Social Media Intervention to Increase Breastfeeding Self-Efficacy

By

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Abstract

Problem Statement: Human milk is a natural and recommended source of nutrition that can assist to reduce infant mortality and provide several maternal health benefits (American Academy of Pediatrics [AAP], 2012; World Health Organization [WHO], 2002). The Baby-Friendly Hospital Initiative developed the "Ten Steps to Successful Breastfeeding" that was implemented in local hospitals to increase the initiation and duration of breastfeeding; however, statistics portray that additional strategies should be utilized to promote and support breastfeeding for optimal outcomes (WHO, 2017). Despite the available resources that new mothers are offered, women need continuous guidance and reassurance to overcome their personal barriers to increase their personal efficacy of breastfeeding.

Purpose: The purpose of this pilot project was to explore the influence of a professionally mediated Facebook peer group to improve breastfeeding outcomes at a local Women, Infants, and Children (WIC) clinic. The Facebook group was designed to increase mothers' confidence levels and breastfeeding knowledge through social networking among women of similar backgrounds.

Methods: Quantitative data were collected using the Breastfeeding Self-Efficacy-Short Form (BSES-SF) and one extra question regarding breastfeeding education through pre- and post-questionnaires to determine if the Facebook group influenced their confidence and awareness in breastfeeding.

Results: The paired samples *t*-test was used to determine if the means of the two sets of observations differed when the same groups of individuals were tested before and after the intervention. The BSES-SF and the breastfeeding education scores increased from pre- to post-

intervention indicating that the women had more breastfeeding confidence and knowledge after participating in the Facebook group. However, the differences were not statistically significant.

Conclusion: With a considerably small sample size (*N*=2) collected in this project, the overall data is difficult to be conclusive. The results did not show statistically significant differences; however, they were clinically significant from pre- to post-intervention. This pilot project can be used as a valuable resource for future research conducted using larger sample sizes regarding breastfeeding in underserved populations.

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Chapter I

Social Media Intervention to Increase Breastfeeding Self-Efficacy

Successful breastfeeding has positive implications for maternal and infant health, the environment, and society as a whole; however, decreasing breastfeeding rates continue to be a global concern. Each mother has a choice of how she provides nutrition to her baby and deserves the right to accurate information. Mothers who choose to breastfeed need guidance and support from family, friends, community, workplace, and health care professionals so they can develop personal confidence to continue breastfeeding despite challenges. The purpose of this project was to increase breastfeeding education, support, and confidence to breastfeeding mothers by creating a peer-to-peer support group through a social media platform. The targeted population was breastfeeding mothers enrolled in the WIC program at a Midwestern local health department. Implementing this project was intended to strengthen collaborative relationships between the public health department and local health care professionals to achieve optimal health outcomes for mothers and their infants.

Background and Significance

Breastfeeding is a natural and beneficial source of nutrition, which promotes healthy growth and development to infants and a unique and emotional connection between a mother and her baby (AAP, 2012). Exclusive breastfeeding is defined by WHO (2002) as "no other food or drink, not even water, except breast milk …" Recommendations by AAP (2012) and WHO (2002) advise that mothers should exclusively breastfeed until the infant is six months old and continue to breastfeed until twelve months after the infant is introduced to solid foods. These guidelines are supported by the several benefits of breastfed infants compared to infants who never breastfed. Breastfed infants have lower rates of respiratory illnesses, ear infections,

gastrointestinal diseases, allergies, and childhood obesity. Furthermore, the rate of sudden infant death syndrome (SIDS) is reduced by over one-third (AAP, 2012; WHO, 2002). Breastfeeding can enhance the bonding relationship between the mother and infant as well as improve infant vital signs (Association of Women's Health, Obstetric and Neonatal Nurses [AWHONN], 2015).

Breastfeeding is also beneficial to maternal health. Lactating mothers have decreased blood loss, lower risk of postpartum infection, and greater weight loss. In addition, breastfeeding has been associated with reduced risk factors of maternal breast cancer, diabetes, hypertension, cardiovascular disease, ovarian cancer, and osteoporosis (AAP, 2012; AWHONN, 2015; WHO, 2002).

