

BREASTFEEDING CLASSES: A QUALITY IMPROVEMENT PROJECT TO INCREASE
INTENT TO BREASTFEED

By

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A DNP Project Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Nursing Practice

Capella University

May 7, 2020

Abstract

Breastfeeding education has been shown to improve a mother's intent to breastfeed and self-efficacy rates. The PICOT question developed was as follows: "In prenatal and perinatal women, how will the participation in a community-based breastfeeding program compared to no program improve the intent to breastfeed and self-efficacy rates in 12 weeks?" The gap in practice was a lack of community resources and educational classes to support the longevity of breastfeeding. A quality improvement design with Bandura's social learning theory was utilized. A total of 155 women participated in this project via face-to-face classes and/or online classes. Findings from the Breastfeeding Self-Efficacy-Short Form (BSES-SF) pre and post surveys showed an increase in self-efficacy scores from 5.4% to 25% post-intervention. The Infant Feeding Intentions Scale (IFI) showed an increase with women who intend to breastfeed. The pre-test 14/37 (37.8%) women who attended the two online sessions scored a maximum score of 16. The post-test 11/24 (45.8%) women of the same group scored a maximum score of 16, an increase of 8% on intent to breastfeed. The follow-up survey 13/24 (54.17%) women scored a maximum score of 16. The conclusion noted from this project was that face-to-face classes showed the most improvement. Limitations included the short time frame to conduct the project, the number of education sessions, transportation, past experiences, and inconsistent attendance. However, further studies and projects are warranted to provide extensive data for comparison over a longer duration.

Keywords: exclusive breastfeeding, intent to breastfeed, community-based breastfeeding programs, education and training and breastfeeding

Breastfeeding Classes: A Quality Improvement Project to Increase Intent to Breastfeed

The optimal choice of nutrition for infants is breastfeeding. Breastfeeding positively affects the health of mothers and newborns by promoting growth, improving the healing process for mothers, reducing adverse outcomes, and reducing the cost of health care. Breastfeeding has been around since ancient times, but in the United States there is a low exclusive breastfeeding rates. The World Health Organization (WHO) set objectives to address the low exclusive breastfeeding rates in the United States. The WHO objectives are as follows: increase the proportion of infants who are breastfed ever, at six months, at one year, exclusively through three months and six months (Healthy people 2020: Breastfeeding objectives, n.d.). The next objective is to increase the proportion of employers that have worksite lactation support programs. The next objective is to reduce the proportion of breastfed newborns that receive formula supplementation within the first two days of life. The last objective is to increase the proportion of live births that occur in facilities that provide recommended care for lactating mothers and their babies. The importance of addressing this issue was to determine if prenatal education, accessibility, and resources had a positive impact on intent to breastfeed and increasing the duration to reach the WHO goals. Moreover, the DNP learner developed a PICOT question to address these objectives. The PICOT question developed for this quality improvement project was as follows: In prenatal and perinatal women, how will the participation in a community-based breastfeeding program compared to no program, improve intent to breastfeed and self-efficacy rates in 12 weeks? The doctor of nursing practice (DNP) project aimed to address the lack of education prenatally for women to better make an informed decision on their feeding method. This entails the incorporation of community-based education programs and the effects on the duration of exclusive breastfeeding.

The gap in practice at the DNP learner's facility (a natural birthing center) was a lack of community resources to support the longevity of breastfeeding. Breastfeeding has numerous benefits like decreasing the incidence, and severity of infectious diseases such as diarrhea, respiratory tract infections, and otitis media and urinary tract infection; decreased incidence of types 1 and 2 diabetes mellitus, overweight, obesity and asthma (Nona & Srijana, 2018). Breastfeeding has positive outcomes for the mother and the infant. The World Health Organization as cited in Breastfeeding (2018) recommended that breastfeeding be the exclusive source of food in the first six months of life and dietary complements until children turn two years old.

Project Focus

The focus of this project was to expand educational classes to the community on breastfeeding. Furthermore, the goal was to implement education, increase participation, and to utilize the community-based breastfeeding program to note the effects on intentions to breastfeed and self-efficacy rates. The quality improvement program used two specific tools named Breastfeeding Self-Efficacy Scale-Short Form (BSES-SF) (see Appendix A) and the Infant Feeding Intentions Scale (IFI) (see Appendix B). The DNP learner utilized these tools to survey women that attended the educational classes to gain pre- and post-test knowledge.

Clinical Significance

Breastfeeding is a unique and valuable feeding practice in infancy that has been associated with lower neonatal mortality and alleviates inequities in child mortality and prevents morbidities such as diarrhea, pneumonia, and neonatal sepsis. Additionally, breastfeeding helps to prevent obesity and diabetes later in life (Takahashi et al., 2017). Large-scale breastfeeding promotion programs prevented about 11.6% of infant deaths and decreased disability years by

21.9 million (Takahashi et al., 2017). Breastfeeding offers the best nutrition for infants. Overall, offering infants the best nutrition can, in turn, reduce illnesses; healthcare costs, and improves patient outcomes.

Additionally, breast milk was uniquely suited to the human infant's nutritional needs and was a live substance with unparalleled immunological and anti-inflammatory properties that protected against a host of illnesses and diseases for both women and children (Office of the Surgeon General, 2011). Furthermore, the risk of hospitalization for lower respiratory tract disease in the first year of life was more than 250 percent higher among babies who were formula-fed than exclusively breastfed infants for at least four months. Also, some women indicated that the psychological benefits of breastfeeding included bonding with their babies, and the most important influence on their decision to breastfeed (Office of the Surgeon General, 2011).

Moreover, infants who were not breastfed or who were weaned early were more likely to suffer common childhood infections such as gastrointestinal infections and acute otitis media, as well as lower respiratory infections and sudden infant death syndrome (Anstey, MacGowan, & Allen, 2016). Current Healthy People (HP) 2020 breastfeeding objectives were to increase breastfeeding initiation to 81.9%, six-month duration to 60.6%, and one year duration to 34.1%. A Healthy People 2020 objective for exclusive breastfeeding through three and six months of age was 46.2% and 25.5%, respectively. Also, Healthy People 2020 set goals to reduce the proportion of breastfed newborns who received formula supplementation within the first two days of life to 14.2% and to increase the proportion of live births that occurred in facilities that provided recommended care for breastfeeding mothers and their babies to 8.1% (Facts, Breastfeeding, CDC, n.d.).

Project Aims

The project aimed to implement breastfeeding education classes face-to-face and online. The aim of the project was facilitated with the use of the BSES-SF (see Appendix A) and the IFI scale (see Appendix B). Higher self-efficacy scores had been associated with higher confidence levels and successful breastfeeding. The IFI scale helped to decipher through a women's intentions of breastfeeding or bottle-feeding. Both tools were implemented pre- and post-education classes. Furthermore, the project relates to public health directly because the goal was to improve breastfeeding rates and to meet Healthy People 2020 goals.

Relevance to Nursing and Public Health

Breastfeeding acted as the optimal nutrition for infants and created a special bond amongst the mother and infant. Breast milk protected the infant from a vast amount of infections in the transitional stages to extra-uterine life. Breastfeeding is the cornerstone of childhood nutrition, and a key global public health issue (Thussanasupap, Lapvongwatana, Kalampakorn, & Spatz, 2016). An estimated 1.30-1.45 million child deaths were prevented each year with improved breastfeeding practices. Global efforts focused on increasing breastfeeding initiation and duration to reach the Millennium Development Goal, which aimed to reduce mortality among children under five by two-thirds (Thussanasupap et al., 2016).

Project Description

The gap in practice at the DNP learner's facility (a natural birthing center) was a lack of community resources to support the longevity of breastfeeding. Breastfeeding has numerous benefits like decreasing the incidence, and severity of infectious diseases such as diarrhea, respiratory tract infections, and otitis media and urinary tract infection; decreased incidence of types 1 and 2 diabetes mellitus, overweight, obesity and asthma (Nona et al., 2018).

Breastfeeding has positive outcomes for the mother and the infant. The World Health Organization as cited in Breastfeeding (2018) recommended that breastfeeding be the exclusive source of food in the first six months of life and dietary complements until children turn two years old.

Stakeholder Communications

A discussion and a gap analysis were performed at the project's site with the certified professional midwife and office manager (personal communication, June 3, 2019). A discussion was held about how the business ran, patient load, deliveries per month, pain control methods, how emergencies were handled, and the types of patients accepted at this facility (personal communication, June 5, 2019 with the nurse consultant for the Bureau of Family Health). The stakeholders discussed the promotion of community education to patients. The DNP learner was included in conference calls to discuss progress and additional goals.

Data to Support

Healthy People 2020 objectives included increasing the proportion of infants who was ever breastfed to 81.9%, increasing the proportion of infants who were breastfed exclusively through six months to 25.5%, and increasing the proportion of infants who were breastfed at one year to 34.1% (Facts Breastfeeding CDC, n.d.). Early identification of lactation issues was crucial to establishing and sustaining breastfeeding for the first six to twelve months of the child's life and beyond (Busch, Logan, & Wilkinson, 2014). Although rates of breastfeeding were slowly rising, prevalence continues to remain poor in the United States compared with other Westernized nations despite current public awareness and public health programs.

