding classes; maternal comfort with breastfeeding in social settings; maternal attitudes toward breastfeeding; family, peer, and partner support of breastfeeding; and perceived behavioral control and confidence of breastfeeding success (breastfeeding self-efficacy) (Al-Akour, Khassawneh, Khader, Ababneh, & Haddad, 2010; Chertok et al., 2011; Coreil & Murphy, 1988; DiGirolamo et al., 2005; Lawson & Tulloch, 1995; Mitra, Khoury, Hinton, & Carothers, 2004; Persad & Mensinger, 2008; Saunders-Goldson & Edwards, 2004; Steube & Bonuck, 2011; Wen, Baur, Rissel, Alperstein, & Simpson, 2009). It is important that educational supportive interventions make allowances for the known barriers and predictors of breastfeeding intent, and consider non-modifiable barriers while attempting to address the modifiable predictors such as environmental and psychological variables. Since breastfeeding intent
is a known predictor of breastfeeding rates, education specifically addressing information on breastfeeding and breastfeeding self-efficacy should be a priority in the prenatal period, in order to positively influence women’s intentions to breastfeed (Chertok et al., 2011; DiGirolamo et al., 2005; Saunders-Goldson & Edwards, 2004).

**Breastfeeding Duration**

It is relevant to note that there are significant social pressures in the mother’s life, such as returning to work, that influence breastfeeding duration, and certain barriers that are unique to specific vulnerable populations (McDonald, Henderson, Faulkner, Evans, & Hagan, 2010; McIntryre, Hiller, & Turnbull, 1999). Mitra et al. (2004) noted that perceptions and attitudes about breastfeeding could explain the observed differences in breastfeeding behavior among various socioeconomic groups of women, which is why educational strategies are recommended targeting these barriers and predictors of breastfeeding. Pain perception related to breastfeeding, loss of freedom, embarrassment with breastfeeding in public, perceived difficulty with breastfeeding, and perceived insufficient milk supply are the most prevalent reported reasons for breastfeeding discontinuation among women (Dennis, 2002; MacGregor & Hughes, 2010).

**Review of Literature**

**Prenatal Interventions to Promote Breastfeeding**

There are a variety of different forms of prenatal educational interventions that can provide information about breastfeeding to a patient during her pregnancy. This could be on an individual or group basis, could include home visiting programmes, peer education programmes or clinic appointments specifically aimed at imparting breastfeeding knowledge and could involve prospective
fathers or not. Breastfeeding education is usually a formalized, defined, descriptive and goal-oriented programme with a specific purpose and target audience. (Lumbiganon et al., 2011, pp. 4).

A thorough literature review was conducted to examine the evidence for prenatal educational interventions that produced positive breastfeeding results. This review revealed various combinations of intervention strategies used to improve breastfeeding outcomes. Interventions included routine and formal breastfeeding education, printed information, video, individual counseling and group educational sessions. In many studies, ‘routine breastfeeding education’ was not described specifically, or was extremely vague. Many studies examining the effects of interventions on breastfeeding outcomes incorporated both prenatal and postnatal intervention strategies. Studies focusing exclusively on the effect of solely prenatal interventions (with minimal to no intrapartum or postpartum interventions) on breastfeeding rates were limited in number. Evidence from these studies were synthesized according to the type, or mode, of delivery of prenatal education, and according to the specific content of the prenatal educational intervention.

**Type of Educational Intervention**

It was often suggested that prenatal breastfeeding support provided through various educational methods is an important predictor of breastfeeding motivation and initiation (Betzold, Laughlin, & Shi, 2007; Couto de Oliveira, Camacho, & Tedstone, 2003; Dennis, 2002; Rosen, Krueger, Carney, & Graham, 2008; Stockdale et al., 2008). The strategies used as prenatal educational methods include visual aids, individual counseling (through lactation consultants[LC], peer counselors [PC], healthcare
providers, a combination LC-PC team, telephone support, and group educational sessions (either a single educational class or a combination of educational sessions).

**Visual aids.** Many of the studies incorporated the use of various types of individual visual aids or a combination of them, such as brochures, handouts, posters, and audio-visual material. These educational delivery methods were used as the only intervention mode for control groups in studies using an additional prenatal intervention, such as individual counseling or educational classes. There were no studies found in the literature that used only visual aids as a prenatal educational intervention for breastfeeding promotion. Overall, the visual aids were used in studies as supplementary material to reinforce the educational content that was delivered through other various strategies (Betzold et al., 2007; Caulfield et al., 1998; Finch & Daniel, 2002; Forster et al., 2004; Mattar et al., 2007; Rosen et al., 2008; Rossiter, 1994; Ryser, 2004; Schlickau & Wilson, 2005; Stockdale et al., 2008; Wolfberg et al., 2004).

In an observational, descriptive pilot study to examine breastfeeding duration, Betzold et al. (2007) distributed educational handouts to 33 pregnant women at each prenatal visit and then at each well baby checkup during the first year until cessation of breastfeeding. In addition to the handouts, the program had implemented the AAP’s (1999) Ten Steps to Support Parents’ Choice to Breastfeed Their Baby. This program also incorporated a variety of outpatient interventions (face-to-face guidance, employing a lactation consultant, and prenatal followed by postnatal instruction). These interventions were considered to be the main contributing factors to the 200% increase in the duration among the exclusively breastfeeding 4-6 month group and a 160% increase in the 6-12 month duration group (Betzold et al., 2007). A unique program feature
described by Betzold et al. was that mothers were also asked to set specific breastfeeding goals and then evaluate them at completion of the study, which was said to enhance maternal confidence related to succeeding at their breastfeeding goals.

Bonuck, Lischewski, and Brittner (2009) described lessons learned from their randomized controlled trial (RCT) conducted in two prenatal clinics. One of the interventions was the use of an Electronic Prompt (EP) used as a form of standardized provider support. Using the electronic medical charts, the EPs included a total of five prompts that appeared throughout the pregnancy. Each prompt would contain one or two brief open-ended questions for the provider to address during the patient’s visit (Bonuck et al., 2009). Challenges found by Bonuck et al. related to EPs included complaints by providers who had difficulty working with computers, and found the process burdensome. The investigators also found that there was not adequate time for feedback and for the implementation phase pilot testing in order to allow the providers to become more familiar with the educational process.

**Individual counseling.** Many research studies examining the effect of breastfeeding education delivered in the prenatal period included the intervention of individual counseling, in the form of instruction by lactation consultants (LC) (Bonuck, Freeman, & Trombley, 2006; Mattar et al., 2007), peer counselors (PC) (Caulfield et al., 1998; MacArthur et al., 2009), pediatricians or nurse practitioners (Kistin, Benton, Rao, & Sullivan, 1990; Serwint, Wilson, Vogelhut, Repke, & Seidel, 1996), or a combination of a LC with a PC (Wambach et al., 2011).

**Lactation consultants.** In a RCT (participants n = 338), Bonuck et al. (2006) evaluated the effect of a lactation consultant intervention on combined outpatient and
emergency department visits of infants with illness and breastfeeding sensitive (BFS) diagnoses, as well as on overall breastfeeding rates. The specific intervention (n = 175) involved two individual 60 minute visits during the prenatal period by a LC in the participants’ home or at the clinic during a scheduled appointment. The LC also attempted one postpartum hospital and/or one home visit. There was ongoing telephone support as needed provided by the LCs for up to 12 months postpartum.

Results of the Bonuck et al. (2006) study showed that at two weeks, more women in the intervention group were breastfeeding (87% in the breastfeeding group versus 65% in the control group; p ≤ .001) and were giving their infants 50% or more breast milk instead of formula (66% in the intervention group versus 46% in the control group; p ≤ .001). Up to 20 weeks postpartum, the intervention group was still significantly more likely to breastfeed at each week (p ≤ .03). There were no differences in exclusive breastfeeding rates at any time between the two groups.

Bonuck et al. (2006) found through multivariate analysis that treatment effects of visits for any illnesses and BFS gastrointestinal or respiratory tract illnesses were not statistically significant. There was, however, a relationship between treatment and Medicaid participants that was found. Bonuck et al. reported that the number of otitis media visits was higher among the control group participants (p ≤ .03) for those who were not receiving Medicaid.

Although this study involved a postpartum component to the intervention, it was included in this literature review because Bonuck et al. (2006) reported that only 44% of the participants in the intervention group had both prenatal and postnatal LC contact. These authors claimed the modest results of breastfeeding rates were due to the low
amount of LC contact in the intervention group, and suggest that greater intervention contact by the LC would have resulted in greater breastfeeding intensity as well as reduced infant illness (Bonuck et al.).

Mattar et al. (2007) conducted a RCT of prenatal patients (N = 401) in which one interventional group (n = 123) received an educational booklet, watched a 16-minute video, and had an individual coaching session with a LC; another interventional group (n = 132) received the educational material but had no contact with the LC; and the control group (n = 146) received routine antenatal care only. Results revealed that when compared to those who received routine antenatal care alone, mothers who received individual counseling and educational material showed an increase in exclusive and predominant breastfeeding at three months (odds ratio [OR] = 2.6, 95% confidence interval [CI] 1.2-5.4) and at six months (OR = 2.4, 95% CI = 1.0-5.7) postpartum (Mattar et al., 2007). Results were not statistically significant for the group that received educational material with no individual counseling when compared to those who received routine antenatal care (Mattar et al., 2007). Based on study findings, Mattar et al. proposed that the provision of audiovisual educational material alone in the prenatal period is not enough, and that just a single encounter of specific antenatal breastfeeding education through counseling can substantially improve breastfeeding practice even up to three months after delivery (Mattar et al., 2007).

Peer counselors. In a 2x2 factorial design study, Caulfield et al. (1998) examined the single and combined results of implementing educational material and peer counseling into four matched Women, Infants, and Children (WIC) clinics on breastfeeding initiation and duration at 7-10 days postpartum among African-American
WIC participants (N = 242). One clinic received no intervention; another received the educational material intervention (consisting of a motivational video and accompanying posters, pamphlets, and breastfeeding counseling by WIC service providers). The third clinic received peer counseling activities consisting of an initial pregnancy visit, then an additional three or more visits at the clinic, at home, or via telephone, during pregnancy to those women who were interested in breastfeeding, as well as weekly postpartum visits up to 16 weeks postpartum as long as they continued to breastfeed. The fourth clinic received both the educational material and peer counseling activities.

Upon controlling for maternal intention, Caulfield et al. (1998) found that mothers in the three intervention clinics had higher breastfeeding initiation rates than mothers in the control clinic (usual care), but the results were not statistically significant except for the clinic with the peer counseling activity intervention only (p ≤ .05). Intent to breastfeed at study enrollment was significantly associated with continued breastfeeding at 7-10 days postpartum (p ≤ .05) and was the strongest predictor of breastfeeding initiation and duration across all four clinics (Caulfield et al., 1998). Study limitations included the high rates of loss to follow-up, and that only one clinic per intervention was used, which weakened the experimental design (Caulfield et al., 1998). The authors’ recommendations, based on study findings, highlighted the importance of targeting breastfeeding promotion within communities in order to influence breastfeeding intent, which ultimately has an impact on breastfeeding duration rates (Caulfield et al., 1998).

Another study utilizing PCs as the main interventional strategy was a clustered RCT of 2,511 women from 66 antenatal clinics in which 33 clinics received standard prenatal care and the other 33 clinics received a peer support worker service (MacArthur
et al., 2009). This specific intervention included at least two contacts per patient with a trained peer support worker between 24-28 weeks of pregnancy and again at 36 weeks. Visits occurred in the antenatal clinic or at the patient’s home (MacArthur et al., 2009). Data obtained from hospital records showed that the groups did not differ in breastfeeding initiation: 69.0% (747/1083) in the intervention group versus 68.1% (896/1315) in the control group; with a cluster adjusted OR = 1.11 (95% CI = 0.87-1.43).

In contrast to Caulfield et al.’s (1998) findings, MacArthur et al. (2009) found the PC service to be ineffective in increasing breastfeeding initiation rates and discovered instead that ethnicity, parity, and mode of delivery independently predicted breastfeeding initiation (MacArthur et al., 2009). In discussion of study findings, MacArthur et al. suggested that when the results of this United Kingdom study are compared to similar studies in the U.S., the education and support on breastfeeding that is already provided in the UK as part of standard prenatal care may be the reason that an additional intervention of peer support workers was not effective in increasing breastfeeding initiation rates.

Both Caulfield et al. (1998) and MacArthur et al. (2009) used a similar approach in selecting individuals to perform in the PC role in order to best match with the patient sample. Caulfield et al. required that all PCs complete a five-week training program, and be former WIC clients, who had successfully breastfed at least one child. In comparison, MacArthur et al. utilized a total of 11 PCs that had eight weeks of training.

These support workers were of similar ethnic and socioeconomic backgrounds to the patient population of clinics in the study sample. Being able to address cultural barriers or concerns is important when providing breastfeeding educational support to women in the prenatal period (Caulfield et al., 1998; Hill, 1987; MacArthur et al., 2009;
Pugh et al., 2010). Especially among minority and low-income women, having trained PCs of similar demographic characteristics as the populations they serve is ideal for effective breastfeeding promotion (Dennis, 2002; Pugh, Milligan, & Brown, 2001).

**Healthcare providers.** Kistin et al. (1990) examined the effects of prenatal education on breastfeeding rates in a RCT (N = 159) through two separate intervention groups compared to the control group of routine prenatal care (n = 56). The first intervention group (n = 38) included attendance at a group breastfeeding class and the second intervention group (n = 36) included an individual counseling session with a nurse practitioner or pediatrician between 30-40 weeks gestation which lasted 15-30 minutes. After controlling for the confounders of age, prenatal plans to breastfeed, prior breastfeeding experience, perceived support for breastfeeding, education, gravidity, and employment plans, women with any intervention were more likely to breastfeed than the women in the control group (OR = 4.26, 95% CI 2.59-7.03) and general prenatal education was associated with increased breastfeeding rates (Kistin et al., 1990). When individual intervention groups were compared to the control group, findings were significant overall for having any educational intervention (p = .003) and for educational classes (p = .006), but not for individual counseling sessions (p = .147). The results of increased duration for the educational class group, could be attributed to the study’s small sample size, as well as the possible peer support that was present in their classes, but absent in the individual counseling sessions (Kistin et al., 1990).

In a RCT by Serwint et al. (1996), pediatric prenatal visits were explored in their relation to their resulting impact on breastfeeding decisions, infant car seat safety use, circumcision, health maintenance, and emergency room visits. To analyze the effect of
the pediatric visits on breastfeeding decisions, the intervention group (n = 81) had a counseling session with their infant’s future pediatrician at the pediatric clinic between 32-36 weeks gestation, whereas the control group (n = 75) received standard prenatal care only. There was significant difference (p = .03) among the intervention group compared to those in the control group in changing their minds from not planning to breastfeed at the beginning of the study to being in favor of breastfeeding after the pediatric prenatal visit occurred (Serwint et al., 1996). Although there were no differences between groups in breastfeeding initiation or duration at 30 days and 60 days, study results are suggestive that pediatric prenatal consultative visits may have a positive impact on breastfeeding outcomes (Serwint et al., 1996).

The Best Start Program was an intervention consisting of counseling sessions (given to patients by the researcher), viewing of a video, and written educational materials that were implemented to evaluate the effects of breastfeeding outcomes among low-income Hispanic women (Ryser, 2004). Reported results included increased positive breastfeeding sentiment (F (91, 52) = 6.82, p < .01), decreased negative breastfeeding sentiment (F (1, 52) = 11.94, p < .01), and increased breastfeeding control (F (1, 52) = 11.11, p < .01) from pretest to posttest for the experimental group when compared to the control group (Ryser, 2004). In data analysis using the $\chi^2$ test of independence, women who received the Best Start Program demonstrated statistically significant results for breastfeeding intent (p < .01) and breastfeeding initiation (p < .01) when compared to the control group (Ryser, 2004). The small sample size (n = 54) limits this study’s generalizability of findings, but demonstrates the importance of designing educational programs to meet the needs of a specific patient population (Ryser, 2004).
**Combination of LC and PC.** Wambach et al. (2011) reported an increase in breastfeeding duration (p < .001) within the experimental group as a result of a counseling intervention provided by a LC-PC team to adolescent mothers (N = 289). The counseling sessions started in the second trimester of pregnancy and extended through four weeks postpartum and included two prenatal classes, PC telephone calls, and individual counseling by the LC during the prenatal and postpartum periods. Although Wambach et al. (2011) did not have significant results on breastfeeding initiation or exclusivity, the results of increased breastfeeding duration are consistent with previous findings in the literature that utilization of a team approach using combinations of education, peer, and professional supportive interventions can contribute to improved breastfeeding outcomes (McKeever et al., 2002; Olson, Haider, Vangjel, Bolton, & Gold, 2010; Pugh et al., 2010; Zimmerman, 1999).