In addition to the health advantages, there are several economical and ecological benefits of breastfeeding. Women who choose to breastfeed can save up to $1500 alone from infant formula in the first year (U.S. Health and Human Services [HHS], 2014). If women breastfed exclusively for the first six months, the U.S. would save $13 billion annually from reduced medical costs (HHS, 2014). In addition, healthier breastfed infants result in fewer insurance claims, less time off work to care for sick children, and higher productivity in the workplace. Furthermore, breastfeeding does not require energy use for manufacturing nor does it create air pollution or waste. The risk of contamination is eliminated and breast milk is always the right temperature and ready to feed the infant (HHS, 2014).

The Office of Disease Prevention and Health Promotion (ODPHP, 2017) states that of infants born in the year 2011, only 18.8% of infants were exclusively breastfeeding at six months and 26.7% of infants were breastfeeding at one year of age. The 2016 annual breastfeeding report specifically for a Midwestern state portrays that of the 81.1% of mothers who have initiated breastfeeding, an alarming 43.2% and 25.5% are only breastfeeding at three and six

months, respectively (Centers for Disease Control and Prevention [CDC], 2016). In addition, for the specific state, WIC breastfeeding report from quarter 1 of the fiscal year 2018 shows 11.5% were exclusively breastfeeding at three months, and 14% of clients were performing any breastfeeding at six months (HHS, 2018). The fiscal year quarter 1 was from July 2017 through September 2017 (HHS, 2018).

In 2011, the Surgeon General made a Call to Action as a response to the critically low breastfeeding rates in the U.S. (HHS, 2014). As the breastfeeding disparities have become a national public priority, the Surgeon General urged all health care professionals, employers, communities, researchers, and policy makers to increase breastfeeding awareness and support. This Call to Action encouraged a society-wide approach to support mothers and infants who are breastfeeding with hopes of implementing new strategies to positively impact the quality of care that lactating mothers receive, and improve breastfeeding support in the community and employment settings (HHS, 2014).

According to Moudi, Tafazoli, Boskabadi, Ebrahimzadeh, and Salehiniya (2015), for appropriate breastfeeding support to take place, new mothers should have intentions to breastfeed with breastfeeding goals. Even though lactation resources are readily available, mothers need a strong desire to breastfeed with resources available to discuss their breastfeeding issues. New mothers need to have the desire to seek and accept breastfeeding assistance. Furthermore, mothers need a sufficient supply of breast milk with adequate maternal nutrition. Moudi et al. (2015) emphasize that breastfeeding self-efficacy is an important component that affects the success and duration of breastfeeding, and many women stop breastfeeding when they fail to overcome challenges. Self-efficacy is defined as “beliefs in one’s capabilities to organize and execute the courses of action required to produce given attainments” (Bandura, 1997, p. 3).

According to McCarter-Spaulding and Gore (2012), a mother has breastfeeding self-efficacy when she has the belief that she can carry out the necessary actions to breastfeed her infant. Most women know that breastfeeding is best although they need to overcome several physical and psychological factors that will impact the duration of breastfeeding (Arora, McJunkin, Wehrer, & Kuhn, 2000; Tuan, Nguyen, Hajeebhoy, & Frongillo, 2014). The most important motivator to breastfeed is having a strong desire to breastfeed. Perseverance can be influenced by attitudes, social norms, and self-efficacy (Moudi et al., 2015). Continued support from health care professionals should be implemented to provide the necessary resources lactating mothers need to feel empowerment and self-efficacy to achieve their breastfeeding goals.

Problem Statement

The Baby-Friendly Hospital Initiative developed the "Ten Steps to Successful Breastfeeding" that has been implemented in local hospitals to increase the initiation and duration of breastfeeding; however, the statistics portray that additional and individualized strategies should be utilized to promote and support breastfeeding for optimal outcomes (WHO, 2017). Despite the available resources that new mothers are offered, women need continuous guidance and reassurance to overcome personal barriers to increase their personal efficacy of breastfeeding.

Project Purpose

The purpose of this project was to implement a professionally mediated Facebook peer group to improve breastfeeding outcomes at a local WIC clinic. The targeted population was breastfeeding mothers enrolled in a Midwestern WIC program. Asiodu, Waters, Dailey, Lee, and Lyndon (2015) define social media as "any form of electronic communications through which users create online communities to share information, ideas, personal messages, and other

content" (p. 269). The information gained through the review of literature provides health care professionals innovative interventions to provide breastfeeding promotion, education, and continued support to lactating mothers. With the ever-changing world of technology, social media offers new mothers a convenient way to access the information and gain support they need to have success in reaching their breastfeeding goals (West et al., 2011). Even though the breastfeeding rates are slowly increasing, the *Healthy People 2020* have goals of increasing these rates to 25.5% exclusive breastfeeding at 6 months and 34.1% breastfeeding continued to 1 year (ODPHP, 2017).