Moreover, the literature shows that a majority of women surveyed identified the following primary reasons for early breastfeeding cessation: (a) poor lactation support, (b)

insufficient knowledge about breastfeeding, (c) low personal confidence (self-efficacy), (d) perceived low milk supply, (e) difficulties with latching, and (f) work/employment barrier. Ineffective postpartum breastfeeding support and education had adverse effects on breastfeeding, which contributed to suboptimal breastfeeding rates and self-efficacy outcomes. As evident by current research, women often cited a lack of breastfeeding support and education as the primary reason for premature cessation (Busch et al., 2014).

Site and community data. The project site delivers about two to four infants monthly. The midwife tracked breastfeeding rates up to six weeks postpartum. The facility had a higher breastfeeding rate because of the low monthly birth rates and the mothers had low risks for birth complications. Thus, the facility's breastfeeding rate was 100%. However, since the census was low, community outreach and improving breastfeeding rates in the community at large was important. The goal was for the facility to expand the realm of breastfeeding support and education to the community. The project pushed towards successful outcomes for breastfeeding in the community as set by Healthy People 2020. Data for the project's state of Louisiana on breastfeeding was as follows for the year of 2015: ever breastfed 67.0 \pm 6.3, breastfed at six months 39.0 \pm 5.8, and breastfed at twelve months 20.6 \pm 4.4; exclusive breastfeeding through three months 39.4 \pm 5.9, and exclusive breastfeeding through six months 20.2 \pm 4.7. Among infants born in 2015 in the United States, four out of five (83.2%) started to breastfeed and over half (57.6%) were breastfeeding at twelve months (Healthy People 2020: Breastfeeding Objectives). Overall, it was clear the positive effects breastfeeding projected for the mother and infant, but no resources are available to aid in the promotion of sustaining exclusive breastfeeding for the community.

State data. The DNP learner outreached to the entire Lafayette and surrounding Lafayette Parish including Broussard, Scott, and Carencro, Louisiana. The population in Broussard, LA was 12,042. The population in Scott, LA was 8,768. The population in Carencro, LA was 8,973. In 2017, Lafayette, LA had a population of 126 thousand people with a median age of 34.7 and a median household income of \$48,533 (Lafayette, LA, n.d.). Between 2016 and 2017 the population of Lafayette, LA grew from 125,808 to 126,476, a 0.531% increase and its median household income grew from \$47,940 to \$48,533, a 1.24% increase (Lafayette, LA, n.d.). The population of Lafayette, LA was 60.3% White alone, 31.5% Black or African American alone, and 4.09% Hispanic or Latino. More so over, only 13.2% of the people in Lafayette, LA spoke the non-English language, and 96.7% were U.S. Citizens (Lafayette, LA, n.d.). Furthermore, most women go to the hospitals in Lafayette, LA for prenatal care.

Current Practice

The staff consisted of one primary birth assistant, two backup birth assistants, the midwife, an apprentice midwife, and the office manager (she was a doula). A doula is trained to provide continuous physical, emotional, and informational support to a mother before, during and shortly after childbirth to help achieve a satisfying experience (What is a Doula, n.d.). The midwife saw about four to five patients on any clinical day and made postpartum home visits as needed. The project site was affiliated with the office manager's company, which provided doula services, placenta encapsulation, and childbirth classes to the community. Increased reliance on midwives would reduce the cost of overuse for obstetric interventions, reduce rates of preterm birth and neonatal loss, and improve breastfeeding and vaginal birth rates, thereby helping to address serious maternal-newborn health deficits in the United States (Vedam et al., 2018). There was no educational class on breastfeeding at the facility or within the vicinity of the site. The

closest facility for mothers to attend educational classes was twenty minutes away in the city of Lafayette, LA. Furthermore, the expansion of educational classes in this area helped to improve exclusive breastfeeding rates and expand reach to the entire community.

Evidence to Support Practice Change

The DNP learner discussed the current practice at the facility's site. Practice changes were necessary because of the lack of education prenatally and limited access to the community. WHO identified several leading factors that may contribute to low rates of exclusive breastfeeding; including societal beliefs favoring mixed feeding, hospital practices that are not supportive of breastfeeding and lack of knowledge among women and their partners (Iliadou, Lykeridou, Prezerakos, Swift, & Tziaferi, 2018). A societal belief was a major factor because of the negativity that surrounded breastfeeding in public. Some hospitals are not conducive to advocate for breastfeeding due to a lack of knowledge and support from nursing and administration. An obvious issue was a general lack of knowledge for the mother and significant other regarding the benefits of breastfeeding. Furthermore, factors related to continuing breastfeeding could be categorized into socio-demographic factors, biomedical factors, and psychosocial factors such as breastfeeding attitude and self-efficacy. The modifiable factors can be addressed through antenatal education for mothers to gain knowledge and self-efficacy about breastfeeding. As noted in a journal article, a four-hour, midwife-led antenatal breastfeeding education class had a positive impact on breastfeeding knowledge, breastfeeding attitude, breastfeeding self-efficacy, and breastfeeding perceived-barriers (Iliadou et al., 2018). Overall, the DNP learner will discuss evidence that addresses maternity care practice, access to professional support, and self-efficacy.

Maternity Care Practices

Maternity care encompasses the care of the mother throughout her pregnancy. Maternity care practices related to breastfeeding took place during the intrapartum hospital stay and included practices related to immediate prenatal care, care during labor and birthing, and postpartum care (National Association of County and City Health Officials [NACCHO], 2018). Mothers that deliver in a hospital setting can be faced with issues that may prevent proper implementation and support for breastfeeding. For example, a major concern is efficiently initiating skin-to-skin contact for mothers who deliver by cesarean section. These mothers run into issues of being exhausted, overly medicated, and a lack of support from staff to advocate for this bonding time. Maternity care practices that supported breastfeeding included initiating skin-to-skin contact between mother and baby after birth, encouraging early breastfeeding initiation, supporting cue-based feeding, supplementing with formula or water only when medically necessary, and ensuring post-discharge follow-up (NACCHO, 2018). The mother needs continuous support from staff, physicians, nurses, and a lactation consultant to promote effective breastfeeding techniques.

Access to Professional Support

Access to support from healthcare professionals included doctors, nurses, and a lactation consultant was important for the health of the mother during pregnancy, after giving birth, and after release from the hospital (NACCHO, 2018). If a mother chose to breastfeed, this support included counseling or behavioral interventions to improve breastfeeding outcomes. It also included helping the mother and baby with latch and positioning, a lactation crisis, counseling mothers returning to work or school, or addressing concerns of mothers and their families. Professional support can be given in different ways and settings: in person, online, over the telephone, in a group, or individually. Some women received individual in-home visits from

healthcare professionals, while others visited breastfeeding clinics at hospitals, health departments, or women's health clinics (NACCHO, 2018). This support from all team members caring for the mothers was the foundation of promoting successful breastfeeding. Overall, professional support after discharge makes a difference in a mother's life if breastfeeding was continued or not.

Self-Efficacy

Breastfeeding self-efficacy was a woman's perceived confidence in the ability to breastfeed successfully and managing problems (SIGs, n.d.). Cultivating maternal breastfeeding self-efficacy through education and lactation support demonstrated an effective evidence-based practice (EBP) intervention that improved postpartum breastfeeding rates and outcomes (Busch et al., 2014). Consistent education early on and throughout the journey of the pregnancy and postpartum dictates successful breastfeeding confidence and compliance. The initial postpartum period was a critical time to identify, establish, support, and sustain breastfeeding efforts by promoting a breastfeeding-friendly postpartum care approach (Busch et al., 2014). The postpartum period is a time for reinforcement of education and techniques for the mother to successfully breastfeed. Furthermore, different types of support and resources were explained to women to increase the duration of breastfeeding and improve a mother's confidence.

Available Knowledge

Search Strategy

A comprehensive search was conducted to obtain evidence to support specific interventions for exclusive breastfeeding. The databases chosen for this task were PubMed, CINAHL Complete, Academic Search Premier, Health and Medical Collection, and PubMed. Keywords utilized for this search were intent to breastfeed, exclusive breastfeeding, community-

based breastfeeding programs, education and training, and breastfeeding. The results obtained from these keywords yielded over 1,000 initial results. Once the results were noted then the restrictions were added to narrow the results down to include only peer-review articles and research articles published within the last five years. This resulted in 500 articles. After each search, the articles were skimmed and glanced at to check for relevance and if appropriate, the article was flagged and emailed to the DNP learner's account. A total of 34 articles was retained and included in this review because of the support offered on this topic.

Interventions to Improve Exclusive Breastfeeding

In general, interventions are a part of the nursing process that provides evidence-based practices to improve patient outcomes. The DNP learner noted certain research themes for interventions to improve exclusive breastfeeding rates. The themes identified for this review were as follows: prenatal education and counseling, positive maternal selection into breastfeeding, community-based breastfeeding promotion program, global breastfeeding recommendations, strategies to improve breastfeeding outcomes and rates, barriers to breastfeeding, self-efficacy, professional collaboration, intent to breastfeed, the influence of micro-biome on respiratory infections and asthma, and fathers and breastfeeding.