**Telephone support.** Five studies in this literature review included telephone support as a component of a prenatal breastfeeding educational intervention (Bonuck et al., 2006; Caulfield et al., 1998; Dennis & Kingston, 2008; Kools, Thijs, Kester, van den Brandt, & de Vries et al., 2005; Wambach et al., 2011). Although telephone support was not used as the primary educational method for interventions, it was often included as a supplementary mode of delivery for educational information on breastfeeding. For example, in a systematic review of literature, Dennis and Kingston (2008) examined 14 RCTs involving a total of 8,037 participants from different countries to assess the effects of telephone support on smoking, preterm birth, low birth weight, breastfeeding, and postpartum depression. In the meta-analysis, Dennis and Kingston found an overall positive effect on breastfeeding continuation (three trials, N = 618; RR = 1.18, 95% CI =
1.05-1.33), as well as an overall positive effect on breastfeeding exclusivity (two trials, N = 295; RR = 1.45, 95% CI = 1.12-1.87). The findings of this synthesis of evidence suggest that proactive telephone support may lead to positive outcomes of increasing breastfeeding duration and exclusivity (Dennis & Kingston, 2008).

**Group educational sessions.** A positive relationship may exist between prenatal class attendance and breastfeeding initiation (Scott et al., 2001). Many studies in the literature that examined the effect of breastfeeding education delivered in the prenatal period included the intervention of group educational sessions. In some studies, the educational group class was offered once, and was the main intervention used against the control of standard prenatal care (Duffy, Percival, & Kershaw, 1997; Kluka, 2004; Lavender et al., 2005; Noel-Weiss, Rupp, Cragg, Bassett, & Woodened, 2006; Olenick, 2010). Other studies compared different classes of varying length and content against each other, used multiple group educational sessions as an intervention, or included a combination of group classes with additional modes of education delivery (Finch & Daniel, 2002; Forster et al., 2004; Kistin et al., 1990; Lu et al., 2001; Rosen et al., 2008; Rossiter, 1994; Ryser, 2004; Schlickau & Wilson, 2005; Stockdale et al., 2008; Wolfberg et al., 2004).

**Single educational class.** Duffy et al. (1997) reported (n = 70) a significant difference in breastfeeding duration at six weeks postpartum between the experimental group compared with the control group ($\chi^2 = 28.8$, df = 1, p < .001), with the intervention being a single one-hour teaching session for nulliparous women who were of 36 weeks gestation. Noel-Weiss et al. (2006) evaluated the effect of a 2.5-hour experimental workshop as the intervention for nulliparous women who were already planning to
breastfeed (n = 101) and found that there was an increase in maternal breastfeeding self-efficacy. Based on results of the 14-item, 70-point Breastfeeding Self-Efficacy Short-Form (BSES-SF) with possible scores ranging from 14 to 70, Noel-Weiss et al. found that the mothers who attended the educational workshop had higher self-efficacy scores (mean = 58.72, standard deviation [SD] = 8.0), than those who did not attend the class (mean = 52.90, SD = 9.2) at four weeks postpartum, t(78) = -3.002, p = .004. Also, women who attended the class were three times more likely to exclusively breastfeed than the non-attender group (OR = 3.2, 95% CI = 1.26-7.94) at eight weeks postpartum (Noel-Weiss et al.).

Olenick et al. (2010) reported an increase in exclusive breastfeeding rates after a 2-hour class for mothers with no previous breastfeeding experience at one week (p = .01), six weeks (p < .001), and twelve weeks (p = .02), and increase in exclusive breastfeeding rates for mothers delivered by cesarean section at one week (p < .01), six weeks (p = .001), and twelve weeks (p < .01). Also using the BSES-SF instrument, Olenick found breastfeeding confidence to be associated with increased exclusive breastfeeding rates at one week (mean difference 14.73; t(158) = -7.09, p < .001), six weeks (mean difference 15.70; t(160) = -8.06, p < .001), and at twelve weeks (mean difference 14.14; t(150) = -7.97, p < .001). Additionally, Olenick et al. found that high breastfeeding confidence was associated with longer mean breastfeeding duration (10 weeks) compared to mean breastfeeding duration of those with lower breastfeeding confidence scores (5 weeks) (Kaplan Meier LR 61.57, p < .0001). The results of this RCT (N=182) indicated through the multivariate analysis that breastfeeding confidence was a strong predictor of breastfeeding exclusivity and duration (Olenick et al., 2010).
In contrast, Kluka’s (2004) RCT found no change in breastfeeding duration as a result of attendance at an educational, interactive antenatal workshop. Using the 33-item BSES, Kluka did find higher breastfeeding confidence (p = .001), non-smoking status (p = .017), and maternal visit by a community health nurse within two weeks of birth (p = .023) all to be significant predictive variables of breastfeeding duration. It is important to consider that all participants (N = 209) were comparable to the study sample used by Noel-Weiss et al. (2006) in that they were nulliparous women who had already decided to breastfeed. Also, the participants in Kluka’s study had previously attended a series of antenatal classes.

With similar overall findings, Lavender et al.’s (2005) study also did not find any significant differences between groups in breastfeeding initiation, exclusivity, or duration using a single educational group session as the main intervention. Participants (N = 1,312) were all women who had expressed a desire to breastfeed at the start of their pregnancy. This degree of homogeneity may explain the insignificant impact on breastfeeding outcomes (Lavender et al., 2005).

**Combination of educational sessions.** In a RCT of urban WIC participants (n = 60), Finch and Daniel (2002) tested an intervention of education by a LC combined with discussion sessions and educational handout materials. Results demonstrated higher exclusive breastfeeding in the intervention group (p = .025) and an increase in breastfeeding intent (p < .001) in the intervention group (Finch & Daniel, 2002). Although Finch & Daniel reported a high dropout rate and, therefore, a small sample size, results of this study revealed that exposure to a prenatal educational intervention led to positive effects on exclusive breastfeeding. Similarly, Kistin et al. (1990) found
increased likelihood of breastfeeding among women in the intervention groups of group educational classes (n = 38, 45% breastfeeding, p < .05) and individual prenatal counseling (n = 36, 50% breastfeeding, p < .05) compared to women in the control group who received standard prenatal care and no additional breastfeeding education (n = 56, 23% breastfeeding). Kistin et al. reported significant findings for any prenatal educational intervention (OR = 4.26, 95% CI = 2.59-7.03, p = .004) compared to the control group, as well as significant findings for women that took prenatal education classes (OR = 5.16, 95% CI = 2.86-9.30, p = .006) compared to women receiving routine care only.

Lu et al. (2003) reported results of a cross-sectional telephone survey (n = 2,068 children) and found that mothers who attended childbirth classes of any sort were 75% more likely to initiate breastfeeding (OR = 1.75, CI = 1.18-2.60). A limitation of this study was that it reported significant unspecified socio-demographic disparities found among the women who attended childbirth classes, but it did not describe what these socio-demographic disparities were. Another major limitation of this study was that it did not account for the variation among classes since only the attendance of class was measured but not the timing, content, or methods used in the childbirth classes (Lu et al., 2003).

In a retrospective cohort design study, Rosen et al. (2008) compared three different interventional methods between pregnant women (n = 194) who already intended to breastfeed and attended breastfeeding education classes at an Army medical center. One intervention used video demonstration and group teaching by a LC; a new mothers’ support group with one-on-one teaching prenatally and weekly meetings
postpartum that were taught by a LC and a pediatrician; and a control group that was educated at routine prenatal visits only (Rosen et al., 2008). Although there was no significant difference among the different types of classes women participated in, Rosen et al. reported significantly increased breastfeeding duration rates at six months among women who attended the one-time group class (67.6%, p = .01) and women who attended the individual teaching (61.1%, p = .01) compared to women who only received education at routine prenatal visits (43.5%).

An Australian RCT by Rossiter (1994) compared an intervention of a 25-minute video followed by a series of three, 2-hour small group discussion sessions to the control group who were only given breastfeeding and childbirth educational pamphlets. A 63-item pre-test questionnaire (information on specific questions was not provided) measured breastfeeding knowledge, attitudes, intent, demographic data, socioeconomic data, social support data, and breastfeeding cultural norms. A 38-item post-test questionnaire consisted of the same questions and was used by Rossiter to measure the intervention effect. This study included only pregnant Vietnamese women (n = 194) and the intervention group indicated an increase in level of breastfeeding knowledge, attitudes, and intent (p < .05), as well as an increase in breastfeeding initiation (p < .001) and duration (p = .001) at four weeks postpartum (Rossiter). Overall generalizability of this study is limited due to its convenience sample, and there were possible interpersonal communication and environmental factors that may have created biases in data collection (Rossiter, 1994).

Stockdale et al. (2008) used the Breastfeeding Motivational Instructional Measurement Scale (BMMS) to assess breastfeeding duration (measuring total value
placed on breastfeeding, total perceived midwife support, and total expectancy for success). Stockdale et al. reported increased maternal confidence \((t = 7.21, p = .000)\) and perceived midwife support \((t = 4.81, p = .000)\) as a result of multi-factorial intervention upon primigravid women \((N=182)\) which included an educational class, a book, a CD-ROM, postnatal instructional support, and additional individual LC sessions upon request. Results of continued motivation to breastfeed at discharge \((p = .018)\) and at three weeks postpartum \((p = .000)\) were also reported by Stockdale et al. (2008) in response to the educational intervention.

Two educational classes were interventions in a RCT reported by Forster et al. (2004) compared to standard prenatal care. The first intervention was a 1.5-hour class using teaching aids; the second was two 1-hour classes that included the patient’s partner or significant other. Neither intervention \((97\% \text{ and } 96\%)\), when compared with standard care \((96\%)\), was found to increase breastfeeding initiation. At six months, duration rates for both intervention groups \((55\% \text{ and } 50\%)\) were not significantly different when compared to the standard care group \((54\%)\) (Forster et al., 2004). The authors attribute the findings of this study to the already high breastfeeding rates in Australia where the study took place, and propose that neither of the interventional methods used could be recommended as an effective strategy to improve breastfeeding outcomes in settings where the rates are already high (Forster et al., 2004).

A small sample \((n = 30)\) of Hispanic nulliparous women who intended to breastfeed were studied in a RCT by Schlickau and Wilson (2005) to examine the effects of a dual-level educational intervention on breastfeeding duration. Level one of the intervention included education throughout prenatal visits using visual aids and dolls, and
the second intervention level involved a class combined with handouts to reinforce educational content. Both interventions were compared to the control group of routine prenatal care (Schlickau & Wilson, 2005). Results were non-significant for all groups; but according to Schlickau and Wilson, trends were seen toward increased breastfeeding duration and projected that statistical significance would be reached if this intervention study was implemented using a large sample size.

In a unique approach to test breastfeeding outcomes through a RCT, Wolfberg et al. (2004) implemented an intervention for expectant fathers (N = 59) in which they were assigned randomly to attend either a 2-hour intervention class or a control group class. Various educational strategies such as discussion, video, colored slides, role-play, chalkboard, and handouts were used in both classes (Wolfberg et al., 2004). Findings by Wolfberg et al. revealed that breastfeeding was initiated by 74% of women whose partners attended the intervention class, whereas 41% of women whose partners attended the control class initiated breastfeeding (p = .02).

**Content of Educational Intervention**

Review of literature found a variety of topics that were included in the educational supportive interventions, and many of the studies were vague in their descriptions related to the specific content of the educational interventions. The main topics of breastfeeding educational content identified in the literature included: benefits and advantages; cultural and societal barriers; misconceptions/myths; strategies for breastfeeding success; and support of friends, family, and/or society (Caulfield et al., 1998; Duffy et al., 1997; Finch & Daniel, 2002; Forster et al., 2004; Kistin et al., 1990; Kluka, 2004; Kools et al., 2005; Lavender et al., 2005; MacArthur et al., 2009; Mattar et
al., 2007; Noel-Weiss et al., 2006; Rosen et al., 2008; Rossiter, 1994; Ryser, 2004; Schlickau & Wilson, 2005; Serwint et al., 1996; Stockdale et al., 2008; Wolfberg et al., 2004).

**Benefits and advantages.** Beginning an educational intervention with instruction about the benefits and advantages of breastfeeding is important in order to assess a woman’s basic knowledge and to help her begin to better understand the breastfeeding process (DiGirolamo et al., 2005; Ryser, 2004). Serwint et al. (1996) reported increased rates of breastfeeding intent in response to a prenatal educational counseling session with the infant’s future pediatrician, in which the topics of breastfeeding advantages and infant nutrition were included.

Finch and Daniel (2002) reported a significant increase in breastfeeding knowledge and benefit perceptions among urban women who were participants in the Supplemental Nutritional Program for Women, Infants, and Children (WIC). Improved breastfeeding outcomes were found among the intervention group, who attended the educational class taught by a LC and then received incentives for their attendance. Information included in the education focused on breastfeeding benefits and barriers, and the instruction and group discussion were accompanied with handouts. Incentives were used to promote breastfeeding due to empirical findings that offering small gift items in an incentive can increase breastfeeding rates among WIC participants, since a known breastfeeding barrier among this group of women is the distribution of free formula samples that is provided to them through this program (Finch & Daniel, 2002). The study included an incentive of an enhanced food package and extended program eligibility that was offered to breastfeeding participants. Women who exclusively
breastfed for at least two months after study completion were eligible to receive a $25
mall gift certificate (Finch & Daniel, 2002). Due to the high number of dropouts in this
study, the results were non-significant for breastfeeding initiation and duration rates;
however, according to Finch and Daniel, the overall study findings indicate that based on
responses to the provided questions, participants learned about breastfeeding benefits and
barriers after a single educational intervention, and that participants valued the
breastfeeding incentive.

Another study reported successful breastfeeding rates as a result of a RCT
including an educational intervention which included breastfeeding benefits and
advantages as main content in the booklet, video, and educational session (Mattar et al.,
2007). The intervention group received this information in the printed and audiovisual
material as well as during a one-encounter antenatal education counseling session and
demonstrated increased breastfeeding duration at three months and six months
postpartum as well as increased exclusive breastfeeding rates (Mattar et al., 2007).

Rosen et al. (2008), Rossiter (1994), Schlickau and Wilson (2005), and Stockdale
et al. (2008) also reported increase in breastfeeding rates resulting from interventions of
breastfeeding education classes which included content that focused on maternal and
infant benefits of breastfeeding. Providing all pregnant women with access to complete
and objective information regarding maternal and infant benefits of breastfeeding is an
important component of prenatal education (AAP, 2005; ACOG, 2007; Jenner, 1988).

**Cultural and societal barriers.** Culturally sensitive care should be provided as
a component of breastfeeding promotion, including identification of cultural differences
or preferences that may affect a woman’s decision to breastfeed (Abramson, 1992;
Bonuck et al., 2006; Rossiter, 1994; Wolfberg et al., 2004). Rossiter (1994) developed a breastfeeding educational intervention specific to language and culture that was used in an RCT to evaluate breastfeeding outcomes among 182 Vietnamese women. The culturally sensitive educational intervention resulted in an overall increase in knowledge, attitudes, planned, and actual behavior toward breastfeeding (Rossiter, 1994).

MacArthur et al. (2009) specifically addressed cultural barriers and concerns in a large clustered RCT involving 2,511 women from a total of 66 antenatal clinics in the UK. The intervention included trained PC workers who were of similar ethnic and socioeconomic backgrounds as their clinic population and provided support visits to patients in the clinic or at home (MacArthur et al., 2009). Although there was no effect on breastfeeding rates, MacArthur et al. suggest that implementation of PCs who are ethnically and linguistically appropriate for the designated population could be useful if targeted at groups of women who are not planning to breastfeed. When cultural and societal beliefs are specifically addressed within communities, substantial opportunity exists to increase breastfeeding initiation and duration rates (Dodgson, Duckett, Garwick, & Graham, 2002; Pugh et al., 2010; Ryser, 2004).