Project objectives. The main outcome of this project was to increase successful breastfeeding rates in a local WIC clinic. The first objective was to increase breastfeeding self-efficacy in a selected population of WIC clients by implementing a Facebook group. The first few days after birth are critical; therefore, for this peer group to be effective, the mothers should be recruited during the prenatal period and then as soon as possible in the postpartum period (CDC, 2013). However, the online group in this project welcomed every breastfeeding mother regardless of the age of her infant. Lack of professional support is one barrier to breastfeeding, especially among African American women; therefore, increasing the breastfeeding support to WIC clients will guide them to professional assistance with more referrals to certified lactation consultants (CDC, 2013). According to the CDC (2013), peers should have similar backgrounds of their clients to build trusting relationships. The online peer group provided a safe environment where WIC clients can share breastfeeding difficulties with each other and offer suggestions on how they overcame their tribulations. The peer-to-peer support from counselors and other WIC clients allowed the mothers to know they are not alone and have support when needed. Breastfeeding self-efficacy was measured by using a specific questionnaire pre- and

post- implementation of the Facebook group to evaluate outcomes.

The second objective of this project was to increase breastfeeding awareness, education, and outside resources to the WIC clients. The WIC breastfeeding counselor posted links to the social media page that guided the clients to additional information related to breastfeeding such as contact information of certified lactation consultants, breastfeeding pumps, or how to increase milk supply. The clients' knowledge and awareness was measured by adding a question to evaluate how much knowledge was gained from the Facebook group.

Clinical Question

Evidence was synthesized from eleven research articles to discover their application to the clinical research question: How do breastfeeding mothers, involved in a professionally mediated social media support group, perceive their breastfeeding self-efficacy, within a three-month time frame? The expectation was to increase maternal confidence in breastfeeding by implementation of a social media platform to enhance breastfeeding support.

Congruence with Organizational Strategic Plan

Data collected from this literature review was be used as a guide to implement a social media peer group to WIC clients located in the American Midwest. This online peer group was intended to complement the breastfeeding support that is already available to lactating mothers at the health department. The project was planned and implemented in congruence with the health department's vision, mission, and values. The health department's mission is to promote health, prevent disease, and provide a safe environment through the use of effective and efficient resources ([redacted], 2017b). Trust, mutual respect, commitment, teamwork, learning, and open communication are encouraged in forming collaborative partnerships to have a healthy, safe, and informed community ([redacted], 2017b).

Providing nutritional information and encouraging breastfeeding to lactating mothers promoted healthy living thereby assisting to decrease health disparities in the community. Encouraging trust and mutual respect through the breastfeeding support group empowered WIC clients to make the best decisions for themselves. The strengths, weaknesses, opportunities, and threats (SWOT) analysis shows a weakness in limited knowledge of community services available to the public. In addition, there is a threat for lack of support for public health services ([redacted], 2017b). This breastfeeding project had intentions to strengthen the health department's collaboration with certified lactation consultants. It also encouraged teamwork in the community to promote well-being for the child-bearing population.

Search Process

Google Scholar, Bradley University library website, and PubMed® search engines were used to search for evidence. Keywords used in searching for evidence were breastfeeding, postpartum, Internet, mobile application, social media, and support. The term used to limit the search was "and" to link breastfeeding with Internet, mobile application, social media, and support. In addition, the search term "peer" was added to link the keyword of support. A total of 25 articles were found limiting articles written within the years 2012-2017; however, one article published in the year 2000 was retained because of its significance to the clinical question, which left 15 articles. Four out of the 15 articles were eliminated because they focused on diabetes or hypertension management in the general population, which left 11 articles for final review.

Synthesis of Evidence

The evidence from the eleven articles was summarized into the following categories: barriers to breastfeeding, peer support through the WIC program, peer support through general social networking, and Internet-based social networking. The articles were synthesized to

evaluate the effectiveness of social media platforms and peer support to new breastfeeding mothers.