Prenatal education and counseling. Prenatal education and counseling were two important components necessary to help improve exclusive breastfeeding, determine intent to breastfeed, recognize barriers or beliefs (that prevented mothers in the past from breastfeeding), increase self-efficacy, and coach through difficulties with breastfeeding. In one study, Westside Healthy Start Participants received general breastfeeding education from case managers throughout pregnancy (such as information about breastfeeding benefits) and one face-to-face visit from a Breastfeeding Consultant (BFC) in the third trimester for more personalized and

comprehensive support (Leruth, Goodman, Bragg, & Gray, 2017). Each prenatal BFC visit included: open-ended questions to elicit breastfeeding beliefs, the affirmation of participant feelings and concerns, and targeted education. The BFC also discussed breastfeeding intentions, described breastfeeding benefits, positioning, and facilitated orders for a breast pump (Leruth et al., 2017).

Furthermore, the type of education or support needed to increase breastfeeding initiation rates appeared to be needs-based, one-to-one, informal sessions delivered in the antenatal or perinatal period by a trained breastfeeding professional or peer counselor (Shakya, Kunieda, Koyama, Rai, Miyaguchi, Dhakal, ... Jimba, 2017). For example, terms of the direct measure of knowledge from WHO Breastfeeding Promotion and Support in a Baby-Friendly Hospital course had significant scores post-intervention for knowledge questionnaire and management of breastfeeding practice case studies (Balogun, O'Sullivan, McFadden, Ota, Gavine, Garner, MacGillivray, 2016). Additionally, the indirect measure of knowledge was healthcare staff receiving WHO/UNICEF breastfeeding counseling that had higher scores, which indicated higher levels of knowledge post-intervention (Gavine, MacGillivray, Renfrew, Siebelt, Haggi, & McFadden, 2017). Overall, education and training were important to provide support, trust, and comfort during the crucial hours of initial breastfeeding.

Positive maternal selection into breastfeeding. Prenatal breastfeeding intentions reflected socio-demographic characteristics and maternal knowledge, attitudes, and social norms about infant feeding methods, all of which played a critical role in infant health (Raissian & Su, 2018). Prenatal breastfeeding intention was an antecedent to breastfeeding behavior that provided insight into relevant maternal characteristics. Overall, prenatal breastfeeding intention was an important factor in examining the relationship between breastfeeding and an infant's

health. Prenatal breastfeeding intention helped to overcome a key identification challenge in measuring the effect of breastfeeding on an infant's health. Consequently, the same characteristics that lead a woman to breastfeed also, lead an infant to have improved health outcomes (Raissian et al., 2018).

Community-based breastfeeding promotion program. The community-based breastfeeding promotion program (CBPP) for working women was developed and studied (Thussanasupap et al., 2016). Additionally, the effectiveness of the CBPP was examined regarding breastfeeding knowledge, breastfeeding self-efficacy, perceived breastfeeding support from family, breastfeeding behavior, and breastfeeding duration. The CBPP was developed based on literature review, information from the situation analysis phase and the four primary sources of information of Bandura's self-efficacy theory included (1) enactive mastery experiences, (2) vicarious experiences, (3) verbal persuasions, and (4) physiological and affective states (Thussanasupap et al., 2016). This program was developed because it was noted that working women were unable to exclusively breastfeed once going back to work. The issue that arises and causes working women to stop exclusive breastfeeding is associated with time constraints, no private setting to pump, and a lack of support from management.

Furthermore, the CBPP for working women increased breastfeeding knowledge. The breastfeeding support team used the breastfeeding kit including (1) a flip chart for teaching mothers and family, (2) a baby doll, (3) a set for demonstrating how to hold the baby to latch on, (4) an artificial breast, (5) and breast milk bag and bottle for demonstrating how to keep breast milk safely and (6) a cup for teaching cup-feeding technique. This outreach program promoted changes for women who continued to breastfeed upon returning to work. Breastfeeding

knowledge and skills were important because working women needed to comprehend to be successful once returning to work.

Global Breastfeeding Recommendations and Guidelines

The global breastfeeding recommendations was to allow newborns initial skin-to-skin contact with their mothers immediately after birth, to support the initiation of breastfeeding within one hour after birth (defined as early initiation of breastfeeding or EIBF), and to exclusively breastfeed the child until six months of age (Takahashi, Ganchimeg, Ota, Vogel, Souza, Laopaiboon, . . . Mori, 2017). Research in developed countries suggested that health education and peer support interventions, the duration of labor, having a professional occupation and maternal overweight were associated with the initiation of breastfeeding. The results of this study showed one of the factors contributing to the delay in the initiation of breastfeeding, which was consistent with previous studies (Takahashi et al., 2017). Skin-to-skin contact allowed the mother and child to establish a physical and emotional connection (Shlafer, Davis, Hindt, Goshin, & Gerrity, 2018).

Strategies to Improve Breastfeeding Outcomes and Rates

Within the vast consensus of literature, three specific EBP interventions that were identified as being effective: early and aggressive lactation support, maternal and staff education, and maternal confidence support (Busch et al., 2014). The National Association of Pediatric Nurse Practitioners (NAPNAP) identified ten key breastfeeding strategies to effectively initiate, sustain, and manage breastfeeding efforts in primary care for all health care providers. These strategies included providing parental education and lactation support, overcoming breastfeeding barriers, maintaining EBP lactation care and knowledge, and designing and implementing breastfeeding policies and procedures (as cited in Busch et al., 2014). Barriers related to different

issues were identified. These issues included maternal and infant health; the short times before women were forced to separate from their newborns, and interactions with nurses (Shlafer et al., 2018).

In January 2011, the Office of the Surgeon General issued The Surgeon General's Call to Action to Support Breastfeeding (Call to Action), which outlined a series of 20 action steps that called for action at a local level up to national policies in a society-wide approach to support all breastfeeding mothers and babies (Anstey, McGowan, & Allen, 2016). These 20 action steps focused on strategies related to six areas: mothers and families, communities, the healthcare system, the workforce, research and surveillance, and public health infrastructure. Strategies identified by the Call to Action for supporting mothers included efforts to educate mothers about the importance of breastfeeding, teaching mothers to breastfeed, encouraging mothers to talk to their providers about breastfeeding, and encouraging mothers to seek help when needed. Some strategies discussed the use of a community-based organization to promote, support breastfeeding, and ensure that maternity care practices throughout the United States were fully supportive of breastfeeding. A system was developed to guarantee continuity of skill support for lactation between hospitals and healthcare settings in the community. Furthermore, education and training about breastfeeding for all health care professionals who care for women and children included basic support for breastfeeding as a standard of care for midwives, obstetricians, family physicians, nurse practitioners, and pediatricians, and ensures access to services provided by International Board Certified Lactation Consultants (Anstey et al., 2016).

Barriers to Breastfeeding

Factors that influenced breastfeeding negatively consisted of societal beliefs, healthcare systems, commercial factors of infant formula, and a lack of knowledge (Nona et al., 2018). The

society has not fully accepted breastfeeding in public places. Some healthcare systems are supportive of the promotion of infant formula instead of educating staff and mothers on breastfeeding. One of the keys to successful breastfeeding was to change the perception of breastfeeding among postnatal mothers (Nona et al., 2018). A positive maternal perception of breastfeeding was associated with continuing to breastfeed longer, which provided a greater chance for success.

Furthermore, the socio-demographic that influenced breastfeeding were maternal age, education with marital status and socioeconomic status (Darwent, Mcinnes, & Swanson, 2016). A congruent social and family network appeared to be significant, with support from female relatives, particularly the maternal grandmother, identified the most important and the key source of the attitudinal and behavioral norm. Family support was beneficial in terms of increased breastfeeding confidence by sharing breastfeeding experiences and providing practical suggestions (Darwent et al., 2016).

Additionally, a majority of women in the United States wanted to breastfeed and most (80%) started breastfeeding (Anstey et al., 2016). Although breastfeeding initiation and duration had consistently improved, one study revealed that 60% of women do not meet their breastfeeding goals. Women face a range of potential barriers to breastfeeding, including lack of knowledge, concerns about milk supply, social norms, poor family and social support, embarrassment, lactation problems and pain, lack of support from employers, child care facilities, inadequate access to healthcare services, and peer or professional breastfeeding support (Anstey et al., 2016).

Self-Efficacy

At the individual level, affective characteristics, or the feelings that capture people's way of responding, was fundamental to behavior (Boateng, Martin, Tuthill, Collins, Dennis, Natamba, & Young, 2019). To measure self-efficacy, Bandura recommended using a behavior-specific technique, which included capturing self-efficacy in one's ability to perform the behaviors and the skills or tasks necessary to complete the behavior. Essentially, breastfeeding self-efficacy captured a range of cognitive components, including whether a mother chooses to breastfeed exclusively, her efforts expended, how she perseveres when challenges arise, and if she was self-critical or self-encouraging to support her breastfeeding behavior, and how she managed exclusive breastfeeding behaviors. The other component, which included behavioral skills associated with breastfeeding, captures confidence in the baby's latch, identifying breast health issues, and learning behavioral skills to overcome perceived or real barriers (Boateng et al., 2019). Self-efficacy interventions and activities foster maternal breastfeeding support and promotion, identifying any barriers or obstacles that inhibited a mother's ability to successfully breastfeed, and enhance emotional support by involving the partner, friends, and extended family (Busch et al., 2014). Furthermore, these interventions are ways to develop a strong support system by including important family members and fathers in education to promote successful breastfeeding.