**Misconceptions and myths.** Identification of misconceptions can reveal breastfeeding barriers, and inclusion of educational content addressing common myths and misconceptions related to breastfeeding (such as issues regarding actual contraindications for breastfeeding, perceived insufficient milk supply, dietary requirements, sleep deprivation, and pain) can correct this misinformation (Caulfield et al., 1998; Finch & Daniel, 2002; Kistin et al., 1990; MacArthur et al., 2009; Zimmerman & Guttman, 2001). Kistin et al. (1990) demonstrated that targeting educational efforts at
providing accurate information and reducing breastfeeding misconceptions can address barriers and lead to improved outcomes among low-income black urban women. Lavender et al. (2005) included common misunderstandings about breastfeeding as part of an educational intervention and found no difference in overall breastfeeding rates as a result. However, the entire sample (n = 1,312) consisted of women who were already planning to breastfeed, which could be a contributing factor to the lack of difference between groups in this study (Lavender et al., 2005).

Ryser’s (2004) Best Start Program provided a useful outline to follow for addressing common breastfeeding barriers perceived by low-income women, which led to increased rates of breastfeeding intent and breastfeeding duration. Encouraging women to ask questions and express concerns discloses breastfeeding myths and provides opportunity for accurate education (Riordan, Bibb, Miller, & Rawlins, 2001). Also, addressing common misconceptions during educational interventions can target barriers and encourage breastfeeding continuation (Sheehan, Watt, Krueger, & Sword, 2006).

**Strategies for breastfeeding success.** Many studies incorporated educational content including information on techniques and tips for correct positioning, latch, and attachment for breastfeeding. A study by Duffy et al. (1997) implemented antenatal group sessions taught by a LC as an educational intervention. Specific content of the sessions included correct positioning and attachment of the baby on the breast for feeding. Each woman in the group had a doll to use as simulated return-demonstration method during the class (Duffy et al., 1997). Outcome variables included position and attachment which was measured by a LATCH score (Latch on, Audible swallow, Type of nipple, Comfort and Help); nipple pain which was measured by a visual analogue scale.
(VAS); and nipple trauma which was measured by the Nipple Trauma Index (NTI). Analysis of variance (ANOVA) with repeated measures showed that the experimental group had a higher LATCH score (M = 35.2, SD = 3.1) compared to the control group (M = 24.1, SD = 4.6); lower VAS score (M = 3.7, SD = 4.1) than the control group (M = 23.5, SD = 9.2); and had a higher overall NTI score (M = 132.85, SD = 5.5) than the control group (M = 94.20, SD = 16.3). These results indicated that women in the experimental group were better able to position and attach the baby onto the breast, had less nipple pain, and had less nipple trauma than the control group (Duffy et al., 1997).

Forster et al. (2004) described an educational class taught by midwives and a community educator who taught proper latch technique through demonstration using dolls and knitted breasts. Lavender et al. (2005) also included instruction on proper positioning and attachment in an educational class. The women were also instructed on potential breastfeeding difficulties and possible solutions, specifically related to latch, positioning, and milk supply. Mattar et al. (2007) included information on management of common breastfeeding problems, such as positioning and latching, and common concerns such as nipple pain in the combined educational intervention that used a booklet, video, and LC group session.

Noel-Weiss et al. (2006) utilized lifelike dolls, videos, and discussion under the framework of self-efficacy theory in order to educate women about specific strategies for addressing common problems in order to achieve successful breastfeeding. Trends toward increased breastfeeding duration were found by Schlickau and Wilson (2005) from educational interventions which included the topics of anatomy and physiology of the breast; supply and demand and prenatal breast preparation; superiority of breast milk
over formula; holding and positioning; latch technique; qualities and appearance of breast
milk; how to pump and store milk; breastfeeding discreetly; and parameters for normal
weight gain.

Increased maternal confidence was reported by Stockdale et al. (2008) following
an implementation of an intervention consisting of a class, book, CD-ROM, and LC
counseling. Educational topics for this intervention were presented as motivational
strategies where women were encouraged to think of breastfeeding as a learned behavior.
Content included latch techniques and positioning, and addressing common breastfeeding
challenges (Stockdale et al., 2008).

**Peer, familial, and societal support.** Because it is known that fathers are highly
influential when it comes to a mother’s feeding preference, Wolfberg et al. (2004)
implemented a breastfeeding educational intervention for expectant fathers and compared
two different peer-educator prenatal classes to see if it made a difference on breastfeeding
outcomes. The fathers in the intervention group attended a class that had open discussion
about breastfeeding concerns, misconceptions, and benefits. There was also an
opportunity for support among the participants to be breastfeeding advocates (Wolfberg
et al., 2004). The outcomes reported by Wolfberg et al. showed an increase in
breastfeeding initiation for women whose partners attended the intervention class, and
demonstrated that expectant fathers can play a key role in positively influencing a woman
in her decision to breastfeed.

Breastfeeding promotion and support should include significant others and family
members, especially for mothers among low-income ethnically diverse populations
(Wambach et al., 2005). Women are more likely to breastfeed, and to breastfeed longer,
when they have the support of their family and significant others (Dennis, 2002; Earle, 2000; Noble et al., 2003). The attitude of support persons toward breastfeeding has a strong influence on a mother’s breastfeeding initiation, exclusivity, and duration (Polluck, Bustamante-Forest, & Giarratano, 2002; Shepherd et al., 2000; Wolfberg et al., 2004).

Summary of Findings

Review of the literature did not reveal one particular type of educational intervention to be more effective than other interventions at improving breastfeeding outcomes. Out of the 19 RCTs that were included in this analysis of literature, there was not a single educational topic or a combination of educational topics related to breastfeeding that was shown to be the most effective in increasing breastfeeding rates. The main limitations of the literature review were related to the inconsistency between studies, especially regarding the significant differences in the specifics of the interventions that were used, the mode of delivery, and the specific content of the education (often, this information was either vague or unavailable). There were variations in the number and combination of audio-visual aids, individual counseling sessions, telephone calls, educational classes, and educational topics that were used in the studies. Many of the studies had small sample sizes, and had limited generalizability of findings. Additionally, there was inconsistency between studies in terms of outcome measurements which included either a single outcome variable or a combination of the variables of breastfeeding intent, initiation, exclusivity, and duration. The sample characteristics also varied across studies in terms of demographic data, such as cultural and socioeconomic status. Furthermore, there was variation related to breastfeeding
intent of participants upon initiation of a study, since there were some studies that had inclusion criteria of women who were already planning to breastfeed when they entered a study. The limitations in this review of literature influence the external validity of the findings since divergent interventions may lead to differing outcomes.

Similar findings to this literature review summary were reported in a Cochrane database systematic review of literature by Lumbiganon et al. (2011) which evaluated the effectiveness of antenatal education for increasing breastfeeding initiation and duration. The Lumbiganon et al. systematic review included data from 17 studies (15 of which are included in the above mentioned literature review), totaling 7,137 women. The authors’ conclusions based on the summary of findings were that although there appeared to be various combinations of interventions that may have been successful in improving breastfeeding outcomes (based on findings from single studies), there were no interventions that were found to be significantly more effective than any other intervention in increasing breastfeeding initiation or duration (Lumbiganon et al., 2011).

**Recommendations**

A prominent finding from this review is the inconsistency of interventions and reported outcomes between studies. Consequently, the most effective content topics and mode of delivery for a prenatal educational intervention to increase breastfeeding rates is inconclusive based on this literature review. Quality educational interventions are needed in order to deliver appropriate prenatal counseling and support that will lead to improved breastfeeding rates (American Dietetic Association, 2001). Since most women make their decision about infant feeding methods before pregnancy or during their first
trimester, it is important to target prenatal educational interventions starting as early as possible (Arora et al., 2000).

In their most recent breastfeeding evidence-based clinical practice guideline (2007), the Association of Women’s Health, Obstetric, and Neonatal Nurses (AWHONN) outlined the following topics to address during prenatal education: benefits for mother and infant; common misconceptions; methods to facilitate continued breastfeeding with return to work or school; how milk is produced; basic management techniques; specific concerns stated by the expectant mother; and community resources. In addition, the AWHONN evidence-based intervention parameters suggest offering breastfeeding information early during pregnancy (in the first trimester) and again at each prenatal visit in the form of instruction including but not limited to: print, video, electronic media, group classes, and one-on-one instruction.

Educational interventions utilizing various methods and forms of support are more effective than interventions that only use a single method, according to a systematic review by Hannula, Kaunonen, and Tarkka (2008) which examined professional supportive interventions for breastfeeding. Combining formal educational methods delivered by healthcare professionals with peer supportive measures can have positive effects on increasing breastfeeding initiation rates (Dyson et al., 2005). Combinations of breastfeeding education and counseling supportive interventions bring about the best outcomes, according to the U.S. Preventive Services Task Force (USPSTF) 2003 review of research on interventions to promote breastfeeding.

Translation of evidence into practice involves addressing barriers and support measures for all breastfeeding women (Pugh et al., 2010). Additional research is needed
on prenatal interventions alone and their effects on breastfeeding initiation, exclusivity, and duration, including women of multiple populations with varying socioeconomic and cultural backgrounds (Academy of Breastfeeding Medicine [ABM], 2009). If further quality evidence was generated through research regarding various prenatal interventions, knowledge on effective breastfeeding promotion would be improved (Wambach et al., 2005). Strong external evidence generated through systematic research is paramount in the knowledge translation process as a means to make practice changes that will lead to the best possible quality of care and improved health outcomes (Melnyk & Fineout-Overholt, 2011). This literature provided supportive evidence that a combination of methods and content of prenatal education and support can lead to improved breastfeeding outcomes. As implied by the ABM (2009), given the significant amount of evidence on the maternal and child health benefits of breastfeeding, education and support in the prenatal period can positively influence breastfeeding rates which would have an overwhelming impact on improving the health of communities and populations.
CHAPTER 3

CONCEPTUAL FRAMEWORK

The conceptual framework of Donabedian (1997) provided a useful clinical perspective to implement a system change. This conceptual model categorizes healthcare in terms of structures, processes, and outcomes which are associated as indicators of quality and the resulting improvement in the health of patients, and of the population (Aday, Bagley, Lairson, & Balkrishnan, 2004). Health promotion is a fundamental component of prenatal care, and Donabedian’s model provided a useful framework for exploring the effectiveness of prenatal health promotion content and health promotion behaviors during pregnancy (Vonderheid, Norr, & Handler, 2007).

Furthermore, Donabedian’s (1997) conceptual framework, integrated with breastfeeding self-efficacy (BFSE) theory, provided the conceptual foundation for this practice dissertation. The purpose of this chapter is to provide the overview of each conceptual framework and the integration of both. The following sections outline the Donabedian model as a conceptual framework and describe the concepts (variables) and linkages between them. Breastfeeding Self-Efficacy Theory (Dennis, 1999) is also described in relation to prenatal patient education as a means of health promotion to improve breastfeeding outcomes and its role in guiding program development, implementation, and evaluation.

Overview

According to Donabedian (1997), quality in healthcare is based on structures, processes, and outcomes; where structures are defined as environments in which healthcare is provided, processes are the method in which healthcare is provided, and
outcomes are the effects of the care provided. The Donabedian model emphasizes that patients and practitioners are key players within healthcare systems and institutions, and the interactions between them are the most critical to the generation of quality (Donabedian, 1993). Handler, Issel, and Turnock (2001) agree that the Donabedian model provides a conceptual framework for research on process performance, and in addition, is useful for evaluation methods in order to achieve health objectives.

**Theoretical Concepts**

The theoretical concepts of structure, process, and outcome in terms of healthcare are central to the Donabedian model since their linkages are indicators of quality (Aday et al., 2004). Donabedian (1997) explained that structure refers to the settings in which care occurs and “includes the attributes of material resources, …of human resources, …and of organizational structure” (p. 1147). Process is defined by Donabedian as “…giving and receiving care. It includes the patient’s activities in seeking care and carrying it out as well as the practitioner’s activities in making a diagnosis and recommending or implementing treatment” (p. 1147). The concept of outcome includes improvements or changes in patients’ behavior and knowledge as being determinants of health status as well as patient satisfaction with care received, and this concept is broadly defined as the “effects of care on the health status of patients and populations” (Donabedian, 1997, p. 1147).

The variables of structures, processes, and outcomes are conceptually linked to demonstrate a directional relationship in which health outcomes experienced are attributable to structural provision of resources as well as the input factors of diagnostic processes, therapy, and care (Wubker, 2007). Assessment of effectiveness is done
through application of the implied linkages between structures, processes, and outcomes as structural components of healthcare in a research paradigm (Aday et al., 2004). Donabedian (1993, 1997) outlined the conceptual connection between structure, process, and outcome in this relatively simple model which provides a solid and integrated approach to exploring the elements of health promotion interventions on overall health system effectiveness.

**Theoretical Application to Addressing Breastfeeding Outcomes**

Donabedian’s (1997) model has been utilized as a conceptual framework to help guide childbirth education outcomes research and it is useful for addressing quality outcomes to evaluate the effectiveness of patient care interventions (Koehn, 2002; Lee & Holroyd, 2009; National Council for the Professional Development of Nursing and Midwifery, 2010). The Donabedian model is effective for exploring how the intervention of prenatal education influences breastfeeding outcomes (see Figure 1). Breastfeeding educational materials are conceptually defined as the provision of influential significant, consistent, positive education about the benefits and management of breastfeeding (AWHONN, 2007). Breastfeeding outcomes can be categorized into breastfeeding initiation and breastfeeding duration. According to the current evidence-based clinical practice guideline by AWHONN (2007), breastfeeding initiation is considered to be the time at which the first breastfeed is offered to the newborn; and breastfeeding duration is measured in terms of duration of time of exclusive breastfeeding (infant receives only breast milk and no other liquid or solid supplements except vitamins, minerals, and medications), as well as in terms of duration of breastfeeding combined with formula feeding.
Figure 1. Conceptual model of the Donabedian (1997) framework integrated with BFSE (Dennis, 1999). Adapted from Aday et al. (2004).
Structure

Utilizing the Donabedian (1997) approach as a framework to guide clinical practice, structure denotes the material resources (the physical facility is a prenatal clinic in a Midwestern rural community), human resources of care providers (nurses, physician assistant (PA), nurse practitioner (NP), and physicians) and patient factors (demographics and pregnancy medical conditions). The structure also refers to the organizational characteristics (the organization of the physicians, nurses, and patient support staff); the teaching and research functions; and the financial components (such as reimbursement and access to care).

Process

The process is the intervention of the provision of breastfeeding educational materials and instructional support, while minimizing breastfeeding barriers and maximizing facilitators to the intervention process.

**Breastfeeding self-efficacy.** The concept of self-efficacy will be utilized as the basis for the implementation process of this project in framing an educational intervention that addresses breastfeeding confidence among women (see Figure 2). This concept is based on Albert Bandura’s Social Cognitive Learning Theory and is defined as a cognitive process of individuals’ confidence in their perceived ability to regulate their motivation, thought processes, emotional states, and social environment in performing a specific behavior (Bandura, 1997). Self-efficacy has been shown to predict the initiation and duration of various health promoting behaviors (Bandura, 1997; Kingston, Dennis, & Sword, 2007).
Figure 2. Model of Breastfeeding Self-Efficacy Framework as described by Dennis (1999).

**ANTECEDENTS**
- Sources of Information:
  - Performance Accomplishments
  - Vicarious Experience
  - Verbal Persuasion
  - Physiological & Affective States

**SELF-EFFICACY**
- Confidence

**CONSEQUENCES**
- Individual Response:
  - Choice of Behavior
  - Effort & Persistence
  - Thought Patterns
  - Emotional Reactions

**BEHAVIOR**
- Activity:
  - Initiation
  - Performance
  - Maintenance
Dennis’s (1999) theory defines breastfeeding self-efficacy as a mother’s confidence in her ability to breastfeed her infant. It is well documented in the literature that breastfeeding self-efficacy is a significant predictor of breastfeeding initiation, duration, and exclusivity, across many populations worldwide (Blyth et al., 2002; Ertem, Votto, & Leventhal, 2001; McQueen, Dennis, Stremler, & Norman, 2011; Nichols, Schutte, Brown, Dennis, & Price, 2009; O’Brien, Buikstra, & Hegney, 2008; Ryan, Wenjun, & Acosta, 2002; Semenic, Loiselle, & Gottlieb, 2008; Taveras et al., 2003; Wilhelm, Rodehorst, Stepans, Hertzog, & Berens, 2008). Providing breastfeeding education in the prenatal period increases breastfeeding self-efficacy and improves breastfeeding outcomes as a result (Kingston et al., 2007; Noel-Weis et al., 2006).