Barriers to breastfeeding. The studies performed by Tuan et al. (2014) and Arora et al. (2000) both recognized that there are several factors influencing breastfeeding rates. Tuan et al. (2014) interviewed 10,834 women who were currently breastfeeding to examine determinants of the gap between breastfeeding awareness and practices in Vietnam. The gap between breastfeeding awareness and practices was defined as a mother not practicing the recommended breastfeeding guidelines even though having the knowledge (Tuan et al., 2014). The awareness-practice gap found for early initiation of breastfeeding and exclusive breastfeeding was 34% and 66%, respectively (Tuan et al., 2014). Mothers had a lower awareness-practice gap in the early initiation of breastfeeding when they received support from health care professionals during pregnancy and at birth. Moreover, the gap was lower among mothers with higher social standards receiving breastfeeding support (Tuan et al., 2014).

Similar to Tuan et al. (2014), Arora et al. (2000) found negative attitudes of the participants' partners, their family members, and even health care professionals that affected their intent to continue breastfeeding. Arora et al. (2000) surveyed 123 mothers and found that the infant's father influenced 71% of the participants' intent to breastfeed. Tuan et al. (2014) also found similar breastfeeding outcomes that may result from lack of supportive environments. Furthermore, Tuan et al. (2014) concluded mothers returning to work, using a breast pump properly, and inadequate milk supply were determining factors of breastfeeding cessation. In addition, Tuan et al. (2014) found specific barriers such as medical complications, intention of feeding the infant formula at birth, and breastfeeding difficulties. Both of these studies

recommend that recognizing and overcoming barriers in the perinatal period would have positive impacts on mothers' intent to breastfeed (Arora et al., 2000; Tuan et al., 2014).

Peer support through Women, Infant, Children programs. The WIC program is specially designed to support and promote breastfeeding to vulnerable populations in the United States and serves individuals who are challenged by disparities in breastfeeding initiation and duration (Cueva et al., 2017; Harari et al., 2017). Furthermore, a significant component of WIC breastfeeding promotion is to increase community awareness and support for WIC clients utilizing breastfeeding peer counselors. The counselors are hired to support WIC clients to initiate and continue to breastfeed. These counselors usually have personal experience breastfeeding and are trained to provide basic breastfeeding information and encouragement (Cueva et al., 2017; Harari et al., 2017).

Three studies focused on evaluating various breastfeeding support implementations with WIC clients. Gazmararian, Elon, Yang, Graham, and Parker (2014) conducted a prospective cohort study assessing factors related to the enrollment process and acceptance of a text-messaging platform at two WIC clinics. Similar to the study by Gazmariarian et al. (2014), Harari et al. (2017) tested the acceptability and feasibility of a two-way text messaging intervention at two weeks postpartum through a pilot study. Fifty percent of the participants were still exclusively breastfeeding at two weeks postpartum compared to the control group of only 17% still breastfeeding (Harari et al, 2017).

However, Cueva et al. (2017) performed a qualitative study to explore the implementation of a variety of breastfeeding peer counselor programs at four different WIC sites. One of the WIC programs implemented a text message system for breastfeeding support, and two WIC sites maintained online social support for their clients to share breastfeeding

experiences and advice (Cueva et al., 2017). According to Cueva et al. (2017), one client stated the Facebook page was "an invaluable support system - well monitored and positive" (p. 5). Cueva et al. (2017) found that online support groups through social media and text messaging decrease transportation challenges while still building relationships. The clients stated that replying back through a text message was convenient when they were struggling with breastfeeding or did not want to make a phone call and wake a sleeping baby. Similar to Cueva et al. (2017), Gazmariarian et al. (2014) found 90% of the 468 participants accepted the text messaging system and had regular reading patterns at two months. All three studies conducted with WIC peer counselors found texting and online support widely accepted with the potential to change health behaviors (Cueva et al., 2017; Gazmariarian et al., 2014; Harari et al., 2017).

Harari et al. (2017) was the only study that identified several barriers to initiation and continuation of breastfeeding in WIC clients such as embarrassment to breastfeed in front of others, time constraints, going back to work, and breastfeeding difficulties. However, Cueva et al. (2017) did discover that the first two weeks after birth was the most critical time to provide breastfeeding support, so the counselors reached out to clients more frequently during this challenging time. Postpartum support was most successful when the breastfeeding counselors and clients established relationships while clients were still pregnant (Cueva et al., 2017).