Maternal breastfeeding self-efficacy was a significant psychometric factor that influenced breastfeeding rates positively and identified high-risk mothers for discontinuing breastfeeding prematurely among varying maternal populations (Iliadou et al., 2018). Moreover, breastfeeding self-efficacy was an important variable in breastfeeding duration as it expresses in advance the

probable choice of the mother to breastfeed, the levels of efforts, the negative or positive patterns of thoughts, and her emotional status while dealing with breastfeeding problems.

Furthermore, the BSES-SF was a valid and reliable instrument utilized to assess the self-efficacy of breastfeeding mothers. This instrument was essential for building an educational intervention that was appropriate for the specific characteristics of each population. The flip chart was utilized to construct, validate, and assess an educational intervention. The strategy of health education fostered by the flip chart titled “I Can Breastfeed My Child” was effective in increasing self-efficacy and the duration of breastfeeding. Maternal self-efficacy also had influences on personal experiences, verbal persuasion at the time of the educational intervention and vicarious, such as desiring other women breastfeeding at the maternity hospital. Education also affected how people behave when facing adversity and influences the duration of adversity and the number of effort people exerted to confront adversity. Nurses needed to use health education strategies such as this flip chart to promote breastfeeding (Dodt, Joventino, Aquino, Almeida, & Ximenes, 2015). Overall, education and self-efficacy work together when it comes to exclusive breastfeeding so; healthcare staff needed to be able to educate mothers efficiently to build confidence.

Professional Collaboration

When professionals collaborated with decision-making and when coordination of care was seamless, fewer intrapartum neonatal and maternal deaths occurred during critical obstetric events (Vedam et al., 2018). Primary determinants listed as follows: poor communication, disagreement, and a lack of clarity resulted in adverse outcomes in regard to the provider role. The ability of midwives to function autonomously to their full scope of practice in community settings and collaboration with other members of the health systems enhances the cost-

effectiveness of maternity care. Regardless of birth setting, midwife-led care had been linked to significantly improve perinatal outcomes, and maternal experience, in both healthy and at-risk populations (Vedam et al., 2018). WHS collaborates with the largest delivering hospital to improve the breastfeeding environment and systems of care. This collaboration addressed four conditions of collective impact, a key strategy of the NHS program. The four conditions consisted of a common agenda, shared measurement, continuous communication, and mutually reinforcing activities (Leruth et al., 2017).

Intent to Breastfeed

Intention to breastfeed was a critical determinant of breastfeeding, particularly exclusive breastfeeding (Nnebe-Agumadu, Racine, Laditka, & Coffman, 2016). Reported barriers include maternal work, age, available emotional support, especially support of the baby's father, planned pregnancy and delivery, race, and maternal education. The United States Breastfeeding committee reported misperceptions and fears of exclusive breastfeeding as barriers to exclusive breastfeeding. Some examples of misperceptions are as follows: mothers with problems breastfeeding may cause excessive concerns about feasibility, perceived inconvenience, commitment required to breastfeed causes a threat to a mothers' freedom and independence, and knowledge upon breastfeeding is not readily available nor easily understood. Research had shown that mothers with more education were more likely than those with less education to exclusively breastfeed for longer durations. Prenatal maternal education and environmental support that extended into the postnatal period were utilized to promote longer durations of exclusive breastfeeding (Nnebe-Agumadu et al., 2016).

Moreover, data from the Centers for Disease Control and Prevention and the Pregnancy Risk Assessment Monitoring System (PRAMS) indicated a strong association between prenatal

intent to breastfeed and breastfeeding initiation and continuation within the first four and ten weeks of delivery (Balyakina, Fulda, Franks, Cardarelli, & Hinkle, 2015). The decision to breastfeed was typically made in the period of prenatal care, and therefore, uniquely places healthcare providers in a position to influence breastfeeding outcomes. Women who were cared for by a midwife or nurse-midwife during the prenatal period was more than twice as likely to intend to exclusively breastfeed within the first few weeks of birth as compared to women whose prenatal care was provided by an obstetrician (Balyakina et al., 2015).

Influence of Micro-biome on Respiratory Infections and Asthma

The intestinal content of breastfed infants was acidic (pH 5.0), whereas those of non-breastfed infants were neutral (pH 7.1) (Lynch, Sikder, Curren, Werder, Simpson, Cuív, ... Phipps, 2017). Milk oligosaccharide was the principal factor that supported the growth of bifidobacteria and hence may influence gastrointestinal and circulating SCFA levels in the infant. Thus, milk oligosaccharides likely served as prebiotics to support the selective growth of “beneficial” bacteria, providing these commensals with a competitive advantage over potential pathogens. Milk oligosaccharides had also been postulated to exert direct anti-pathogenic and pro-tolerogenic roles in the intestine by acting as glycan receptor decoys for microbial adhesion factors and preventing pathogen attachment. Additionally, they modulated the balance between Th1/Th2 immunity and provided essential nutrients for brain development and cognition. Breast milk also contained a variety of foodborne and aeroallergens that was transferred to the infant and influence sensitization to these antigens. In an elegant study by Verhasselt and colleagues, transforming growth factor- β transferred in breast milk was shown to facilitate T cell tolerance, protecting the offspring from OVA/alum-induced allergic airways disease. Overall, birth cohort

studies demonstrated that a non-breastfed infant was at a greater risk of developing asthma, strongly implicating maternal factors in protecting against disease (Lynch et al., 2017).

Fathers and Breastfeeding

Research indicated that the support of fathers was critical to breastfeeding success and was identified as one of the strongest and consistent factors associated with women's willingness to breastfeed (Maycock et al., 2015). The fathers needed to be included in the antenatal preparation for breastfeeding as well as in the postnatal period, to deflect negative attitudes associated with breastfeeding and increase support for the mother. By involving both mother and father in infant feeding discussions and processes, it was predicted that parents would adopt more positive breastfeeding behaviors (Maycock et al., 2015).

Furthermore, fathers' attitudes and behaviors impact mothers' breastfeeding decision and practice: couples that had a positive attitude toward breastfeeding more likely resulted in mothers' breastfeeding their infant (Namir, Brady, & Gallagher, 2017). Although breastfeeding was a relatively brief period in fatherhood, it was associated with insecurities and concerns toward breastfeeding. The inability to provide support after birth increased a father's worries in their fathering role and problems such as jealousy, isolation, and resentment. Five essential characteristics of fathers who support breastfeeding as follows: being knowledgeable about breastfeeding, having positive attitudes towards breastfeeding, involvement in feeding decision-making, providing practical support, and providing emotional support (Namir et al., 2017, p. 432). Overall, it was very important to include fathers in the decision/education process (prenatal, perinatal, and postpartum) to breastfeed not only to help them feel included, but to have positive attitudes, a support system for the mother, and an increase in breastfeeding rates at birth.

Overall, the literature provides strategies and interventions that are based on evidence-based practice to improve exclusive breastfeeding rates. The interventions and classes for this project included prenatal education and counseling, positive maternal selection to breastfeeding, community-based promotion program, global breastfeeding recommendations, strategies to improve breastfeeding outcomes and rates, barriers to breastfeeding, self-efficacy, professional collaboration, intent to breastfeed, the influence of micro-biome on respiratory infections and asthma, and fathers and breastfeeding. These interventions provide examples for appropriate utilization to improve exclusive breastfeeding rates.

Rationale

The Social Learning Theory

Albert Bandura developed the social learning theory. The social learning theory emphasized the importance of observing and modeling the behaviors, attitudes, and emotional reactions of others (Bandura, 1988). The component processes underlying observational learning was as follows: (1) attention, including modeled events and observer characteristics, (2) retention, including symbolic coding, cognitive organization, symbolic, (3) motor reproduction, including physical capabilities, self-observation of reproduction, the accuracy of feedback, and (4) motivation, including external, vicarious and self-reinforcement (Bandura, 1988).

An example that utilizes the social learning theory is the basic life support course. The individuals in this course had to pay attention to knowledge being taught by the instructor. This course is structured to help retain information by having set time where the learners reiterate the skills with return demonstrations. The motivation factors take place throughout the course and completion is noted with a certificate.

The quality improvement project and PICOT question were directly connected to this theory because the mothers were learning directly through observation. The goal was to gather a baseline for intent to breastfeed, pre and post self-efficacy rates, and to compare if a community-based program affected the outcomes. Breastfeeding is a learned behavior that only gets better with repetition and continual support if problems occur. Lastly, once a woman successfully masters breastfeeding their confidence level increases.

Variables

The independent variable was the community-based breastfeeding program. This was a program of classes that provided resources, support, and education to mothers to overcome obstacles that hindered exclusive breastfeeding and the project's focus.

Both intent to breastfeed and self-efficacy were the outcome measures and thus, the dependent variables. The intent to breastfeed was a mother's determination to breastfeed. The ability of an individual to believe that a goal was achieved was defined as self-efficacy.

Project Assumptions

An assumption was that community women would participate in classes and pass the word around to additional women in the community. Another assumption for the project was that all women would participate and support the change. The last assumption was that the center's staff would assist with the program.