According to Dennis (1999), breastfeeding self-efficacy predicts: “(1) whether a mother chooses to initiate breastfeeding or not; (2) how much effort she will expend; (3) whether she will have self-enhancing or self-defeating thought patterns; and (4) how she will respond emotionally to breastfeeding difficulties” (p. 197). Breastfeeding Self-Efficacy Theory (Dennis, 1999) proposes that a woman’s level of breastfeeding self-efficacy is influenced by the four main sources of information (see Figure 3): (1) personal accomplishments (e.g., past breastfeeding experiences); (2) vicarious experiences (e.g. observing other women breastfeed); (3) verbal persuasion (e.g. encouragement from LCs, friends, family, PCs, healthcare providers); and (4) psychological and affective states (e.g. nipple pain, fatigue, stress, anxiety, perception of insufficient milk supply). Targeting interventions toward improving breastfeeding self-efficacy before pregnancy or early in the prenatal period includes influencing these four
sources of information in order to modify a mother’s confidence in her ability to breastfeed (Dennis, 2003).

Figure 3. Breastfeeding Self-Efficacy Theory Antecedents

Figure 3. Antecedents of Breastfeeding Self-Efficacy Theory as adapted from Dennis (1999).
There are both modifiable (psychological and social) and non-modifiable (demographic and biological) risk factors that are associated with barriers to breastfeeding. Among the non-modifiable risk factors associated with poor breastfeeding rates are demographic variables, such as age, race, socio-economic status, level of education, and marital status (Thulier & Mercer, 2009). Maternal breastfeeding confidence, however, is a psychological variable that is modifiable through educational and supportive measures, which is why targeting breastfeeding self-efficacy in the prenatal period is of high importance (Dennis, 2003; McQueen et al., 2011). Since it is a known predictor of breastfeeding duration, breastfeeding self-efficacy is a variable that is advantageous to measure in the antepartum stage of pregnancy when implementing educational interventions (Wells et al., 2006).

Outcomes

The clinical perspective of short term outcomes is measured at the patient level, referring to educational outcomes of patients reporting that they have received and read or viewed the educational material, and can correctly report the content of the received education. Additionally, measurement of breastfeeding self-efficacy late in the prenatal period or early in the postpartum period can give an indication of predictive value of the long term outcomes. Long term breastfeeding outcomes can be assessed at the community level through examination of exclusive breastfeeding, and breastfeeding initiation and duration rates.

Summary

Following the Donabedian (1997) model, overall evaluation of the prenatal intervention will include evaluation of the structure (the organizational setting in which
the intervention takes place); evaluation of the process delivery aspect (teaching content and methods used, skills of the educator(s)); and ultimately evaluation of the outcome component (the knowledge and skills gained by clients; patient self-report of breastfeeding intent; and level of breastfeeding self-efficacy). As part of the process (the educational intervention), utilization of educational strategies that enhance breastfeeding self-efficacy (Dennis, 1999) will aid in the identification of breastfeeding barriers and will then maximize sources of strength and support in order to achieve breastfeeding success (Bowles, 2011).

Evaluation of breastfeeding self-efficacy can be included in short-term outcomes since high levels of breastfeeding self-efficacy are correlated with high rates of breastfeeding duration (Blyth et al., 2002; Dennis, 2003; Dennis & Faux, 1999; Humphreys, Thompson, & Miner, 1998; Ryan et al., 2002; Wilhelm, Stepans, Hertzog, Rodehorst, & Gardner, 2006). Examination of the factors necessary to be in place in order for an educational program to occur (structure) and how the intervention is implemented (process) will follow the Donabedian (1997) framework to evaluate outcomes (Lee & Holroyd, 2009).

As suggested by Couto de Oliveira et al. (2003), the Donabedian model is a useful approach to examining prenatal education as an intervention tool for supporting positive breastfeeding outcomes. The integrated model in this practice dissertation provided the framework for effective examination of organization and clinical structures for delivery of an educational process that will ultimately affect the outcomes of breastfeeding knowledge, intent, and self-efficacy.
CHAPTER 4

METHODS

Structure

Program Development

The first step to guide an evidence-based practice implementation is identifying both clinical and organizational needs and barriers (Melnyk & Fineout-Overholt, 2011). The evidence of process outcomes for implementation of the BFHI (2010) combined with the structural (clinical and organizational) assessment needs provided justification for this scholarly project. Breastfeeding is one of the most effective measures available in disease prevention and in maternal-infant health promotion (Abrahams & Labbok, 2009; Dennis, 2002).

People involved in breastfeeding social support include a woman’s family, friends, significant other, and healthcare workers (Riordan & Gill-Hopple, 2001). Therefore, hospitals and healthcare providers have an opportunity to provide breastfeeding support and education through implementation of the BFHI ten steps to successful breastfeeding (Hannon, Ehlert-Abler, Aberman, Williams, & Carlos, 1999; Merewood et al., 2005; Merten, Dratva, & Ackermann-Liebrich, 2005; Phillip & Radford, 2005). Following the BFHI (2010) guidelines and implementing evidence-based practices to support breastfeeding contributes to increased breastfeeding rates and ultimately improved public health (Braun et al., 2003; Camurdan et al., 2007; Dyson et al., 2005; Phillip et al., 2001).

To further the efforts of breastfeeding support, the focus of this scholarly project was to work in collaboration with a healthcare organization in a rural Midwestern
community on the designation pathway to BFHI, specifically by implementing step three of the guidelines in its affiliated prenatal clinic. The proposed program targeted all pregnant women for whom this facility’s clinic provides prenatal care.

The specific area of focus for this program was to assess breastfeeding self-efficacy as well as whether education and support from healthcare providers made a difference in breastfeeding intent among pregnant women when implemented to prenatal patients in a clinic setting. Prenatal education that targets information on breastfeeding can influence intent to breastfeed, which is a consistent predictor of breastfeeding rates (Chertok et al., 2011; DiGirolamo et al., 2005; Persad & Mensinger, 2008; Saunders-Goldson & Edwards, 2004). The overall goal of this project was to improve breastfeeding knowledge, self-efficacy and intent, and thus to ultimately improve breastfeeding rates among the designated patient population as a result of a prenatal educational intervention.

Needs Assessment

The results of a recent community health needs assessment for this rural county were reviewed prior to implementation of this scholarly project. This needs assessment was done through collaborative efforts of the health systems within the county and with funding through a U.S. Department of Health and Humans Services (HRSA) Rural Health Network Development planning grant which covered project activities for 11 months (March 2011 to April 2012). This community assessment also fulfilled a legislative requirement from the Affordable Care Act, which stated that in order to maintain their tax-exempt status under Section 501(c)(3), non-profit hospitals must
conduct a community health needs assessment every three years (United States Government Printing Office, 2010).

Based on the results, the residents in the county in which this OB clinic located, are predominantly Caucasians (94%) with varying levels of education. Roughly 4.2% have less than 9th grade education while 12.0% have some high school education, 39.4% have a diploma or GED, and 24.1% have some college education (Mid-Michigan District Health Department, 2011). In the community needs assessment, the general health status was rated by country residents as fair or poor when compared to the state average for reported health status. Likewise, there were an increased number of individuals and families who reported living in poverty, and who were unemployed, uninsured and underinsured (Mid-Michigan District Health Department). It was also noted in the community needs assessment that there were higher rates of teen pregnancy, increased adolescent obesity, engagement in frequent risky health behaviors such as substance abuse and smoking, and a consistently higher mortality rate for stroke, unintentional injuries, and kidney disease. Therefore, this rural community in which the designated healthcare organization resides is comprised of at-risk populations in need of quality care delivery services that would improve their overall health outcomes.

**Need for the BFHI in the Rural Community**

Data from the community needs assessment also revealed low rates of breastfeeding in the county. According to the report (Mid-Michigan District Health Department, 2011), the breastfeeding initiation rate was only 21.8% compared to 33.2% of women in the state, and a national breastfeeding initiation rate of 73% (CDC, 2007).
Equally important was the lack of local breastfeeding support groups located anywhere near the targeted community, or in the entire county.

As of May 2012, out of the nearly 3,000 birthing facilities in the United States, only 143 are certified as Baby-Friendly®. This represents around only 4% of all live births in the United States (CDC, 2010). There are currently 22 Baby-Friendly® hospitals in the Midwest, and out of these, only four are smaller community hospitals (have less than 500 deliveries per year). There is only one Baby-Friendly® hospital in the state of Michigan (Baby Friendly USA, 2010). Hospitals that have achieved the Baby-Friendly® designation have the highest rates of breastfeeding, which is why it is essential for the BFHI to target hospitals in rural communities in order to improve the overall health for the medically underserved infants, families, and populations (Baby Friendly USA, 2010). Through implementation of the Ten Steps to Successful Breastfeeding, an organization’s newborn policies and practices are improved, which can assist in decreasing health disparities among vulnerable populations that exist within rural communities (U.S. Preventive Services Task Force, 2003). Therefore, investment in a commitment to pursue Baby-Friendly® designation would be an effective way to utilize evidence-based practices to improve breastfeeding outcomes in this targeted organization and surrounding community.

**Organizational Characteristics**

Although the designated prenatal clinic is located in a rural community, it is affiliated with a local hospital that is part of a sizeable urban healthcare system in a large Midwestern city. The large non-for-profit health system is comprised of nine hospitals and 190 service sites which provide healthcare throughout the 13-county service area.
The mission for this healthcare organization is to improve the health of the communities it serves, with a vision to be a national leader for health by 2020. Striving toward achieving Baby-Friendly® designation directly aligns with the dedication of this healthcare organization to provide high quality care to improve the health of individuals and communities.

The designated local community hospital that is part of this larger healthcare organization has 62 total beds and averages around 400 births per year (B. Brasser, personal communication, March 21, 2012). The providers from the affiliated prenatal clinic are the only obstetricians that do deliveries at this community hospital.

The obstetrics and gynecology (OB/GYN) practice includes four physicians, a nurse practitioner (NP), and one physician assistant (PA) as healthcare providers. There is one registered nurse (RN) and two licensed practical nurses (LPNs) who work in this OB/GYN practice, along with four medical assistants, one lab technician, and four clerical staff (J. Parris, personal communication, March 21, 2012).

There is a total of approximately 14 OB visits per day in the office, averaging around 70 total prenatal visits each month (J. Parris, personal communication, March 21, 2012). Each provider sees his or her own OB patients in the office, and initial OB visits (which last 30 minutes) are seen on any given day, along with routine OB visits (lasting 10 to 15 minutes) at all different stages of pregnancy (J. Parris, personal communication, March 21, 2012). Prior to program implementation, the current practice during OB visits was for a healthcare provider to simply ask the patient, “do you plan to breastfeed or bottle feed?” at the first pregnancy visit. However, this is often the only time breastfeeding is mentioned or discussed with OB patients, as there was no further
breastfeeding education or discussion provided to patients during any other prenatal visits at the clinic after the initial pregnancy visit (J. Parris, personal communication, March 21, 2012).

**Targeted Population**

All pregnant patients who receive or seek treatment from the designated rural community prenatal clinic received breastfeeding education through the implementation of a prenatal education program (PEP). This is because the affiliated hospital required that all prenatal patients receive the necessary breastfeeding education and support in order to meet the criteria for step three of the BFHI (2010). Therefore, the targeted population for this PEP was all patients who were seen at the clinic, most of whom reside in the local community (J. Parris, personal communication, March 21, 2012).

The allotted time for the implementation phase of the PEP was approximately eight weeks. Data collection occurred during this time period, allowing for preliminary evaluation to determine the effect of the prenatal program components on breastfeeding knowledge, self-efficacy, and intent.

**Program Assessment Tools**

**Breastfeeding self-efficacy.**

Dennis and Faux (1999) developed the Breastfeeding Self-Efficacy Scale (BSES), a 33-item instrument that assesses breastfeeding self-efficacy in new mothers. Evidence for the reliability and validity of the BSES has been established in a sample of postpartum mothers (Dennis & Faux). However, this particular instrument is not appropriate for administering to women in the prenatal period since many of the questions which assess breastfeeding confidence require a woman to have actual
interaction with her baby (Wells et al., 2006). Being able to measure breastfeeding self-efficacy in the prenatal period would provide a worthwhile opportunity for breastfeeding promotional interventions since it is known that breastfeeding confidence prenatally is predictive of breastfeeding initiation and duration (Dennis, 2002; DiGirolamo et al., 2005).

To address this, Wells et al. (2006) reported on the development and initial psychometric testing of an instrument designed to specifically measure prenatal breastfeeding self-efficacy. The instrument is a 20-item self-report Likert scale method (Appendix A) with responses ranging from 1 (not sure) to 5 (completely sure). Possible overall scores range from 20 to 100, with higher scores indicative of greater breastfeeding self-efficacy (Wells et al., 2006). This instrument was created to assess “an individual’s judgment of her capability to organize and execute the causes of action required to perform breastfeeding behavior. In other words, the items measure whether the participants could obtain information, obtain support, deal with scheduling concerns, prepare milk for others to feed the baby, breastfeed around others, discuss breastfeeding with others, and breastfeed when others disapprove” (Wells et al., 2006, p. 179).

Results from the initial psychometric testing of this instrument by Wells et al. (2006) demonstrated internal consistency (Cronbach’s alpha = .89) and adequate content validity (with an index of .90). An average reading level of the entire 20-item scale was found to be at a grade of 5.4 with a range from grade 1.0 to 8.4, using Microsoft® Word to evaluate the total Flesch-Kincaid grade reading level (Wells et al., 2006). A factor analysis was performed by Wells et al. utilizing a maximum likelihood analysis with a varimax rotation. This factor analysis generated four factors with eigenvalues greater
than one, which indicated separate themes (Wells et al., 2006). There were seven items that loaded onto factor 1 (eigenvalue = 6.67) which all relate to the skills and demands that are involved in breastfeeding. Factor 2 had five items (eigenvalue = 1.82) that relate to the gathering of information about how to breastfeed. The five items which loaded onto factor 3 (eigenvalue = 1.44) all relate to breastfeeding around other people as well as any feelings of embarrassment during breastfeeding. Two items (factor 4; eigenvalue = 1.29) assess perceived social pressure when breastfeeding. According to Wells et al., the items loading onto each factor are summed in order to calculate four factor scores which allow the following possible ranges: factor 1: 7 to 35; factor 2: 5 to 25; factor 3: 4 to 20; and factor 4: 2 to 10. A second factor analysis was performed by Wells et al. which produced only one factor, showing that all items in the instrument were indeed measuring the one concept of breastfeeding self-efficacy.

Therefore, the instrument developed by Wells et al. (2006) was adapted and used in this project to assess prenatal breastfeeding self-efficacy. Questions 1-7 assessed environmental factors, such as whether the patient could breastfeed under certain conditions that may hinder breastfeeding. Questions 8-12 on the questionnaire were related to the gathering of information on how to breastfeed. Questions 13-16 concerned breastfeeding around other people and feelings of embarrassment about breastfeeding. The final subscale involved two questions (17-18) which assessed social pressure women may perceive when breastfeeding. Reliability coefficients were calculated for overall the Breastfeeding Self-Efficacy Questionnaire and for each subscale. The results are presented in Table 2.
Table 2

*Reliability Coefficients for the Prenatal Breastfeeding Self-Efficacy Questionnaire*

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<td>Overall Self-Efficacy</td>
<td>.89</td>
<td>.96</td>
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<tr>
<td>Environmental</td>
<td>.94</td>
<td></td>
</tr>
<tr>
<td>Information</td>
<td>.93</td>
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</tr>
<tr>
<td>Other</td>
<td>.86</td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>.97</td>
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**Breastfeeding knowledge.**

In addition to the 20 questions measuring breastfeeding self-efficacy, there were additional items added that were developed by the author to assess patient breastfeeding knowledge (Appendix B). Patients’ breastfeeding knowledge was assessed through asking questions which specifically address the BFHI (2010) criteria for content topics to include during the prenatal period. A prenatal breastfeeding education checklist (Appendix C) covering all Baby-Friendly® criteria for step three was placed in the patients’ charts for the healthcare provider (RN, LPN, or MA) to fill out when breastfeeding educational information is given at a prenatal visit.

Given that this assessment tool was created to evaluate the prenatal educational program, no previous reliability analyses exist. However, a reliability coefficient for these eight knowledge items was calculated following completion of the PEP. A Cronbach’s alpha coefficient of .90 was obtained. According to Polit and Beck (2011), reliability coefficients greater than .70 are acceptable for group comparisons.
In summary, the combined items resulted in an assessment tool (Appendix E) consisting of 28 items assessing breastfeeding self-efficacy and evaluation of knowledge gained for meeting evaluation criteria of step three for the BFHI (2010).