Specific Aims

The purpose of the quality improvement project was to provide a starting point for the DNP learner's site to begin branching breastfeeding educational classes out to the community. The central project aimed to implement breastfeeding education classes face-to-face and online to help increase the number of women who would choose to breastfeed. The goal was to improve

exclusive breastfeeding rates over the long term. The PICOT question and theory worked hand and hand because breastfeeding is a learned behavior for the mother and the infant. Repetition was the best way to improve knowledge, which could impact breastfeeding rates for the project's site.

Current State

The gap in practice at the DNP learner's facility was a lack of community resources and educational classes to support the longevity of breastfeeding. As a birthing facility, there needs to be standardization to produce continuity of care and to provide quality patient care. A barrier to overcome was low staffing and a lack of utilization of breastfeeding education.

Desired State

The desired state after implementation of change was to determine if education and support increased the intent to breastfeed and extended the duration of breastfeeding. However, it was not feasible to follow women for a full year within the project time frame. Education and support were directly compared to the mother's self-efficacy scores. The intervention was determined to impact the duration of breastfeeding. Building a mother's confidence was key in promoting success in breastfeeding. A mother needed extra support, encouragement, and guidance to embark on the journey to continue to breastfeed even post-discharge.

Desired Outcomes

The desired outcome was to evaluate intent to breastfeed and self-efficacy rates for women that were currently pregnant or mother's who recently delivered. The outcome was to focus on if education and professional support increased the duration of breastfeeding. The BSES-SF survey was implemented pre- and post-intervention phase. The IFI scale scores were calculated into pre- and post-total mean scores after the completion of the class. The change was

noted with higher self-efficacy scores and the women who intended to breastfeed breastfed. Data was collected in regard to pre- and post-total means to note any changes.

Since education was introduced in the prenatal stage women were more likely intending to breastfeed exclusively and reach this goal. The prenatal stage was the most important stage to introduce education for breastfeeding and hosting face-to-face and online classes prenatally, which helped to improve self-efficacy rates. Looking at pre- and post-mean self-efficacy scores and a follow-up presentation was developed and the IFI scale was evaluated post-survey. More so over, the interventions noted success with higher self-efficacy rates, higher intent to breastfeed numbers, and a gradual increase in exclusive breastfeeding percentages over time.

Context

The staff consisted of one primary birth assistant, two backup birth assistants, the midwife, an apprentice midwife, and the office manager. The midwife sees four to five patients a day and she made postpartum home visits. The project site was affiliated with the office manager's private company, which provided doula services, placenta encapsulation, and childbirth classes to the community by referral. Increased reliance on midwives reduced the overuse of obstetric interventions, reduced rates of preterm birth and neonatal loss, and improved breastfeeding and vaginal birth rates, thereby addressing serious maternal-newborn health deficits in the United States (Vedam et al., 2018). The facility did not teach any breastfeeding educational classes until this project was implemented. The closest facility for mothers to attend educational classes was twenty minutes away in Lafayette, LA. The expansion of educational classes to the surrounding areas could help to improve the state's exclusive breastfeeding rates and reach the goals of Healthy People 2020.

The patients were required to see their obstetrical gynecologist for the initial visit and then a consultation took place to transfer care to the midwife's practice. The initial consultation was performed with the patient and then a request was placed to receive the patient's obstetrical records. A risk assessment was performed to determine the risk status of the patient because an only low-risk patient was accepted to receive care. A term risk assessment was performed as well to determine overall delivery risks. Should risk factors change, the patient was transferred back to their obstetrical gynecologist for further treatment. This list of medical conditions that disqualified a woman for midwifery care, consisted of vaginal birth after cesarean section, epileptics currently on medication, type 1 or 2 diabetes, current addiction to narcotics, confirmed HIV infection, hepatitis B or C, twins or other multiple pregnancies, and a pregnancy that required a cesarean section for safe delivery of the baby.

Stakeholder Communications

Communication with the certified professional midwife and office manager at the project site to discuss and perform a gap analysis at the facility was conducted (personal communication, June 3rd, 2019). A discussion was also held about how the business was running, patient load, deliveries per month, pain control methods, how emergencies were handled, and the types of patients accepted at this facility (personal communication, June 5th, 2019 with the nurse consultant for the Bureau of Family Health). The development of community education and support was discussed to promote education to patients. The DNP learner was included in monthly conference calls to discuss progress and goals.

Barriers

The DNP learner had to make changes to the original data collection process to implement an online presentation and accompanying pre- and post- surveys online due to space

barriers for classes at the practice site. The midwife had limited availability to speak to the DNP learner directly. However, the midwife's practice manager was open for communication to facilitate meetings, documents, and feedback. Also, the lactation consultant was instrumental in helping the DNP learner overcome these barriers. The project cost was minimal because the facility was utilized for classes and equipment was available for use. This project benefits the organization by providing additional resources, educational handouts, and assistance with meeting certain standards for the GIFT (Guided Infant Feeding Techniques) designation. These educational classes reached out to a broader area of the community. No financial support was needed to carry out this project.

Intervention

Setting

A privately owned birthing center in Louisiana was the project site. The state of Louisiana was 91% urban and 9% rural. This facility provided prenatal care, assistance with delivery, and postpartum care by a Certified Professional Midwife. The population in the project site's city was 12,042. The project's site provided holistic prenatal and postpartum appointments, nutritional counseling, health, and risk assessment with diagnostic testing, ultrasounds, birth planning, breastfeeding education, breastfeeding support, newborn care education, family planning consultation, natural techniques for comfort, individualized care, and homeopathic, herbs and essential oils were available for non-emergencies. The midwife was on-call 24 hours a day.

The ages of patients seen at the facility were between 21 and 41 years of age. The racial ethnicities consisted of a majority of Caucasian (83.7%) and African American women (13.8%). These women had all completed high school or greater. The median household income was

\$46,448 and the average family size was three, which consisted of mother, father, and child. The average age of women giving birth ranged from 25-29 (47.9%). The target population consisted of primiparous, multiparous women who breastfed before and those who did not breastfeed. The inclusion criteria needed for the project were women who spoke English, and exclusion criteria consisted of non-English speaking women, and women who had vaginal birth after cesarean section, gestational diabetes, or pregnancy-induced hypertension due to their high risk.

The DNP learner extended outreach for the breastfeeding educational classes to the surrounding community by having face-to-face and online classes. The population included was women in Lafayette Parish and surrounding areas (Carencro, Scott, Lafayette, and Broussard, Louisiana). The race and ethnicity included in this project was Caucasians, African Americans, American Indians or Alaska Natives, Asians, and Native Hawaiians or other Pacific Islanders. The project targeted women who had children already and/or currently pregnant. Also, the population was open to women who had the interest to breastfeed or had attempted to breastfeed in the past with a previous child. The goal was to provide knowledge to women, provide access to resources, build confidence, and develop a strong community support system.

Educational Classes

The DNP learner composed two different types of educational classes on breastfeeding. The classes were given online and in-person (face-to-face). Permission was received from the authors to place the two surveys on Survey Monkey. There were an initial presentation and a follow-up presentation to teach about breastfeeding basics. The initial breastfeeding class was taught in person and then online to increase the sample size. The initial presentation contained information on the anatomy of the breast, benefits of breastfeeding, basics of breastfeeding, phases of milk, latching techniques, growth of the baby, challenges of breastfeeding, emotions,

and expectations, legal rights, Louisiana state laws on breastfeeding, programs for assistance, and resources available. The Breastfeeding Basics presentation was 45 minutes in length and both pre- and post-surveys for BSES-SF and the IFI scale were utilized (see Appendices A and B). The follow-up class was taught online to provide convenience and to wrap up the educational sessions. The follow-up presentation contained information on the basics of breastfeeding, benefits of breastfeeding, phases of milk, growth, and development, latching and positioning, and resources available. The follow-up presentation was 20 minutes in length and only a post-survey for IFI scale was created and given to the women who participated.

The lactation consultant was very instrumental in the development of the education material to include in both presentations. She was available to suggest practice recommendations to reach the goal of expanding education in the community. The lactation consultant was able to give important videos for demonstration, handouts for education purposes, and provide websites with pertinent information on breastfeeding. The lactation consultant was not able to attend the physical class that was offered. Difficulties with coordinating dates and times that accommodated the lactation consultant, the midwife and the DNP learner to teach together. This barrier led the DNP learner to create, discuss, and implement different actions to execute this project. The team was constructed during the initial stakeholder meeting. The team consisted of the midwife, office manager, an apprentice midwife, the lactation consultant, and the DNP learner. There were scheduling conflicts with the midwife due to possible deliveries. These conflicts were discussed with the office manager to promote appropriate scheduling and a modification to post the presentations on the company's website. The total number of face-to-face classes that were scheduled is three, but only one of those classes had attendance and the

online class was posted to the site's website (one breastfeeding basics and the follow-up presentation).

Study of Intervention

Implementation of educational classes was challenging as it pertained to time, schedule, promotion of participation, and actual assistance from the stakeholders. The tools evaluated the women's self-efficacy level and intent to breastfeed (see Appendices A and B). The two survey tools were chosen because of a direct relationship with breastfeeding and self-efficacy.

Education prenatally had a significant impact on if women chose to breastfeed or not. The financial and emotional barriers are not easy to overcome and can be exacerbated if health professionals themselves are not fully educated in breastfeeding strategies (Glasper, 2019). The DNP learner accomplished effective education classes online with props, which provided visualization and demonstration of techniques for breastfeeding. The evaluation plan was to compare pre-post surveys. A change would be noted, and the impact of the intervention will be determined with the scores of the pre-post test and compared to the follow up presentation and surveys. This method used for evaluation was not 100% effective because it was difficult to track the women who participated and those who returned for the follow-up class and survey. The observed outcome was related to the intervention.

Measures

Project Design

A quality improvement design was used for this project and a pre-post test was used to quantify the outcome measures. A quality improvement project was utilized to improve the quality of a process, and therefore, improve the patient outcomes. The steps that were followed consisted of: assessing, recognizing a need for change, involving appropriate stakeholders and

clinicians, developing a plan for change, implementation, and evaluation of findings and follow the plan, do, study, and act (PDSA) model. It was important for the DNP learner to continuously monitor, evaluate, and tweak the classes to meet the needs of the audience.

The project used the dependent T-test and correlation evaluations to analyze data. The self-efficacy and intent to breastfeed were measured as interval data. The student t-test was appropriate because the difference with mean values was related to findings (Heavey, 2019). A correlation evaluation was conducted for the follow-up surveys since there was only a post-survey for all classes. An anticipated finding was that women who participated in the classes were more confident in their skills and expressed a desire to breastfeed and/or continues to breastfeed exclusively for longer durations. This may have been related to the demographics rather than the class format. For example, more women in the face-to-face class may have been successful with breastfeeding in the past.

Tools

The self-efficacy scores were calculated into pre and post total means for comparison and evaluated by using descriptive statistics. The intervention was noted successful when the duration of breastfeeding rates increased and self-efficacy scores were higher amongst the post scores, which meant that the women expressed more confidence and that continued support might increase the intent and duration of breastfeeding. An existing widely used tool, BSES-SF, (see Appendix A) was used to measure the self-efficacy outcome. Breastfeeding self-efficacy was defined as a mother's perceived ability to carry out breastfeeding. Dennis and Faux were interested in capturing two components to self-efficacy in postpartum women, including one's belief that behavior will produce a particular outcome and one's conviction in one's ability to perform a specific behavior that results in the desired outcome (Tuthill, McGrath, Graber,

Cusson, & Young, 2015). The instrument had 14 items with a five-point Likert-type scale, with responses from not at all confident (1) to always confident (5). As such, scores can range from 33 to 165.

The IFI scale (see Appendix B) was developed to provide a quantitative measure of maternal breastfeeding intentions (Nommsen-Rivers & Dewey, 2008). A tool that assesses the strength and duration of intentions to breastfeed up to six months of age was aligned with current infant feeding recommendations. This survey suggested women should initiate breastfeeding early on and to provide breast milk as the sole source of milk throughout the first six months (as recommended by public health agencies). The tool was developed and examined for content and construct validity of the IFI scale (Nommsen-Rivers et al., 2008).

Breastfeeding Self-Efficacy-Short Form. The tool's validity and reliability were determined and discussed as follows. To establish content validity, Dennis and Faux calculated a content validity index score (Tuthill et al., 2015). To calculate this score three measurement experts and four content experts reviewed the instrument. They rated each item on its relevance (i.e., it is fit and understandability for the target population) and clarity (i.e., item readability) using a four-point Likert-type scale. The overall content validity index score was .86, suggesting strong content validity. Construct validity was measured by administering the 40-item instrument to 23 mothers in-hospital who were breastfeeding. This yielded three derived factors and a Cronbach alpha of .95, indicating both strong reliability and that some items could be omitted while still preserving internal reliability. The final 33-item instrument was then retested among 130 recently delivered, in-hospital breastfeeding mothers with a Cronbach alpha of .96. Predictive validity was not measured (Tuthill et al., 2015).

Infant Feeding Intentions Scale. The IFI scale (see Appendix B) was developed to provide a quantitative measure of maternal breastfeeding intentions (Nommsen-Rivers et al., 2008). For illustrative purposes, two Kaplan–Meier survival curves were generated for the duration of EBF: (1) by IFI score, stratified into five four-point increments representing very low (0–3.5), low (4.0–7.5), moderate (8–11.5), strong (12.0–15.5), and very strong (16.0) intentions to breastfeed and (2) by mother’s planned duration of EBF, stratified by the five categories defined previously. The scale was designed such that each IFI item represents a higher level of breastfeeding intention than the preceding item. Therefore, to be consistent with the scale design, it was hypothesized that within a given individual, the intention score for each item was the same or lower than the score for the preceding item. IFI score demonstrated a strong association with actual breastfeeding behavior: 0%, 33%, 40%, 50%, and 86% was exclusively breastfeeding at one month in IFI score categories 0–3.5, 4–7.5, 8–11.5, 12–15.5, and 16, respectively (chi-square = 10.3; $P = 0.03$). IFI score ranged from 0 to 16 with a mean \pm SD of 10.5 ± 4.6 and median (inter-quartile range) of 11.0 (7.0–14.0). The same parameter in the comparable pilot study subset (low-income and primiparous, $n = 33$) was 10.8 ± 4.3 and 11.0 (8.5–15.0) for the mean and median, respectively. IFI score was a valid measure of the *feeding intention* construct, as evidenced by all three-construct validity measures examined. IFI score was significantly different between pre-admission feeding choice groups (Nommsen-Rivers et al., 2008).

Analysis

The tools utilized to collect the interval data in this project were the IFI scale and the BSES-SF survey with permission (see Appendices A and B). The women had to complete pre-surveys before the class was taught and then the post-surveys. Data from both tools was collected over 12 weeks and evaluated for comparison to note a change. The presentation for the online

classes was not accessed until the password was entered and then the post-survey was accessed. Data collected for all online surveys via Survey Monkey online.

Using the Statistical Package for Social Sciences (SPSS) software to complete the data analysis, descriptive and inferential statistics were utilized for analysis. A dependent T-test was also performed as well as correlation evaluations. Descriptive statistics used data to provide descriptions of the population, either through numerical calculations, graphs, or tables. The paired dependent T-test determined if the sample mean was statistically different from a known or hypothesized population means.

Ethical Considerations

Human Subjects Protection

The Institutional Review Board from Capella University approved the DNP learner's project as non-human subject research. Site permission was obtained to utilize the project's site. A modification form was submitted for data collection techniques to develop and present a PowerPoint presentation online and to send surveys via Survey Monkey. The DNP learner informed all women that their responses were confidential and anonymous. All patient information was de-identified and protected by the HIPPA privacy act. Ethical aspects noted for this quality improvement project was confidentiality, respect for intellectual property, honesty, integrity, and remaining objective. Respecting intellectual property was simply not plagiarizing another person's work. Honesty and integrity were key factors in obtaining and analyzing data appropriately. The DNP learner always remained objective to avoid skewing data.

Results

A total of 155 women participated in this project via face-to-face classes and online classes. Findings from the BSES-SF pre and post surveys showed an increase in self-efficacy

scores from 5.4% to 25% post-intervention. The IFI scale showed an increase with women who intend to breastfeed. The pre-test 14/37 (37.8%) women who attended the two online sessions scored a maximum score of 16. The post-test 11/24 (45.8%) women of the same group scored a maximum score of 16, an increase of 8 % on intent to breastfeed. The follow-up survey 13/24 (54.17%) women scored a maximum score of 16. The conclusion noted from this study was that face-to-face classes showed the most improvement however, both online and face-to-face classes showed improved scores. There should be additional projects to extend over a longer period to provide extensive data for comparison.

Infant Feeding Intentions Survey (Online Class)

The mean of IFI Pre-Surveys (online class) was 13.292 with a standard deviation of 3.0854, inferring there was a mild variation in the mean of this sample of 24 women (see Table 1). On the other hand, the average of IFI Post-Survey (online class) was 13.33 (slightly above) with a standard deviation of 3.964, inferring there was an increase of variation in the mean. There was a positive weak correlation between the two groups of 0.006 (see Table 2). The p -value was 0.968 and because the p -value = 0.968 \geq 0.05 level of significance, no statistical significance was found (see Table 3). Hence, there was no statistical difference between IFI Pre-Surveys (online class) and IFI Post-Survey (online class). It was noted that the IFI scores (online class) did not improve the mother's infant feeding intentions' scores (leaning more towards breastfeeding).

Breastfeeding Self-Efficacy Short Form Survey (Online Class)

The mean of the BSES-SF pre-survey (online class) was 50.58 with a standard deviation of 11.729, inferring there was a high variation in the mean of this sample of 24 women (see Table 4). On the other hand, the average BSES-SF Post Survey (online class) was 57.33 with a

standard deviation of 12.409, inferring there was an increase of variation in the mean of this sample. There was a weak negative correlation between the two groups of -0.156 (see Table 5). The p -value was $p = 0.0085$ and because the p -value = 0.0085 less than 0.05 level of significance, thus these findings were not statistical significant (see Table 6).