**Breastfeeding intent.**

A single item was used to assess patients’ intention to breastfeed. Assessing breastfeeding intent close to the time of the program implementation will increase sensitivity for determining the effectiveness of the PEP on patients’ breastfeeding goals (Rosen et al., 2008). At the first and second prenatal visit, patients were asked if they intended to do any breastfeeding after delivery. Patient responses (yes, no, undecided) were then recorded in the electronic medical record.

**Process**

**Procedure**

Prior to beginning this program, the nurses, care providers, and support staff at the designated prenatal clinic were informed of the project and received education about the BFHI, with emphasis on step three and the breastfeeding educational program for all prenatal patients at the clinic. Educational binders were created for the care providers containing evidence from the literature and relevant professional organizations on the importance of pursuing Baby-Friendly® designation and the demonstrated improvement in breastfeeding outcomes as a result of implementation of the Ten Steps to Successful Breastfeeding (Baby-Friendly USA, 2010).

A 90-minute presentation to the care providers of the affiliated prenatal clinic occurred prior to program implementation in order to review the content of the educational binders, and to discuss the evidence supporting the designation of BFHI.
(2010), breastfeeding prenatal education, and details surrounding implementation at the prenatal clinic. Once the healthcare providers were informed of the program plan and agreed to pursue Baby-Friendly® designation, all other care providers and support staff of the clinic were then educated on the prenatal breastfeeding program details. This occurred in two separate two-hour educational sessions in the form of slide presentations and discussion. Pocket cards were also distributed to all staff containing information on maternal, infant, and community benefits of breastfeeding as well as information on available community resources for additional breastfeeding support and education.

During the staff educational sessions, training occurred on how to provide supportive educational information to patients about breastfeeding, specifics on topics to cover during prenatal visits, the content of the educational information that would be given to patients, and resources for patient referrals for additional breastfeeding support (such as existing community health programs involving home visits; prenatal classes; phone numbers for local lactation specialists; and a breastfeeding support group). A copy of the slide presentations were distributed to all staff, and were placed in a binder in the office for quick-access referencing. The slides, with accompanying voice-recording offering additional educational information to each slide, were planned to be placed on the hospital organization’s online learning website within several months of program implementation. This would allow staff to access the information at any time for review, as well as for new staff to view so that they could receive this educational information in the future. However, due to organizational and time constraints, the educational information was not yet uploaded to the website at the time of the PEP implementation.
Program Content and Delivery

*Program content.* Breastfeeding educational information was on display and available in the prenatal clinic at all times in the form of handouts, brochures, and posters. Posters that were hung in the examination rooms provided positive messages about the benefits of breastfeeding, the importance of skin-to-skin contact, and available resources for breastfeeding support. The content on the posters was consistent with the written material that was given to patients regarding breastfeeding. Including displays of breastfeeding information on posters and in public waiting rooms of hospitals and clinics have been effective in increasing breastfeeding initiation rates (Simard et al., 2005; Zimmerman, 1999).

In addition, written material on breastfeeding, including booklets and brochures, were given to patients at their initial pregnancy visit. All of the education material given to patients was also explained at this visit. Topics covered in the PEP were congruent with the requirements for implementation of step three of the BFHI and included: (a) the benefits of breastfeeding; (b) the importance of exclusive breastfeeding for the first 6 months; (c) that breastfeeding continues to be important after 6 months when other foods are given; (d) non-pharmacologic pain relief methods for labor; (e) effective positioning and attachment; (f) explanation of the maternal-infant care practices of early skin-to-skin contact; (g) rooming in on a 24-hour basis; and (h) feeding on demand or baby-led feeding (BFHI, 2010). In accordance with the BFHI (2010) guidelines, all prenatal educational material provided to the patients was free of any messages promoting artificial feeding. During the PEP, patients were given an opportunity to ask any
questions about breastfeeding. Once all questions were answered, additional information on resources for breastfeeding education and support were be provided.

*Program delivery.* Previously, there was one LPN who did all of the initial pregnancy visits (known as OB teach visits) at this prenatal clinic, with the responsibility to provide prenatal education during this visit. However, due to organizational issues, initial pregnancy visits were sometimes completed by a RN, LPN, or medical assistant (MA) doing the initial pregnancy visit with the patient. Because of this variation, all clinical staff were educated on the specifics of educational content for the PEP to ensure consistency of breastfeeding information was delivered to the patients.

**Outcomes**

**Program Evaluation**

The PEP was designed to be an ongoing process continuing through the duration of a patient’s pregnancy. To evaluate the initial effectiveness of the program for the purpose of this dissertation project, patients filled out an assessment tool related to breastfeeding knowledge, self-efficacy, and intent before their initial obstetrical visit (referred to as the patient initial OB teach/nurse visit) and again at their next prenatal visit (referred to as their initial OB provider visit). Clinical and clerical staff at the clinic were provided with specific education regarding distribution and re-collection of the assessment tool, which was scanned into the patients’ electronic medical records. Both assessments were a part of the medical record and were reviewed retrospectively as part of the program evaluation process.

During the check-in process, each patient filled out the 28-item breastfeeding assessment tool prior to their initial obstetric visit. The same tool was given to patients to
fill out when they came for their next prenatal visit. This second visit was typically scheduled for approximately four weeks after the initial pregnancy visit.

Each time a breastfeeding questionnaire was completed, the front office staff member who collected it from the patient placed the assessment tool in the basket with other documents that needed to be scanned into the electronic medical record. All questionnaires had the patients’ stickers on both pages in order for them to be scanned in. Then, the medical records staff member scanned all papers from this basket into the charts electronically.

Data collection. An audit tool (see Appendix D) was used to collect specific information from the medical records before and after implementation of the prenatal education in order to determine if there was a significant difference. In addition to the 28 items on the breastfeeding questionnaire assessment tool (see Appendix E), the chart audit tool contained items related to pregnancy health characteristics and demographic data. Pregnancy health characteristics included number of pregnancies, previous breastfeeding experience, attendance of a prenatal class, and estimated due date. Demographic data included maternal age, race/ethnicity, marital status, and education. Available data with a description of these participant characteristics assisted in understanding subgroup effects (Polit & Beck, 2011). This type of pre- and post-program assessment allowed for the collection of comparative data to perform an initial program evaluation (Melnyk & Fineout-Overholt, 2011) for patients participating in the prenatal educational program over a three-month period.
Ethical Considerations

Human subject considerations were adhered to for this program evaluation project. This program involved implementation of an evidence-based practice educational intervention for infant nutrition. As such, there was minimal risk to patients who participated in the prenatal educational program and completed the assessment tools. Approval for exempt research protocol (see Appendix F) was obtained from the Human Research Review committee from Grand Valley State University (GVSU). A Health Information Patient Accountability Act (HIPAA) waiver for the hospital organization used in this project was signed as part of the routine educational practices of the agreement between GVSU and the affiliated healthcare organization.
CHAPTER 5
RESULTS

A targeted project objective was to work in collaboration with a healthcare organization to implement evidence-based practices for breastfeeding. Implementation of such a systems change provided an opportunity to enhance breastfeeding education and support through execution of the BFHI (2010) Ten Steps to Successful Breastfeeding (Merewood et al., 2005). Specifically, the focus of this project was to implement step three of the BFHI guidelines in a prenatal setting and then assess whether education and support from healthcare providers made a difference in breastfeeding self-efficacy, knowledge, and intent among pregnant women using a retrospective chart review process.

Data analysis were completed using Statistical Package for Social Sciences (SPSS) software. Bivariate procedures were used to explore differences in breastfeeding knowledge, self-efficacy, and intent before and after program participation. The level of significance was set at $p < .05$ for all statistical procedures.

**Patient Demographics**

During the allotted time span of this program evaluation phase, a total of 54 prenatal patients were seen at the designated clinic. Of the 54 women, 53 were non-Hispanic Caucasians while one patient was of Hispanic descent. The sample of 54 patients ranged in age from 16 to 38 years ($M = 24.78$ years; $SD = 5.77$). Approximately half (51.9%) of the sample was single, while the remaining participants (48.1%) reported being married.
Among the 54 women, 50% were primiparas. One quarter of the sample (25.9%) had a parity of 1. As expected, most of the women were in their first trimester (74.1%). Gestational age at the time of the initial prenatal visit ranged from five weeks to 30 weeks, with a mean of 78.13 days, or 11 weeks gestation (SD = 43.27 days). Out of all the pregnant women in this sample, there was one patient who had a personal history of a postpartum hemorrhage as well as a family history of breast cancer. There was another patient who had previous chest or breast surgery or breast trauma. However, none of the pregnant women reported having concerns about their breasts and/or breastfeeding.

**Pre-Intervention Assessment**

**Breastfeeding Knowledge**

The eight items of the knowledge scale were summed to assess perceptions of overall breastfeeding knowledge. Since three women did not respond to some of the knowledge questions, these were considered missing data. Therefore, overall breastfeeding knowledge scores were available for 51 pregnant women. Total scores for breastfeeding knowledge ranged from 8 to 40 (M = 31.65, SD = 8.34). Approximately 41% (22 women) scored 37 or higher on the breastfeeding knowledge section of the questionnaires, with 9 women (16.7%) having a maximum knowledge score of 40. However, five women (10%) scored 20 or lower on overall breastfeeding knowledge.

A rank order of the eight knowledge items was examined to determine perceived areas of greatest and least confidence among the women concerning their knowledge of breastfeeding. The area patients felt most confident about their knowledge was related to the importance of skin to skin contact (M = 4.38, SD = 1.113). Areas of breastfeeding knowledge patients felt the least confident in were the importance of rooming-in with
their baby (M = 3.54, SD = 1.614); different positions to use during breastfeeding and how to tell if their baby is latched on correctly (M = 3.45, SD = 1.682); and knowledge regarding methods of pain control when in labor (M = 3.40, SD = 1.536). The rank order results are displayed in Table 3.

Table 3

*Rank Order of Breastfeeding Knowledge Items*

<table>
<thead>
<tr>
<th>Knowledge item</th>
<th>f</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Know importance of skin to skin contact</td>
<td>53</td>
<td>4.38</td>
<td>1.130</td>
</tr>
<tr>
<td>Know importance of breastfeeding soon after delivery</td>
<td>53</td>
<td>4.23</td>
<td>1.154</td>
</tr>
<tr>
<td>Know that breastfeeding is important even after 6 months when other foods are given</td>
<td>53</td>
<td>4.13</td>
<td>1.177</td>
</tr>
<tr>
<td>Know more frequently breastfeed, sooner the milk comes</td>
<td>52</td>
<td>4.08</td>
<td>1.341</td>
</tr>
<tr>
<td>Know impact of giving anything other than breast milk for first 6 months</td>
<td>53</td>
<td>4.00</td>
<td>1.359</td>
</tr>
<tr>
<td>Know importance of rooming-in</td>
<td>52</td>
<td>3.54</td>
<td>1.614</td>
</tr>
<tr>
<td>Know different positions to use and how to tell if proper latch</td>
<td>53</td>
<td>3.45</td>
<td>1.682</td>
</tr>
<tr>
<td>Know types of things can do to control pain in labor</td>
<td>53</td>
<td>3.40</td>
<td>1.536</td>
</tr>
</tbody>
</table>

Note. Frequency does not equal 54 due to missing data.
Breastfeeding Self-Efficacy

Pre-intervention assessment scores for overall breastfeeding self-efficacy ranged from 20 to 100, with a mean score of 83.51 (n = 53, SD = 18.78). There were six women (11.1%) that had the maximum score of 100 and 28 out of 53 women (51%) had a score of 90 or higher for overall breastfeeding self-efficacy.

Environmental skills and demands. There were seven items related to assessing the effect of physical environmental conditions on breastfeeding (such as being busy, tired, upset, experiencing discomfort, using a breast pump, managing preparation of breast milk for others to feed their baby). Both possible and actual scores ranged from 7 to 35. The mean score in this category was 28.11 (SD = 8.22), suggesting a moderately high degree of confidence in this area. There were 16 women (29.6%) who had maximum scores of 35 for this subscale, with 51% of the women having a score of 35 or higher. However, it is important to note that three women (5.6%) had the minimum self-efficacy score of 7 in this area.

Gathering information on breastfeeding. The five items on this subscale related to knowing who to talk to and where to go in order to get help, as well as who could provide support for breastfeeding. Possible scores in this subscale ranged from 5 to 25. The actual scores ranged from 5 to 25 and the mean score was 21.91 (SD = 4.81). Two women (3.7%) had the minimum score of 5. There were 25 women (46.3%) who had a maximum score of 25 for this subscale.

Breastfeeding around others. There were four items that related to breastfeeding around other people and feelings of embarrassment during breastfeeding. When the items were summed, possible scores could range from 4 to 20. The average
scores for this breastfeeding self-efficacy subscale was 15.83 (SD = 4.42), with almost one-quarter (24.1%, n = 13 women) with a maximum score of 20. Approximately 5.6% of the group (three women) had the minimum score of four for this subscale.

**Social pressure.** Two items assessed social pressure from others that women may perceive when breastfeeding: (1) feeling that they can choose to breastfeed even if their partners do not want them to, and (2) feeling that they can choose to breastfeed even if their family does not want them to. The possible scores for this subscale ranged between 2 and 10. The mean score for these two items was 9.40 (SD = 1.62), with the majority of women (n = 41; 75.9%) scoring the maximum value of 10 for this category.

**Breastfeeding Intent**

Upon initial assessment, 34 women reported that they intended to breastfeed (63%) their baby. In contrast, 20 women (37%) stated that they either did not intend to breastfeed or were undecided at the time of the pre-intervention assessment.

The demographic data of the women were analyzed to determine if there were differences by breastfeeding intent. There were not any significant differences found related to age or gestational age for the 20 women who did not intend to breastfeed when compared to the other 34 women.

However, there was a significant difference found between the women related to their number of pregnancies and births. Based on the results, women who reported no intention of breastfeeding were significantly lower gravida (t = 2.38; df = 49; p = .04) and parity (t = 2.05; df = 52; p = .04) status.

Independent t-tests were also performed to explore differences in knowledge and self-efficacy scores between the 34 women who intended to breastfeed at the pre-
intervention assessment and the 20 women who were either undecided or who did not
intent to breastfeed. It was found that the women who intended to breastfeed had
significantly higher overall breastfeeding self-efficacy scores (M = 88.90; t = 2.52; df = 
23; p = .02) and breastfeeding knowledge (M = 34.18; t = 2.83; df = 25; p = .009) scores.
They also had higher scores in the breastfeeding self-efficacy subscales of environmental
factors (t = 2.84; df = 26; p = .009) and breastfeeding around others (t = 2.58; df = 27; p = 
.02). Table 4 shows the differences in scores by breastfeeding intent.

Table 4

Comparison of Breastfeeding Knowledge and Self-Efficacy Scores by Intent (Pre-
Intervention Assessment Group)

<table>
<thead>
<tr>
<th>Scale</th>
<th>Intent</th>
<th>M</th>
<th>SD</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breastfeeding</td>
<td>Yes</td>
<td>88.90</td>
<td>12.1</td>
<td>2.52</td>
<td>23</td>
<td>.02</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>No</td>
<td>73.80</td>
<td>24.4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge</td>
<td>Yes</td>
<td>34.18</td>
<td>6.31</td>
<td>2.83</td>
<td>25</td>
<td>.009</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>27.00</td>
<td>9.70</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental BFSE subscale</td>
<td>Yes</td>
<td>30.61</td>
<td>6.07</td>
<td>2.84</td>
<td>26</td>
<td>.009</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>23.60</td>
<td>9.72</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information BFSE subscale</td>
<td>Yes</td>
<td>23.02</td>
<td>2.61</td>
<td>1.91</td>
<td>21</td>
<td>.07</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>19.90</td>
<td>6.90</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others BFSE subscale</td>
<td>Yes</td>
<td>17.05</td>
<td>3.42</td>
<td>2.58</td>
<td>27</td>
<td>.02</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>13.60</td>
<td>5.20</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social BFSE subscale</td>
<td>Yes</td>
<td>9.76</td>
<td>.60</td>
<td>1.77</td>
<td>19</td>
<td>.09</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>8.70</td>
<td>2.49</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Post-Intervention Assessment

There were 19 (35%) of the 54 women who completed a post-intervention assessment. These 19 pregnant patients completed an assessment prior to participating in the prenatal education program (time 1) and then filled out a second questionnaire at their next prenatal visit (time 2). Paired Samples t-tests were performed to see if an improvement was made between time 1 and time 2 related to breastfeeding knowledge, self-efficacy, and intent.