Breastfeeding Self-Efficacy-Short Form/Infant Feeding Intention (Face-to-Face Class)

The mean of IFI Post Survey (face-to-face class) was 4.89 with a standard deviation of 5.395, inferring there was a high variation in the mean of this sample of women (see Table 7). On the other hand, the average BSES-SF Post Survey (Face to face class) was 59.22 (largely above) with a standard deviation of 8.105, inferring there was an increase in variation of the mean of this sample. There was a positive correlation between the two groups of 0.549 (see Table 8). The p -value was $p = 0.000$ and because the p -value = 0.000 less than 0.05 level of significance (see Table 9), there was a statistical difference between the IFI Post Survey (Face to face class) and BSES-SF Post Survey (Face to face class). Findings suggest that the IFI scale (Face to face class) does improve a mother's feeding intentions (leaning more towards breastfeeding).

Infant Feeding Intention Follow up Survey (Online Class)

The IFI follow up survey showed an average score of 14.5. The box plot (see Figure 1) showed a presence of outliers in the data set on the higher values, which in turn showed that the project performed to a greater extent in some women. But to those with scores less than 14.5 had no outliers as the median line divides the box plot into two equally defined areas as shown. The histogram illustrated that the data set was normally distributed with a uni-modal.

Furthermore, it was noted that more research is needed to obtain additional data in this aspect and to make further improvements in the intent to breastfeed and self-efficacy rates. The

site lacked the patient load, scheduling conflicts, and a lack of assistance. The project outcome was achieved, but professional education did not occur with the staff because of the minimal amount of staff employed and schedule conflicts. Education and support were the interventions and contextual elements that were important to increasing the intention of breastfeeding and self-efficacy rates, which are the outcomes.

The social learning theory gives a comparison in the sense that the women were educated with props to demonstrate what was taught in these educational classes. An unintended consequence of the project was the limited amount of data collected face-to-face. Additionally, there was a lack of structure to determine correlations amongst the pre-post-surveys. Barriers consisted of a lack of participation, insufficient advertisement, and the long-distance for the DNP learner to the site.

Sustainability

The practice change was sustained after completion of the project by providing the site with appropriate handouts for education, granting access to recorded presentations, providing the site with surveys, and speaking with the midwife to get feedback. A conversation took place with the lactation consultant to discuss plans for developing a breastfeeding educational class to implement weekly or even monthly.

Future Practice

For future practice, access to the DNP learner's data collection, presentations, and handouts was made accessible to the site. The goal is to provide mothers the opportunity to learn about breastfeeding to make an informed decision for their feeding option. Most likely this project initiated the start of further research and other projects to improve exclusive

breastfeeding rates. The DNP learner's project site will be able to develop standards, policies, and interventions to successfully execute breastfeeding for longer durations.

Summary

In summary, the IFI (face-to-face class) improved the mother's feeding intentions (leaning more towards breastfeeding). Similarly, BSES-SF (online class) improved self-efficacy rates. The IFI (online class) did not improve the mother's feeding intentions (leaning more towards breastfeeding). These findings were important because it justified that appropriate education improves the intentions of breastfeeding and builds confidence, which helps to increase breastfeeding rates. The strength noted with the project was the flexibility that was granted to complete and record online classes to reach a bigger sample of women. The online classes increased participation in the project.

Interpretation

The interventions directly affected the outcomes in research. However, as a QI project, the pre-post test can suggest a relationship based on the results. Women needed to have access to support, prenatal classes, and resources available to facilitate successful breastfeeding. For example, mothers need skilled support and accurate information to overcome any breastfeeding challenges they may face, and the health visitor is ideally placed to provide this (Syme, Holt, Fell, & Crawley, 2015). Education and support positively impacted breastfeeding rates. For example, a survey of mothers in the USA identified several reasons why mothers chose not to feed their babies naturally, including returning to work or education, having too many household chores, embarrassment at exposing what is seen by many as sexual aspects of the body, not wanting to be tied down and the lack of support (Glasper, 2019).

The project findings compared the same with other findings in the literature. For example, in a study of fathers involved in the breastfeeding process, it was found that a primary fathering role was to develop knowledge about breastfeeding and then use this knowledge to help their partners by expressing value to the act of breastfeeding and to share housework and child care (Glasper, 2019). The comparison of this project to the actual project is that fathers were not incorporated in the classes to gain knowledge and education. Fathers need to be actively involved in any additional projects related to increasing exclusive breastfeeding rates.

However, this project impacted people and the systems directly by promoting optimal nutrition for the infant, reducing hospital visits, and providing a bonding opportunity for women and their babies. The reason for differences between the anticipated and observed outcomes was discussed previously because of inconsistent participation and a lack of access to classes. There were no costs or strategic trade-offs. The strengths noted with this project are the awareness of this issue, actively improving interventions, and active participation from the site to implement and address the insufficient breastfeeding classes. The weaknesses noted is a lack of participation, lack of time, limited space, and not including the women's support system for appropriate education.

Limitations

Limitations included the short time frame to conduct the project, transportation, past experiences, and inconsistent attendance. Women who had previous unsuccessful attempts with a previous child may have felt discouraged and chose not to choose not to actively participate. The DNP learner was unable to track the women who completed pre- and post-surveys online for direct comparison to the follow-up survey. Thus, this limitation had an impact on the overall effectiveness and validity of the data. The inconsistency with attendance amongst the pre-post

test was another issue that would affect the validity and reliability of the results. In order to adapt to this limitation the DNP learner had to provide a password for the women to view the presentation so, the women were not given this information until the presentation was viewed and the pre-test surveys had to be completed. The DNP learner worked closely with the lactation consultant to reduce these limitations.

Conclusion

Breast milk was the optimal source of nutrition for infants. Breastfeeding had positive effects on the infant and the mother. Education was the key factor in increasing a woman's self-efficacy or confidence level to begin and continue to breastfeed. Prenatal education on breastfeeding early on showed a positive impact on if a mother chose to breastfeed or not. This quality improvement project was just a baseline for implementing education in the early stages of pregnancy and postpartum. This project does spread to other contexts because of the impact inflicted on a mother and her child. The project needs to be revised and implemented over a longer time frame to produce extensive results to compare appropriately. The ultimate goal was to provide education so informed decisions were made on whether to breastfeed or not. Breastfeeding improves patient outcomes for women and infants, decreases hospital costs, and supports a healthy healing process post delivery for the mother and her infant.

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Appendix A

Breastfeeding Self-Efficacy Scale –Short Form

Dear Latonya,

Thank you for your email and interest in my breastfeeding Self-Efficacy Scale. Attached is the short form to be used in your Capstone project. Good luck with your studies and research project.

Warm regards

Cindy-Lee

Cindy-Lee Dennis, PhD, FCAHS

Professor in Nursing and Medicine, Dept. of Psychiatry, University of Toronto;

Women's Health Research Chair, Li Ka Shing Knowledge Institute, St. Michael's Hospital;

Fellow, Canadian Academy of Health Sciences

University of Toronto

155 College St

Toronto, Ontario

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The Breastfeeding Self-Efficacy Scale – Short Form (BSES-SF) is under the copyright of Dr. Cindy-Lee Dennis (2003). Permission to use the BSES-SF must be obtained in writing or via email prior to use. There is no charge for this use. Dr. Cindy-Lee Dennis must approve any translations and a final copy provided via email. Publication of the full BSES-SF scale is not permitted. Of course, you can publish your research results.

Email or mail all correspondence to: Dr. Cindy-Lee Dennis

University of Toronto

Lawrence S. Bloomberg Faculty of Nursing

155 College Street

Toronto, Ontario, Canada



Appendix A

Breastfeeding Self-Efficacy Scale – Short Form

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

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

1	I can always determine that my baby is getting enough milk	1	2	3	4	5
2	I can always successfully cope with breastfeeding like I have with other challenging tasks	1	2	3	4	5
3	I can always breastfeed my baby without using formula as a supplement	1	2	3	4	5
4	I can always ensure that my baby is properly latched on for the whole feeding	1	2	3	4	5
5	I can always manage the breastfeeding situation to my satisfaction	1	2	3	4	5
6	I can always manage to breastfeed even if my baby is crying	1	2	3	4	5
7	I can always keep wanting to breastfeed	1	2	3	4	5
8	I can always comfortably breastfeed with my family members present	1	2	3	4	5
9	I can always be satisfied with my breastfeeding experience	1	2	3	4	5
10	I can always deal with the fact that breastfeeding can be time consuming	1	2	3	4	5
11	I can always finish feeding my baby on one breast before switching to the other breast	1	2	3	4	5
12	I can always continue to breastfeed my baby for every feeding	1	2	3	4	5
13	I can always manage to keep up with my baby's breastfeeding demands	1	2	3	4	5
14	I can always tell when my baby is finished breastfeeding	1	2	3	4	5

Appendix B

Infant Feeding Intentions Scale

Hello Dr. Laurie,

My name is Latonya Thomas and I'm currently enrolled at Capella University working on my Doctor of Nursing Practice. My topic for my project is breastfeeding. I am in the beginning stages of my capstone project and I am reaching out to you to ask for permission to utilize your Infant Feeding Intention Scale. Can I use this scale in my project? If so, can you attach a copy of the scale to this email? I appreciate your time in reviewing this email. Please feel free to reach me by email if you have any questions.

Thank you,

Latonya Thomas

Dear Latonya,

Best wishes on your research. See attached.