Patient Demographics

All 19 women who filled out the post-intervention assessment were non-Hispanic Caucasians, ranging in age from 16 to 38 years (M = 25 years, SD = 7.27 years). However, 50% of the participants were less than 23 years of age. Out of the 19 women, there were seven pregnant mothers between the ages of 16 and 19 years. Nine of the mothers were married and 10 of them were single. Primiparas comprised 53% (n = 10) of the group and gestational age at time 1 ranged from four weeks to 21 weeks, with an average of approximately 9 weeks gestation (M = 67.6 days, SD = 30.72 days). Gestational age of the women at time 2 ranged from 7 weeks to 24 weeks (M = 97.2 days; SD = 31.38 days). There were no significant correlations found with age and any other variables of interest.

Breastfeeding Knowledge

Among this subgroup of women, breastfeeding knowledge scores ranged from 13 to 40 (M = 33.0; SD = 7.87) at time 1. At time 2, actual scores ranged from 17 to 40 (M = 34.39; SD = 6.49). Although there was a slight improvement in mean scores from time 1 to time 2, there was not a statistically significant difference found in overall
breastfeeding knowledge ($t = -1.840; df = 17; p = .083$). However, it was found that the knowledge scores of women intending to breastfeed were significantly higher than for the women who were undecided about whether or not they were going to breastfeed at Time 1 ($M = 35.57$ vs. $M = 25.80$; $SD = 5.88$; $t = 2.797; df = 17; p = .012$) and at Time 2 ($M = 36.38$ vs. $M = 29.20$; $SD = 5.20$; $t = 2.372; df = 16; p = .031$).

A Wilcoxon Signed Ranks test was done to test whether differences existed in how the 19 women ranked the items on the assessments from Time 1 to Time 2. Based on the results, there was only one area in which a difference was found. These results suggest that a mother’s confidence in knowledge related to the impact of giving her baby anything other than breast milk for the first six months of life improved following participation in the PEP ($Z = -2.121; p = .034$).

**Breastfeeding Self-Efficacy**

Information from the 19 women were analyzed to determine if there were any differences in breastfeeding self-efficacy after participating in the PEP. The paired data were analyzed for differences in overall breastfeeding self-efficacy as well as on separate components. Paired t-Tests were performed to determine differences in scores from Time 1 to Time 2. A Wilcoxon Signed Ranks test was used to examine individual item differences.

**Overall breastfeeding self-efficacy.** When comparing the overall breastfeeding self-efficacy scores for the 19 women, there was an improvement seen between Time 1 ($M = 90.89$, $SD = 10.29$) and Time 2 ($M = 92.05$, $SD = 8.72$). However, the results were not statistically different ($t = -1.690; df = 18; p = .108$). This finding suggests that participating in PEP did not significantly improve overall breastfeeding self-efficacy.
Environmental skills and demands. Actual scores ranged from 21 to 35 at Time 1 and from 22 to 35 at Time 2 for the subscale which addressed the effect of physical environmental conditions on breastfeeding. Although there was a slight improvement between Time 1 (M = 31.42, SD = 4.71) and Time 2 (M = 32.11, SD = 4.0), it was not statistically significant (t = -1.950; df = 18; p = .067).

Gathering information on breastfeeding. With possible scores in this category ranging from 5 to 25, the actual scores ranged from 17 to 25 at both pre-intervention and post-intervention assessments. Although there was a slight improvement, between Time 1 (M = 23.53, SD = 2.57) and Time 2 (M = 24.0, SD = 2.08), the results were not statistically significant.

Breastfeeding around others. Possible scores were 4 to 20 for the items assessing a woman’s feelings of embarrassment about breastfeeding around others. Range of actual scores for this group both at Time 1 and Time 2 was 10 to 20. There was not improvement shown in mean scores between Time 1 (M = 17.21; SD = 2.95) and Time 2 (M = 17.32; SD = 2.79) for this area of breastfeeding self-efficacy. These results suggest that the women were confident in their ability to breastfeed around others prior to their participation in the PEP. Moreover, this degree of confidence was maintained after their PEP participation.

Social pressure. Possible scores ranged from 2 to 10 for this subscale and actual scores ranged between 8 and 10 for both Time 1 and Time 2. There was no significant difference found. In fact, actual scores remained unchanged in this subgroup from Time 1 to Time 2 (M = 9.68; SD = .749).
When completing an item analysis, the Wilcoxon Signed Ranks procedure found only one area of significance between Time 1 to Time 2 in the environmental skills and demands subscale. Based on the results, women had greater confidence in their ability to breastfeed even when tired after participating in the PEP ($Z = -2.00; p = .046$).

**Breastfeeding Intent**

The majority of the PEP participants ($n = 14; 74\%$) had reported an intention to breastfeed during the initial assessment, while the remaining participants were undecided ($n = 5; 26\%$). Following the PEP, 13 women continued to report a positive intention to breastfeed; one woman did not respond to this question at Time 2. In addition, the five women who were undecided about breastfeeding at Time 1 remained undecided at Time 2. Chi-square analysis was used in order to examine breastfeeding intent among patients after they received breastfeeding education compared to their self-reported breastfeeding intent before they received any breastfeeding education. No significant differences were found. However, all five women who were undecided about their breastfeeding intent were primiparas.

Independent t-tests were performed to examine differences in breastfeeding knowledge and self-efficacy by breastfeeding intent between the 13 women who planned to breastfeed and the 5 women who reported they were undecided about whether or not they were going to breastfeed. A summary of the results are presented in Table 5.
Table 5

Comparison of Breastfeeding Knowledge and Self-Efficacy Scores by Intent

<table>
<thead>
<tr>
<th>Scale</th>
<th>Intent</th>
<th>M</th>
<th>SD</th>
<th>( t )</th>
<th>df</th>
<th>( p )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breastfeeding Knowledge</td>
<td>Yes</td>
<td>35.57</td>
<td>5.88</td>
<td>2.797</td>
<td>17</td>
<td>.012</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>25.80</td>
<td>8.87</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breastfeeding Knowledge</td>
<td>Yes</td>
<td>36.38</td>
<td>5.20</td>
<td>2.372</td>
<td>16</td>
<td>.031</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>29.20</td>
<td>7.16</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breastfeeding Self-Efficacy</td>
<td>Yes</td>
<td>93.71</td>
<td>8.28</td>
<td>2.202</td>
<td>17</td>
<td>.042</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>83.00</td>
<td>12.17</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breastfeeding Self-Efficacy</td>
<td>Yes</td>
<td>94.36</td>
<td>7.63</td>
<td>2.103</td>
<td>17</td>
<td>.051</td>
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<td></td>
<td>No</td>
<td>85.60</td>
<td>9.07</td>
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<td></td>
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<tr>
<td>Environmental BFSE subscale</td>
<td>Yes</td>
<td>33.14</td>
<td>2.41</td>
<td>3.336</td>
<td>17</td>
<td>.004</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>26.60</td>
<td>6.43</td>
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<td></td>
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<tr>
<td>Environmental BFSE subscale</td>
<td>Yes</td>
<td>33.57</td>
<td>2.21</td>
<td>3.348</td>
<td>17</td>
<td>.004</td>
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<td></td>
<td>No</td>
<td>28.00</td>
<td>5.24</td>
<td></td>
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<td></td>
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<tr>
<td>Information BFSE subscale</td>
<td>Yes</td>
<td>23.64</td>
<td>2.76</td>
<td>.323</td>
<td>17</td>
<td>.751</td>
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<td></td>
<td>No</td>
<td>23.20</td>
<td>2.17</td>
<td></td>
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<tr>
<td>Information BFSE subscale</td>
<td>Yes</td>
<td>23.93</td>
<td>2.37</td>
<td>-.244</td>
<td>17</td>
<td>.810</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>24.20</td>
<td>1.10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others BFSE subscale</td>
<td>Yes</td>
<td>18.14</td>
<td>1.99</td>
<td>2.662</td>
<td>17</td>
<td>.016</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>14.60</td>
<td>3.85</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Others BFSE subscale</td>
<td>Yes</td>
<td>18.14</td>
<td>2.14</td>
<td>2.442</td>
<td>17</td>
<td>.026</td>
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<tr>
<td></td>
<td>No</td>
<td>15.00</td>
<td>3.32</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social BFSE subscale</td>
<td>Yes</td>
<td>9.71</td>
<td>.73</td>
<td>.589</td>
<td>17</td>
<td>.779</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>9.60</td>
<td>.98</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social BFSE subscale</td>
<td>Yes</td>
<td>9.71</td>
<td>.73</td>
<td>.589</td>
<td>17</td>
<td>.779</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>9.60</td>
<td>.98</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
According to the results, women who intended at both time points had higher mean scores for several of the outcome variables. There were statistically significant differences found for the areas of overall breastfeeding knowledge and for breastfeeding self-efficacy, as well as for the self-efficacy subscale of breastfeeding around others for those who intended to breastfeed compared to those that were undecided.

**Observations Related to Pre- and Post- Intervention Assessment Groups**

Additional data analysis were performed to determine if there were any differences in scores between those who did the post-intervention assessment and those who did not. Women who did not complete the post-intervention assessment at Time 2 had statistically significant lower mean scores for overall breastfeeding self-efficacy at the pre-intervention assessment (M = 79.9; SD = 21.17; t = -2.41, df = 51 p = .02) than those who did fill out the post-intervention assessment (M = 90.39; SD = 10.34). This suggests that the 35 mothers who only filled out the pre-intervention assessment breastfeeding questionnaire had significantly lower perceptions of their breastfeeding self-efficacy at the time of their first prenatal visit than those who filled out two sets of breastfeeding questionnaires.
CHAPTER 6
DISCUSSION

The purpose of this scholarly project was to implement an evidence-based intervention designed to improve breastfeeding knowledge, self-efficacy and intent. In addition, it provided an opportunity to collaborate with a healthcare institution that wanted to pursue the BFHI designation pathway. This chapter will discuss accomplishments and challenges that were encountered during program development and implementation in accordance with structure, process, and outcomes related to the PEP intervention. In addition, a summary of the limitations will be addressed. Finally, effectiveness, feasibility and sustainability of the project along with the Doctor of Nursing Practice (DNP) roles related to project implementation and recommendations will be analyzed.

**Donabedian and Breastfeeding Self-Efficacy Theory**

The conceptual framework of Donabedian (1997) categorized healthcare in terms of structures, processes, and outcomes and provided a useful clinical perspective to implement system change. Assessment of effectiveness was done through the quality indicators of structures, processes, and outcomes which were the organizational structural elements of the program planning, implementation, and evaluation for Step 3 of the BFHI. Donabedian’s model, integrated with breastfeeding self-efficacy theory provided the guiding conceptual framework for the overall program as a means of health promotion to improve breastfeeding outcomes. Dennis’s (1999) breastfeeding self-efficacy theory was used as a complementary framework to guide program implementation and evaluation, since breastfeeding self-efficacy has been found to be a
strong predictor of breastfeeding initiation, duration, and exclusivity (McQueen et al., 2011; Nichols et al., 2009).

Using the conceptual framework of Donabedian (1997) as a guide, outcomes will be explored through discussion of the PEP results. Additionally, overall evaluation will also be done through examination of the structure and process as they relate to program development, implementation, and evaluation.

Outcomes

The purpose of this prenatal educational program was to improve breastfeeding knowledge, self-efficacy, and intent among pregnant women at the designated prenatal clinic. Self-report measures were included in prenatal visits at two time points that evaluated breastfeeding knowledge, self-efficacy, and intent.

Breastfeeding knowledge. The pre-intervention assessment knowledge scores indicated that the majority of women in the group felt confident about their breastfeeding knowledge related to the BFHI criteria for Step 3. This is consistent with previous literature that insufficient knowledge related to the benefits of breastfeeding is rarely the reason for decreased breastfeeding initiation or duration rates; rather, other barriers exist which mainly contribute to a woman’s decision to breastfeed (Brownell, Hutton, Hartman, & Dabrow, 2002). Also, according to Breastfeeding Self-Efficacy Theory (Dennis, 1999), having knowledge about the benefits of breastfeeding is only a small contributing factor within the four sources of information (personal accomplishments, vicarious experiences, verbal persuasion, and psychological and affective states) that influence a woman’s confidence in her ability to breastfeed.
The rank order for the knowledge items showed that knowing the importance of skin to skin contact and knowing the importance of breastfeeding soon after delivery were areas with the greatest knowledge. In contrast, knowing the importance of rooming-in and knowing different positions to use for breastfeeding, and knowing how to determine proper latch were areas of least knowledge. This was not surprising; common barriers cited for decreased breastfeeding rates are lack of previous breastfeeding experience and perceived difficulty with breastfeeding (Dennis, 2002; MacGregor & Hughes, 2010). Given the results of the rank order for women’s confidence in the breastfeeding knowledge items especially concerning rooming-in, latch and positioning, and pain relief methods in labor may be areas to prioritize and focus on in future prenatal breastfeeding education.

For the post-intervention assessment, there was not improvement seen in overall breastfeeding knowledge scores among the women. Therefore, there was no evidence that the PEP improved overall breastfeeding knowledge over the course of the eight week timespan between prenatal clinic visits. Interestingly, though, at both the pre-intervention and the post-intervention assessments, the women who intended to breastfeed had a higher overall confidence in their knowledge of breastfeeding compared to women who were undecided about breastfeeding. This correlates with the evidence that some of the known predictors of breastfeeding intent are maternal knowledge of breastfeeding benefits, and perceived behavioral control and confidence of breastfeeding success (Chertok et al., 2011; DiGirolamo et al., 2005).

**Breastfeeding self-efficacy.** Overall breastfeeding self-efficacy scores for the 54 women in the pre-intervention assessment group were relatively high, considering that
the mean score out of a possible 100 was 83.51 (SD = 18.78), with 51% of the women scoring a 90 or higher. Results of the post-intervention assessment showed that out of the group of 19 women, there was not improvement found in overall breastfeeding self-efficacy or in any of the subscales.

A notable finding was the difference in breastfeeding self-efficacy scores between those who only filled out the pre-intervention assessment and those who filled out the two sets of questionnaires. Since the 35 women who only filled out the pre-intervention assessment had significantly lower confidence in their breastfeeding ability (self-efficacy), it is difficult to know whether or not the PEP would have made a difference for that group.

Results did not indicate that the prenatal educational program made a difference in overall breastfeeding self-efficacy. However, there were higher levels of breastfeeding self-efficacy among women who intended to breastfeed compared to those who were undecided about breastfeeding. It is recognized that due to the small sample size, assumptions cannot be made regarding the difference in breastfeeding self-efficacy outcomes as a result of the PEP. However, findings of this program evaluation are consistent with other empirical findings that women who intend to breastfeed have higher breastfeeding self-efficacy scores (Mitra et al., 2004; Wambach, 1997; Wilhelm et al., 2008).

**Breastfeeding intent.** It is important to note that none of the women who planned to breastfeed changed their minds about breastfeeding intent over the course of the PEP. This is consistent with findings from the literature suggesting that most women decide on their method of infant feeding prior to the end of their first trimester, if not
even before they become pregnant (Noble et al., 2003; Wells et al., 2006). Although the sample size is too small to make inferences about the general population, it is noteworthy to point out that five out of the six mothers in the post-intervention assessment group who were undecided about breastfeeding intent were primiparas. Also, in the pre-intervention assessment group, women who did not intend to breastfeed (or were undecided) were of lower parity. These findings coincide with evidence from the literature regarding increased parity is positively correlated with breastfeeding intent, especially when women have had prior personal experience breastfeeding (Chertok et al., 2011; Saunders-Goldson & Edwards, 2004). Therefore, a suggested area of concern to target is first-time mothers who are undecided about breastfeeding, since focusing interventions on improving breastfeeding self-efficacy before pregnancy or early in the prenatal period has been shown to modify a woman’s confidence in her ability to breastfeed (Dennis, 2003).

For those women who were undecided about breastfeeding, the scores were lower for each of the subscales as well as for overall breastfeeding self-efficacy and breastfeeding knowledge, when compared to women who planned to breastfeed. This suggests that the women who were undecided about breastfeeding had less confidence about breastfeeding knowledge and breastfeeding self-efficacy than the women who intended to breastfeed. These differences related to breastfeeding intent were found in both the pre-intervention and post-intervention assessments. Evidence from the review of literature supports these data findings, since known predictors of breastfeeding intent are maternal knowledge of breastfeeding and breastfeeding self-efficacy. Both of these known predictors are modifiable which is why targeting breastfeeding self-efficacy and maternal breastfeeding knowledge in the prenatal period are of utmost importance, so that
women can be positively influenced on breastfeeding intent (Chertok et al., 2011; DiGirolamo et al, 2005; Saunders-Goldson & Edwards, 2004).

**Structure**

The physical location of the program implementation was a prenatal clinic that is affiliated with a local community hospital. Support from all stakeholders was necessary before even beginning the pursuit of the Baby-Friendly® designation. Individual meetings took place with a BFHI steering committee, which functioned as a workgroup throughout the designation process. Eventually, individual meetings and presentations occurred with the four practicing obstetricians from the affiliated clinic, the office practice manager, and the entire office staff to discuss the BFHI designation process at this specific organization. Included in the discussions were foreseeable barriers, concerns, and ideas for project implementation. Additional meetings to discuss the BFHI included those with the hospital president and medical executive committee. The Chief Nursing Officer (CNO) of the hospital organization served as the executive sponsor and represented the senior leadership team on the BFHI steering committee. Once all stakeholders were on board, the BFHI designation journey was initiated.

A significant challenge initially involved some miscommunication between hospital staff, leadership, and the obstetricians regarding what the BFHI was really about, and whether or not it should be pursued. Without stakeholder understanding, support, buy-in, and approval, project development and implementation would be jeopardized. As a result, this “approval phase” in the BFHI process took much longer than anticipated. Initially, there were misconceptions surrounding what the purpose of the initiative was, and if it was going to seem as if the organization was “forcing” women to breastfeed.
Once the obstetricians were approached as a collective group, heard the BFHI presentation, and were allowed to collaborate with their ideas, they were fully supportive of the initiative and agreed to proceed on the BFHI designation pathway. All stakeholders came to the understanding that the BFHI is not about forcing women to breastfeed, but rather it is about providing them with the evidence-based educational information that they deserve to then make an informed decision.

A crucial element to program design and planning was gaining buy-in from all of the key stakeholders as well as having full support and engagement from a senior executive. This is necessary in order to fully support and implement a systems-level change such as the BFHI. The CNO was supportive of the BFHI at the designated organization, was dedicated to driving this implementation, and was the executive sponsor from the senior leadership team on the BFHI steering committee. This key involvement of the CNO was instrumental in facilitating an organizational climate ready for systems change such as the BFHI. Analogously, a fundamental component of implementation science is that the dynamic interplay between organizations and individuals affects readiness for implementation. Leadership engagement is a crucial factor in implementation because of the commitment, involvement, and accountability of leaders that can contribute power and influence to the implementation process (Damschroder et al., 2009).

**Process**

The DNP student along with another employee of the affiliated healthcare organization (who was a certified dietician and an international board-certified lactation consultant (IBCLC) provided all of the education to the staff. Education was provided to
the nurses, care providers, and support staff at the prenatal clinic in the form of a slide presentation, lecture, video, and discussion. The staff members were educated on how to provide supportive educational information to patients about breastfeeding, specifics on which topics to cover during specific prenatal visits (throughout the entire pregnancy), content of educational information that would be given out to patients, and resources for patient referrals for additional breastfeeding support. A competency tool was developed for staff and a process for putting educational information online so that staff could access it on a regular basis was being put into place. A challenge related to this part of the process development was that the staff were given the two educational sessions as well as written materials to use as resources, but there was not a method in place to verify how well the staff was doing at what they learned in these educational sessions, which was how to provide the patients with breastfeeding education and support. The DNP student and the IBCLC were available resources to the staff and healthcare providers if they had any questions or concerns during the program implementation process. Additionally, the initial prenatal OB teach visits were either done by an RN, LPN or a MA. There was not a process to ensure consistency of information and messages given to patients, between the various staff members.

Evidence from the literature suggests a variety of methods and content topics to include in prenatal education about breastfeeding. Unfortunately, electronic media and video was not a part of this program content at the time of initial implementation, due to time and financial constraints. Also, the posters that were in the waiting rooms and individual patient rooms had to be taken down toward the end of the data collection phase, due to Occupational and Health Safety Administration (OSHA) codes regulating
that all posters must be in laminated form if they are to be located in patient rooms. Therefore, the posters had to be taken down and there was a time lapse in which no visual aids were on display in the office, while replacement posters were developed by the marketing department.

A main shortcoming of this program evaluation involved the processes surrounding collection of the preliminary data. The two questionnaires were given out to the patients close together (four weeks apart on average). The questionnaires were administered this way because the data had to be collected in a short time span due to pre-agreed upon logistics of this scholarly project. The challenges that resulted were multi-factorial.

After the first week that patients began filling out their second breastfeeding questionnaire when they came to the office for their OB provider visit, the staff voiced concerns that some of the patients were complaining that they had to fill out the questionnaires so close together (e.g. “why am I filling this out again? I just did one of these at my other appointment last time I was here”). One of the obstetricians also expressed concern that one of her patients had complained that the surveys were being given out too close together. Discussions occurred with the office staff and with the obstetricians via e-mail and face-to-face regarding the logistics of the preliminary program evaluation and the breastfeeding questionnaires. It was confirmed that the first set of breastfeeding questionnaires would be given out to patients before they were seen for their initial prenatal OB teach visit, and the second set of breastfeeding questionnaires would continue to be given out to patients at the next visit (their OB provider visit)
through the pre-agreed upon time frame, which was the duration of the data collection phase of this program evaluation project (a total time span of 8 weeks).

There were a total of 60 patients that were on the list (kept by the LPN and MA who do the initial prenatal OB teach visits) as having been seen for their prenatal OB teach visit during the time span of the data collection phase of this project. The initial prenatal OB teach visit is the appointment when patients filled out the pre-intervention assessment. Upon performing the retrospective chart review, it was discovered that many of the patients who were on the list as having had their initial prenatal OB teach visits only had the first questionnaire in their charts while the second one was missing. As a result, there were 34 patients from the list that were missing second questionnaires, and six patients did not have questionnaires in their charts at all. Conceivable reasons for some of the missing questionnaires according to the initial list of 60 possible patients include missed appointments or patients who had miscarriages. Nevertheless, an explanation for the considerable number of patients who filled out the pre-intervention assessments but not the second set of post-intervention assessments, was not identified.

The reason for the breakdown in program processes is not well understood. As part of their educational sessions, all staff and healthcare providers were educated on the processes involved with the breastfeeding assessment questionnaires, and which specific prenatal visits these would be distributed. Education also included a separate meeting with the individuals doing the initial pregnancy visit and the front office staff members who were responsible for handling distribution and collection of paperwork that was part of the medical record. When questioned about the data collection processes, the various staff members involved in the PEP process all stated that the surveys had been
administered to all pregnant patients at the designated visits (the initial OB teach visit and the initial OB provider visit). They reported that the breastfeeding questionnaires were being collected, put into the designated basket, and then scanned into the electronic medical records, according to proper procedure protocol. As such, a reason for the missing post-intervention assessments was not found. Additionally, depending on staffing needs and ill calls, there was inconsistency between who was staffing the front office and medical records on a daily basis. A weakness in the design of the program evaluation was that success of the processes surrounding implementation relied on the skill, cooperation, and attention to detail on the part of multiple individuals who were a part of the support staff in the clinic. Other confounding factors may also have been present at the organizational or individual level.

**Limitations**

Challenges faced for this prenatal educational program were embedded in larger barriers that existed at the structure level, in that systems change was multi-faceted and dependent upon effective buy-in collaboration between the stakeholders: individuals and teams at all levels within the organization. Lack of effective and accurate communication at the beginning stages from numerous levels can contribute to a loss of autonomy for outside individuals attempting to collaborate with those embedded in an organization on program design. The time allotted may not have been sufficient for cultivation of stakeholder buy-in, staff development, and program implementation required in the pursuit of the BFHI designation pathway.

Methodological limitations were associated with processes surrounding the administration of the breastfeeding questionnaires and the collection of the preliminary
data for program evaluation. Although the exact point where the breakdown in communication and process flow was not identified, it is clear that further evaluation of program processes must occur in order to identify solutions to improve program implementation and evaluation methods. Multiple training sessions with all staff on the exact plan for distribution, collection, and scanning of questionnaires into the medical records may offer a way to ensure better consistency and follow-through by all staff members in the data collection process.

Administering the breastfeeding questionnaires in close proximity may have prevented the ability to uncover differences in breastfeeding outcomes. The four-week timespan between administering of the questionnaires may not have been sufficient to allow for a true reflection of rates of breastfeeding knowledge, self-efficacy, and intent. There was also the possibility of response bias as patients filled out the breastfeeding questionnaires in that they may have given more favorable responses in order to be perceived as adept mothers.

A final limitation was the number of patients who participated in the PEP and completed two sets of questionnaires. The methodological limitations contribute to this aspect, but considering the structural setting of the project, the numbers would have improved only slightly.

There are several other considerations that were discovered upon the retrospective chart review. Other contributing factors to a smaller sample size were that some patients could have had spontaneous abortions (SAB) and were no longer pregnant at the time they should have come to the office for their second OB provider visit, eliminating the need to complete a second questionnaire. Also, there were patients that did not show up
for their second OB provider visit so they never filled out that second questionnaire (personal communication, K Vander Myde, August 28, 2012). There was not a system in place to ensure that all pregnant patients had filled out two sets of questionnaires. Instead, at a specified start date of the program, from that point on, all prenatal patients were given a breastfeeding questionnaire to fill out before their initial OB teach visit, and then were given the second questionnaire when they arrived for their next visit, which was the OB provider visit.

**Program Recommendations**

Continued program benefits can be measured through tracking breastfeeding outcomes as well as continuous re-evaluation of the organizational climate and culture regarding the BFHI designation process. Within implementation science, program sustainability is dependent upon the multi-faceted influences of the innovation characteristics, the organizational and systems level context (culture, climate, leadership), capacity of resources (funding, stakeholder support), and the processes and interactions involved with implementation and evaluation (Stirman et al., 2012). Re-evaluation of the PEP processes, barriers, and facilitators is necessary to engage in collaborative efforts for program improvement and sustainability. Continued engagement by nursing leadership and key stakeholders in the BFHI designation process will positively contribute to ensuring program sustainability in the organizational and community settings. Understanding and evaluating the interaction of the many factors influencing a program is a necessary step to ensuring sustainability (Stirman et al., 2012). Based on preliminary program evaluation, recommendations include addressing a variety of factors in order to better ensure sustainability.
Although the sample size was small and results from this evidence-based practice project are not generalizable to the population, there are implications for continued exploration into system change and program evaluation outcomes. To begin with, ensuring involvement and commitment of all stakeholders is crucial when embarking upon organizational change. No single person can bring about systems change alone. Working toward the BFHI designation is a large collaborative effort that requires alignment, effective communication, and commitment of key stakeholders in order to successfully carry out program design and implementation. For continued sustainability, it is necessary for all members of this BFHI multidisciplinary leadership team to remain engaged and committed to doing their part in working toward improved care delivery of breastfeeding education and support to the communities that the organization serves.

Further examination of program implementation and data collection processes is necessary in order to improve the data collection tools that can be used for BFHI designation as well as for measuring breastfeeding outcomes. Managing individual and aggregate level information related to breastfeeding knowledge, self-efficacy, and intent can be used to evaluate the systems of care in providing breastfeeding education and support. Efficient data tracking are valuable for making important decisions regarding practice changes in order to evaluate and improve care delivery to women, children, and families.

Comprehensive, consistent education is recommended for all staff members involved in the prenatal educational program. An exact timeline and script of “what topics to discuss at what visit” would be useful for staff so that they have specific criteria to abide by for the type of breastfeeding education that should be given to the patients.
during the entire prenatal period. Additionally, a follow-up educational session is recommended for all of the providers in the affiliated clinic (including the obstetricians, NPs, and PAs) on how to better provide breastfeeding education and support to their patients, along with their input on suggestions for which topics to discuss at which visits. A validated competency tool online is also necessary for all healthcare providers and support staff that are involved in providing education and support to patients on breastfeeding during the prenatal period.

Innovative marketing strategies are needed in order to fully implement evidence-based practice recommendations using a combination of educational delivery methods to improve breastfeeding outcomes. This includes educating patients about breastfeeding and the BFHI through video (a large TV in the waiting room of the prenatal clinic to display educational videos, pictures, and messages), electronic media (updated educational information on the hospital and clinic website and email updates in staff newsletters), local community newspapers, and billboards.

**Implications for Practice**

Due to the alarmingly low national and international breastfeeding rates, support for intervention strategies to increase breastfeeding outcomes has become a priority. Further research is necessary to explore specific content topics and methods for delivery of breastfeeding education and support by healthcare providers to patients in the prenatal period. Insufficient knowledge about breastfeeding benefits is rarely identified as being a reason for poor breastfeeding rates. Therefore, addressing known modifiable contributing barriers to breastfeeding (e.g. never having observed anyone breastfeed, lack of encouragement, and psychological and affective states) can provide the support that
mothers need to breastfeed. Targeting interventions toward improving breastfeeding self-efficacy among women before pregnancy or early in the prenatal period through educational support can make a difference in improving a woman’s self-confidence about her ability to breastfeed. This modifiable variable of maternal breastfeeding confidence is predictive of breastfeeding intent, initiation, duration, and exclusivity, which is why discovering specific educational supportive measures that are directed at breastfeeding self-efficacy is of high importance.

Healthcare providers play an important role in breastfeeding promotion. Implementing evidence-based practice interventions for breastfeeding education and support can contribute to improved health outcomes. Prenatal interventions targeted at breastfeeding support are fundamental to increasing the number of infants who are breastfed for the first six months of life (Renfrew et al., 2007). This program evaluation was a way to preliminarily examine the linkage between educational interventions in the early prenatal period and patient breastfeeding outcomes of knowledge, self-efficacy, and intent.

**The DNP Role related to Program Implications**

The DNP degree is the terminal practice degree for nursing and is intended to prepare nurses to contribute their advanced practice knowledge and skills set to address the complex healthcare needs of patients, communities, and delivery systems through various roles. The DNP educational preparation is shaped around a set of essentials which include: nursing science, scholarship to advance the nursing profession and evidence-based practice, organizational and systems leadership, information technology, healthcare policy and advocacy, interprofessional collaboration across disciplines of
nursing healthcare, and advanced nursing practice (American Association of Colleges of Nursing [AACN], 2006). There are various ways that assorted DNP roles have been used to develop, implement, and evaluate this prenatal education program as well as additional means that the DNP roles can be enacted related to this program in the future. The DNP essentials will be discussed related to program implications.

**Scientific Underpinnings for Practice**

The practice doctorate in nursing prepares an individual for advanced nursing practice through understanding the scientific foundation of the discipline. The involvement of the DNP student related to this project began with the evaluation and synthesis of the literature. The pivotal role of the DNP prepared nurse as related to this prenatal education program involves more than just possessing a body of knowledge; rather, it is utilizing nursing sciences (biological, psychosocial, ethical, analytical, and organizational) to guide practice. The prenatal educational program was built using nursing science as its foundation, through integration of both Donabedian (1997) and Breastfeeding Self-Efficacy Theory (Dennis, 1999) and using their concepts to guide program development, implementation, and evaluation. Utilization of evidence from the nursing sciences influenced the overall framework of this program.

**Organizational and Systems Leadership**

Preliminary evaluation of this evidence-based educational program solidified that a multidisciplinary approach to program design and implementation is necessary when embarking upon a large systems change. The knowledge regarding implementation processes of this program and the outcomes generated thus far can contribute to further healthcare improvements. Implications for the DNP prepared nurse related to this
prenatal educational program involved collaboration with diverse stakeholders toward the organizational goal of achieving Baby-Friendly designation as well as specifically facilitating implementation of Step 3 at the patient delivery system level. The DNP student enacted the competency of organizational and systems leadership through being collaborating with the organization while being a facilitator of the systems change. In doing so, developing and evaluating the care delivery approaches of the prenatal education program can ultimately influence patient care delivery with the goal of improving breastfeeding outcomes.