Sincerely, Laurie

Laurie A Nommsen-Rivers, PhD, RD, IBCLC
Associate Professor of Nutritional Sciences
Ruth E. Rosevear Endowed Chair of Maternal and Child Nutrition
Nutrition Track Director, Medical Students Scholar Program
College of Allied Health Sciences
University of Cincinnati

Appendix B

Infant Feeding Intentions Scale

I. Feeding intentions

You may not know exactly what your plans are for feeding your baby, but you may have ideas about what you would like or are planning to do. I am going to read you some statements about feeding your baby and I would like you to please choose the answer that most closely matches your opinion, considering both your current feeding plans and the likelihood that you will carry out those plans.

Very much agree
Somewhat agree
Unsure
Somewhat disagree
Very much disagree

- | | | | | | |
|---|---|---|---|---|---|
| 1. I am planning to only formula feed my baby (will not breastfeed at all). | 0 | 1 | 2 | 3 | 4 |
| 2. I am planning to breastfeed my baby or at least try. | 0 | 1 | 2 | 3 | 4 |
| 3. When my baby is one month old, I will be breastfeeding without using any formula or other milk. | 0 | 1 | 2 | 3 | 4 |
| 4. When my baby is three months old, I will be breastfeeding my baby without using any formula or other milk. | 0 | 1 | 2 | 3 | 4 |
| 5. When my baby is six months old, I will be breastfeeding my baby without using any formula or other milk. | 0 | 1 | 2 | 3 | 4 |

Scoring

For item 1: Very much agree = 0, Somewhat agree = 1, Unsure = 2, Somewhat disagree = 3, and Very much disagree = 4.

For items 2, 3, 4 and 5: Very much agree = 4, Somewhat agree = 3, Unsure = 2, Somewhat disagree = 1 and Very much disagree = 0.

Total score = (mean of items 1 + 2) + (sum of items 3, 4, 5). Thus, total score ranges from 0 (very strong intention to not breastfeed at all) to 16 (very strong intentions to provide breast milk as sole source of milk for first 6 months).

Developed by Laurie A. Nommsen-Rivers, PhD, RD, IBCLC
laurie.nommsen-rivers@cchmc.org
Cincinnati Children's Hospital Medical Center, Cincinnati, OH

Infant Feeding Intentions Pre-Surveys (online class) - r 1	-.0417	5.0085	1.0224	-2.1566	2.0732	-.041	23	.968
Infant Feeding Intentions Post-Survey (online class)								

Table 4: Descriptive Statistics BSES-SF

Paired Samples Statistics

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 Breastfeeding Self-Efficacy-Short Form Pre-Survey (online class)	50.58	24	11.729	2.394
Breastfeeding Self-Efficacy-Short Form Post Survey (online class)	57.33	24	12.409	2.533

Table 5: Paired Samples Correlations BSES-SF

Paired Samples Correlations

	N	Correlation	Sig.
Pair 1 Breastfeeding Self-Efficacy-Short Form Pre-Survey (online class) & Breastfeeding Self-Efficacy-Short Form Post Survey (online class)	24	-.156	.468

Table 6- BSES-SF Paired t-test

	Paired Differences					T	Df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 Breastfeeding Self-Efficacy-Short Form Pre-Survey (online class) - Breastfeeding Self-Efficacy-Short Form Post Survey (online class)	-6.750	18.352	3.746	-14.499	.999	-1.802	23	.0085

Table 7: Descriptive Statistics IFI to BSES-SF

Paired Samples Statistics

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 Infant Feeding Intentions Post Survey (Face to face class)	4.89	9	5.395	1.798
Pair 1 Breastfeeding Self-Efficacy Scale-Short Form Post Survey (Face to face class)	59.22	9	8.105	2.702

Table 8: Paired Samples Correlations IFI to BSES-SF

Paired Samples Correlations

	N	Correlation	Sig.

Pair 1	Infant Feeding Intentions Post Survey (Face to face class) & Breastfeeding Self-Efficacy Scale-Short Form Post Survey (Face to face class)	9	.549	.125
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Table 9: Paired Samples T-test IFI to BSES-SF

Paired Samples Test									
	Paired Differences					t	df	Sig. (2-tailed)	
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference					
				Lower	Upper				
Pair 1	Infant Feeding Intentions Post Survey (Face to face class) - Breastfeeding Self-Efficacy Scale-Short Form Post Survey (Face to face class)	-54.333	6.837	2.279	-59.589	-49.078	-23.839	8	.000

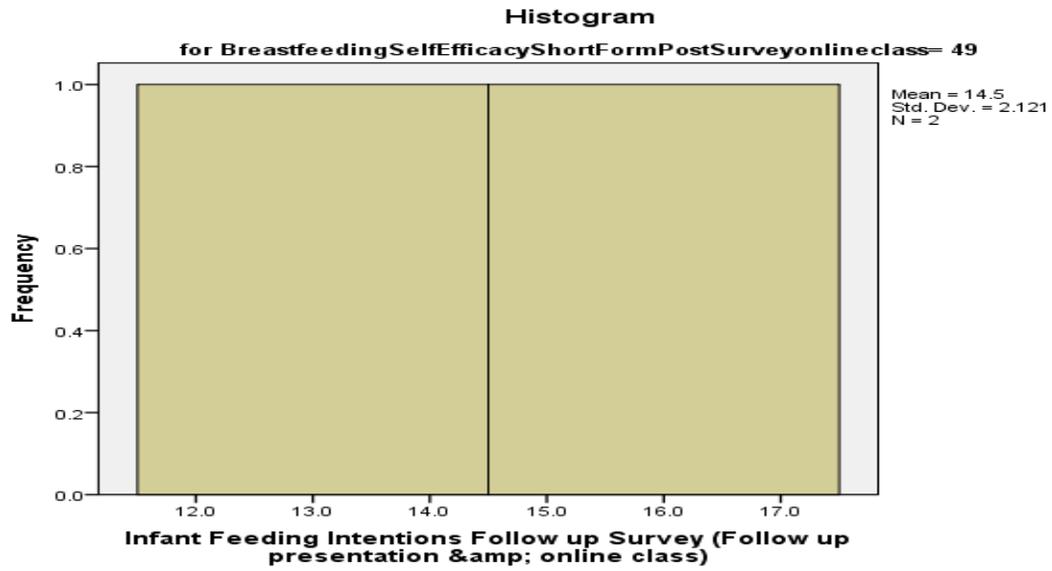


Figure 1. IFI follow up scores

Appendix D

Update to utilize Breastfeeding Self-Efficacy Scale-Short Form on Survey Monkey as well from author

Latonya Thomas [REDACTED]
To: Cindy-Lee Dennis
Nov 21 at 8:28 AM
Hi Dr. Dennis,

I received permission to utilize your Breastfeeding Self-Efficacy Scale -Short Form previously. I have a question. Is there anyway that I could put the question into survey monkey to keep track online specifically? I would like record my presentation and administer the surveys online. I just wanted to ask if this would be appropriate before doing so.

Thank you,

Latonya Thomas

Sent from my iPhone

Cindy-Lee Dennis <[REDACTED]>
To: Latonya Thomas
Dec 13 at 10:37 AM

Yes, this would be ok – no problem at all.

Cindy-Lee Dennis, PhD, FCAHS
Professor in Nursing and Medicine, Dept. of Psychiatry, University of Toronto;
Women's Health Research Chair, Li Ka Shing Knowledge Institute, St. Michael's Hospital.

Appendix D

Fellow, Canadian Academy of Health Sciences

University of Toronto
155 College St
Toronto, Ontario
Canada M5T 1P8

Update to utilize Infant Feeding Intention Scale on Survey Monkey as well from author

Latonya Thomas <[REDACTED]>

To: Nommsen-Rivers, Laurie ([REDACTED])

Nov 13 at 6:47 AM

Hi Dr. Laurie,

I received permission to utilize your Infant Feeding Intention Scale previously. I have a question. Is there anyway that I could put the question into survey monkey to keep track online specifically? I would like to record my presentation and administer the surveys online. I just wanted to ask if this would be appropriate before doing so.

Thank you,

Latonya Thomas

Sent from my iPhone

Nommsen-Rivers, Laurie (nommsele) <[REDACTED]>

To: Latonya Thomas

Nov 13 at 12:20 PM

Absolutely. Sounds like a great idea. Best wishes with the study.

Appendix D

Latonya Thomas <[REDACTED]>

To: [REDACTED]

Dec 16 at 10:40 PM

----- Forwarded message -----

From: **Capella IRB** ([REDACTED]) >

Date: Thursday, December 5, 2019

Subject: IRB Modification Approved

To: Latonya Thomas [REDACTED]

Cc: Mary Elizabeth Teixeira [REDACTED]

Dear Latonya,

Thank you for notifying us of the proposed changes to your IRB approved study. This email is to acknowledge the change to post the PowerPoint on the project's website and to put the surveys online. You may proceed with your research; however, note the following aspects regarding your study:

- IRB and School requirements for review of modifications are not identical. If you have not already received school approval for this modification, your mentor should consult with the faculty chair in your School for further guidance.
- Per the [Doctoral Learner policy](#), you are required to be enrolled during recruitment, data collection, and data analysis. If you are not enrolled, you must cease recruitment, data collection and analysis.

Note that all other aspects of your original approval remain in place. If you need to make further changes to your study in the future, you must receive approval from the IRB before implementing changes.

Sincerely,

The IRB

Capella IRB Office

E-[REDACTED]

[REDACTED]

[REDACTED]