**Clinical Scholarship**

The scholarship of practice in nursing refers to the translation of research into practice as well as knowledge dissemination and integration. A sound literature review was done prior to initiation of this program to examine the evidence for prenatal educational interventions that influence breastfeeding knowledge, self-efficacy, and intent. Although the literature did not reveal one specific type of educational intervention to be more effective than another at improving breastfeeding outcomes, an evidence synthesis was used to incorporate clinical practice guideline recommendations on combinations of delivery methods and topics to include for delivery of breastfeeding prenatal education.

The DNP nurse contributed translation of evidence into practice as well as evaluation of the program through obtaining preliminary data. Evidence-based practice for this program included critically appraising the literature for the best method for implementation and implementing knowledge integration and translation of prenatal breastfeeding education into the patient care delivery system. A fundamental component
of engaging buy-in from key stakeholders involved knowledge translation of the Baby-Friendly® guidelines as best evidence-based practices that would lead to improved patient care outcomes. Additionally, program evaluation using structure, process, and outcomes allowed for identification of limitations and recommendations in order to further develop best practices which lead to improved breastfeeding outcomes.

**Innovation through Information Technology**

Improving care delivery through utilization of information systems and technology is another role of the DNP prepared nurse that is important to the continued sustainability of this program. The DNP student collected data for preliminary program evaluation, and assisted in collaborative efforts to develop a data collection plan for the BFHI designation requirements as well as for tracking long-term breastfeeding outcomes for patients of the designated organization. Managing both aggregate and individual patient level information can assist in the necessary tracking and monitoring of breastfeeding outcomes for continued process improvement and program evaluation. Leadership to facilitate the proper selection of data tracking tools will provide means for evaluation of the prenatal education program by assessing the selected patient outcomes of breastfeeding knowledge, self-efficacy, and intent. Additionally, further evaluation of outcomes through efficacy of patient care technology processes can be useful in assessing more long term outcomes of breastfeeding initiation, duration, and exclusivity.

**Advocacy**

Leadership through integration of clinical practice, research, and advocacy is an essential contribution of the DNP prepared nurse in relation to the wide span of the initial development of the program to advocating for breastfeeding at the health policy level.
Through being equipped with transformational leadership skills, the DNP prepared nurse can be a powerful advocate in healthcare policy for the promotion of breastfeeding educational support. The development and implementation of healthcare policy at the institutional level with this program started with involvement of stakeholders through committees to advocate for initiation of the BFHI designation pathway. Additionally, participation in education of other healthcare professionals and stakeholders took place at the community level, regarding the BFHI and best practices to provide patients with breastfeeding education and support.

Future program implications for advocacy include addressing health disparities and access to care at the community level related to breastfeeding educational support services in the prenatal and postpartum period. Also, future healthcare advocacy related to public relations, marketing, and policy development is likely needed in order to provide education to employers, the public, and government leaders on the importance of supporting breastfeeding women. Passage of recent legislation, Section 4207 of the Patient Protection and Affordable Care Act, contains provisions supporting breastfeeding women in the workplace (United States Government Printing Office, 2010). This amendment states that employers (who have 50 employees or more) are required to provide reasonable break time as well as a private, non-bathroom place for nursing mothers to express breast milk during the workday, for one year after the child’s birth (United States Government Printing Office).

Continued policy infrastructure and government leadership to support breastfeeding is needed in order to improve health outcomes for mothers and children. Collaborative efforts targeting breastfeeding support has significant policy implications.
regarding the Triple Aim initiative to (a) improve quality of care, (b) improve population health, and (c) decrease costs (Institute for Healthcare Improvement, 2012). Including breastfeeding support and education in preventive services through promotion of evidence-based practices such as the BFHI will positively impact patient quality through improved maternity care practices (United States Breastfeeding Committee, 2009). Through implementation of policies and practices that support breastfeeding, overall population health will be improved as a result of increased breastfeeding rates (United States Breastfeeding Committee). Additionally, improving collaborative efforts to support breastfeeding women and increase breastfeeding rates will decrease national healthcare and insurance costs for individuals, employers, and populations (U.S. DHHS, Health Resources and Service Administration [HRSA], Maternal and Child Health Bureau, 2008).

**Interprofessional Collaboration**

Interpersonal competence, communication skills, shared vision, and mutual trust in expertise are vital components when working collaboratively as a team such as the BFHI steering committee. The DNP prepared nurse is often a key individual to work on an interprofessional team such as this because of experience on working together with other disciplines to improve outcomes at the point of care, combined with expert knowledge in complexity science and organizational change. Empowering other members of the team to become engaged and formulate an integrated approach was needed for both the prenatal educational program development as well as the processes surrounding the overall initiation of the Baby-Friendly® designation pathway. A diverse blend of skills and qualities among individuals on the interprofessional teams for this
program provided an opportunity to promote unity through shared involvement while working toward transformational change.

**Clinical Prevention and Population Health**

Health promotion and risk reduction for individuals and families are principles that line up cohesively with the prenatal educational program goals to improve breastfeeding outcomes. With a focus on breastfeeding educational support in the prenatal period, the DNP prepared nurse is in a main position to facilitate health promotion and risk reduction activities because of the increased expertise in evaluating evidence pertinent to improving breastfeeding health outcomes of individuals and populations. Preparation in integration of public health concepts related to women and children can continue to guide nursing practice through impact on the health of women, children, and communities through sustainability of the prenatal breastfeeding educational program.

**Advanced Practice Leadership**

Leadership roles were enacted in various ways through program planning, design, implementation, and evaluation. Providing visionary leadership at different system levels through offering additional practice experiences occurred in order to empower others to make practice decisions that would best meet the needs of the patients, the organization, and the community. Expertise in areas of nursing administration and healthcare systems provided the ability to be a catalyst for systems change, targeting breastfeeding outcomes through evidence-based care practices. Using critical and reflective thinking, evaluation of the program outcomes is an integral part of systems reform in healthcare delivery. A DNP prepared nurse involved with this program has a responsibility to consider all
implications for sustainability, ensuring that evaluative methods are used to improve healthcare delivery through the provision of breastfeeding educational support.

**Conclusion**

Healthcare providers have a tremendous opportunity to provide breastfeeding education and support to pregnant women through implementation of the BFHI (2010) evidence-based practice guidelines (Merewood et al., 2005). Engaging all stakeholders in collaborative efforts through accountability and synergy was essential in order to build momentum for visionary thinking, leading to the decision to pursue Baby-Friendly® designation at the rural community hospital. Helping to create transformational change in organizational culture at the system level resulted in the development of the prenatal educational program. With the collaborating organization’s decision to pursue best practice measures related to breastfeeding, the goal of this project dissertation was to examine the effects of the prenatal educational program on the outcomes of breastfeeding knowledge, self-efficacy, and intent. The development, implementation, and evaluation of this program was guided through the conceptual frameworks of Donabedian’s (1997) structure, process, and outcomes theory as well as through Breastfeeding Self-Efficacy Theory (Dennis, 1999).

The preliminary program evaluation did not give indication that there was a difference in the short-term outcomes of breastfeeding knowledge, self-efficacy, and intent. However, there are important implications to nursing practice from an organizational standpoint regarding program implementation and systems change. Continued focus on breastfeeding education throughout the duration of the prenatal period as well as emphasis on addressing modifiable barriers of maternal confidence
about breastfeeding are important ways that healthcare providers can positively impact breastfeeding knowledge, self-efficacy, and intent. Through continued program sustainability, long-term outcomes of breastfeeding initiation, duration, and exclusivity can be further evaluated.

Reflective evaluation including examination of the DNP roles related to program implications brought to light recognition that the processes to bring about system change and improve breastfeeding outcomes at the system level are equally as important as the long term goals of Baby-Friendly® designation and improving breastfeeding rates among populations. Initial program evaluation results demonstrated patients’ positive desire to breastfeed. Through continuous program evaluation of evidence-based implementation practices, healthcare providers can be prepared with the tools needed to be effective in the improvement of breastfeeding outcomes, meeting individual and population needs at the community level.
APPENDIX A
PRENATAL BREASTFEEDING SELF-EFFICACY SCALE

1 = not at all sure, 2 = slightly sure, 3 = fairly sure, 4 = very sure, 5 = completely sure

1. I can make time to breastfeed my baby even when I feel busy
2. I can breastfeed my baby even when I am tired
3. I can schedule my day around the breastfeeding of my baby
4. I can breastfeed my baby when I am upset
5. I can breastfeed my baby even if it causes mild discomfort
6. I can use a breast pump to obtain milk
7. I can prepare breast milk so others can breastfeed my baby
8. I can find out what I need to know about breastfeeding my baby
9. I can find the information I need about problems I have breastfeeding my baby
10. I know who to ask if I have any questions about breastfeeding my baby
11. I can call a lactation counselor if I have problems breastfeeding
12. I can talk to my healthcare provider about breastfeeding my baby
13. I can breastfeed my baby when my family or friends are with me
14. I can breastfeed my baby around people I do not know
15. I can breastfeed my baby when my partner is with me
16. I can breastfeed my baby without feeling embarrassed
17. I can choose to breastfeed my baby even if my partner does not want me to
18. I can choose to breastfeed my baby even if my family does not want me to
19. I can talk to my partner about the importance of breastfeeding my baby
20. I can breastfeed my baby for one year

(Wells et al., 2006)
APPENDIX B
# Breastfeeding Knowledge

<table>
<thead>
<tr>
<th>BFHI Criteria Topics for prenatal education</th>
<th>Knowledge Items on Breastfeeding Questionnaire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Importance of early skin-to-skin contact</td>
<td>I know the importance of skin to skin contact</td>
</tr>
<tr>
<td>Importance of rooming-in</td>
<td>I know the importance of rooming-in</td>
</tr>
<tr>
<td>Importance of exclusive breastfeeding for the first six months</td>
<td>I know the impact of giving my baby anything other than breast milk for the first 6 months</td>
</tr>
<tr>
<td>Importance of breastfeeding after 6 months when other foods are given</td>
<td>I know that breastfeeding continues to be important even after 6 months when other foods are given</td>
</tr>
<tr>
<td>Non-pharmacologic pain relief methods for labor</td>
<td>I know about types of things I can do (besides getting drugs or an epidural) to control my pain when I am in labor</td>
</tr>
<tr>
<td>Importance of early initiation of breastfeeding</td>
<td>I know the importance of starting breastfeeding as soon as possible after the delivery of my baby</td>
</tr>
<tr>
<td>Importance of early and frequent nursing</td>
<td>I know that the more frequently I breastfeed my baby, the sooner my milk will come in</td>
</tr>
<tr>
<td>Effective positioning and attachment</td>
<td>I know about different positions I can use when breastfeeding my baby, and I know how to tell if baby is latched on correctly</td>
</tr>
</tbody>
</table>
APPENDIX C
Prenatal Breastfeeding Education Checklist

(insert name of designated healthcare facility) promotes, protects and supports breastfeeding

Patient Name: _________________________________
D.O.B _____________________

<table>
<thead>
<tr>
<th>Breastfeeding Education Topic</th>
<th>Date</th>
<th>Provider’s Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Importance of exclusive breastfeeding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exclusive breastfeeding for the first 6 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breastfeeding continues to be important when other foods are given</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-pharmacologic pain relief methods for labor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Importance of early skin-to-skin contact</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Early initiation of breastfeeding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rooming-in on a 24-hour basis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baby-led feeding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequent feedings/optimal milk supply</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effective positioning and attachment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Received Your Guide to Breastfeeding Book</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Adapted from the criteria for evaluation of step 3 for Baby-Friendly® designation (BFHI, 2010).
Chart Audit Tool

MR# ___________________________  Subject # ______________________

DOB __________________________

Today’s Date ____________________

EDC __________________________

Weeks Gestation at time of survey ______

Race __________________________

Marital Status ______

Gravida/Para ______

Plans to breastfeed this baby ______

Patient answers to the following questions:

What do you know about breastfeeding? ____________________________

What is your breastfeeding history? ____________________________

Have you had a previous postpartum hemorrhage? ______ Yes No

Have you had any previous chest or breast surgery or breast trauma? ______ Yes No

Do you have a family history of breast cancer? ______ Yes No

Do you have any concerns about your breasts and/or breastfeeding? ______ Yes No
Please read each statement and circle the answer that best describes you:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Not at All Sure</th>
<th>Slightly Sure</th>
<th>Fairly Sure</th>
<th>Very Sure</th>
<th>Completely Sure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I can make time to breastfeed my baby even when I feel busy</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. I can breastfeed my baby even when I am tired</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. I can schedule my day around the breastfeeding of my baby</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. I can breastfeed my baby when I am upset</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. I can breastfeed my baby even if it causes mild discomfort</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. I can use a breast pump to obtain milk</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7. I can prepare breast milk so others can breastfeed my baby</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8. I can find out what I need to know about breastfeeding my baby</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9. I can find the information I need about problems I have breastfeeding my baby</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10. I know who to ask if I have any questions about breastfeeding my baby</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11. I can call a lactation counselor if I have problems breastfeeding</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12. I can talk to my healthcare provider about breastfeeding my baby</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>13. I can breastfeed my baby when my family or friends are with me</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>14. I can breastfeed my baby around people I do not know</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>15. I can breastfeed my baby when my partner is with me</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>16. I can breastfeed my baby without feeling embarrassed</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>17. I can choose to breastfeed my baby even if my partner does not want me to</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not at all sure</td>
<td>Slightly Sure</td>
<td>Fairly Sure</td>
<td>Very Sure</td>
</tr>
<tr>
<td>---</td>
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<td>--------------</td>
<td>------------</td>
<td>-----------</td>
</tr>
<tr>
<td>18. I can choose to breastfeed my baby even if my family does not want me to</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>19. I can talk to my partner about the importance of breastfeeding my baby</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>20. I can breastfeed my baby for one year</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>21. I know the importance of skin to skin contact</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>22. I know the importance of rooming-in</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>23. I know the impact of giving my baby anything other than breast milk for the first 6 months</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>24. I know that breastfeeding continues to be important even after 6 months when other foods are given</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>25. I know about types of things I can do (besides getting drugs or an epidural) to control my pain when I am in labor</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>26. I know the importance of starting breastfeeding as soon as possible after the delivery of my baby</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>27. I know that the more frequently I breastfeed my baby, the sooner my milk will come in</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>28. I know about different positions I can use when breastfeeding my baby, and I know how to tell if baby is latched on correctly</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
APPENDIX F
DATE: June 13, 2012

TO: Keill Damstra
FROM: Grand Valley State University Human Research Review Committee
STUDY TITLE: [34121] Improving Breastfeeding Knowledge, Self-Efficacy and Intent Through a Prenatal Education Program
REFERENCE #: 12-222-H
SUBMISSION TYPE: New Project

ACTION: APPROVED
EFFECTIVE DATE: June 5, 2012
REVIEW TYPE: Exempt Review

Thank you for your submission of materials for this research study. The Human Research Review Committee has reviewed your submission and approved your research plan application under Exempt review. All prior requests for additional information have been satisfactorily fulfilled. This approval is based on no greater than minimal risk to research participants. All research must be conducted in accordance with this approved submission.

Please insert the following sentence into your information/consent documents as appropriate. All project materials produced for participants or the public must contain this information.

This EXEMPT research protocol has been approved by the Human Research Review Committee at Grand Valley State University. File No. 12-222-H.

Exempt protocols do not require formal renewal. However, we do confirm on an annual basis that the research continues to meet the criteria for exemption and that there have been no significant changes in activity or key personnel. By June 6, 2013, please complete the brief Continuing Review Application Form, available in your IRBNet Project Designer, or from our website, www.gvsu.edu/hrirb, and submit this form via IRBNet.

Once study enrollment and data analysis have been concluded, please complete the Closed Protocol Reporting Form on our website, and upload a saved copy to IRBNet.

This project remains subject to the research ethics standards of HRRC policies and procedures pertaining to exempt studies.

Please note the following in order to comply with federal regulations and HRRC policy:

1. Any revision to previously approved materials must be approved by this office prior to initiation. Please use the Change in Protocol forms for this procedure. This includes, but is not limited to, changes in key personnel, study location, participant selection process, etc.

2. All UNEXPECTED PROBLEMS and SERIOUS ADVERSE EVENTS to participants or other parties affected by the research must be reported to this office within two days of the event occurrence. Please use the UP/SAE Report form.

3. All instances of non-compliance or complaints regarding this study must be reported to this office in a timely manner. There are no specific forms for this report type.

If you have any questions, please contact the HRRC Office, Monday through Thursday, at (616) 331-3197 or hrcc@gvsu.edu. The office observes all university holidays, and does not process applications during exam week or between academic terms. Please include your study title and reference number in all correspondence with this office.
References