Support through social networking. McCarter-Spaulding and Gore (2012) conducted a study to determine if higher levels of social support increased mothers' self-efficacy and encouraged longer durations of exclusive breastfeeding in a targeted population of 155 African American women. McCarter-Spaulding and Gore (2012) used a Network Support for Breastfeeding (NSB) instrument to measure network support and concluded that the woman's mother rated the highest, followed by partners and friends. Using Bandura's Social Cognitive

Theory as a framework, the researchers found that a higher level of network support for breastfeeding did not predict breastfeeding behaviors even with self-efficacy included as a variable; however, when network support was analyzed with breastfeeding self-efficacy as the outcome, the higher levels of support were predictive of higher levels of breastfeeding self-efficacy (McCarter-Spaulding & Gore, 2012).

In contrast, Moudi et al. (2015) compared the effect of peer support versus training by health care providers on women's breastfeeding self-efficacy on 93 primiparous women. However, Moudi et al. (2015) based their study on Bandura's Social Cognitive Theory focusing on factors that could influence breastfeeding self-efficacy, which was similar to McCarter-Spaulding and Gore's (2012) research. Using a random controlled trial, Moudi et al. (2015) found that breastfeeding self-efficacy of women at the end of the eighth postpartum week was not significantly different between peer support, training by health care providers, and control groups. These results are similar to McCarter-Spaulding and Gore (2012) research findings; however, the conclusions of Moudi et al.'s (2015) research indicated that the groups of peer support and training by health care providers improved self-efficacy scores by the breastfeeding mothers. Peer support and training by health care providers have similar impacts on breastfeeding self-efficacy; therefore, breastfeeding support through professionals and peers could be used interchangeably to promote breastfeeding behaviors (Moudi et al., 2015).

Studies by Ingram (2013) and Prates, Schmalfuss, and Lipinski (2015) took different approaches and used qualitative data in their research. Ingram (2013) used a variety of methods to measure breastfeeding support and breastfeeding self-confidence of 163 mothers in 12 lower socio-economic areas located in Bristol, United Kingdom. Ingram (2013) measured self-confidence in breastfeeding after mothers received peer support through antenatal and postnatal

contacts by phone calls, home visits, or both. In addition, Ingram (2013) performed semi-structured interviews with a focus group using qualitative data to explore perceptions of mothers, midwives, and peer supporters. However, Prates et al.'s (2015) primary objective was to determine the social support network of 21 breastfeeding mothers.

Similar to McCarter-Spaulding and Gore's (2012) findings, Prates et al. (2015) found that the woman's mother was the most influential to breastfeeding practices because grandmothers are considered knowledgeable individuals based on life experiences. Prates et al. (2015) concluded that breastfeeding appears to be permeated by myths, beliefs, and values passed on by each family generation. In contrast to Moudi et al. (2015), Prates et al. (2015) confirmed that health care professionals did not impact breastfeeding mothers whereas families and friends had the largest influence on breastfeeding intention; therefore, health care professionals should consider the family and community context as they implement breastfeeding support programs. Women with previous breastfeeding experiences are eager to communicate their experiences and give support to new mothers (Prates et al., 2015). Ingram (2013) found that the targeted peer support service had small non-significant increases in breastfeeding rates although the participants positively evaluated the peer support service. Mothers expressed that the peer support increased their confidence to breastfeed while peer supporters, midwives, and maternity support workers found the contacts to be rewarding and beneficial to new mothers (Ingram, 2013). Furthermore, through the interviews that Ingram (2013) conducted, mothers testified that the peer support groups were informal opportunities for discussion and extremely helpful in offering postnatal reassurance. One of the mothers stated in the interview that "it was quite comfortable because it was informal…" (Ingram, 2013, p. 5). Another mother reported that "I feel very strongly that this useful and practical advice given in the comfort of your home

environment in those very early days was an invaluable support" (Ingram, 2013, p. 6). In contrast to Moudi et al. (2015) and McCarter-Spaulding and Gore's (2012) research approaches, Ingram (2013) also focused on the mothers' partners to assist in building trust and manage role conflict. Some peer counselors had difficulty with partner participation due to conflicting schedules or lack of interest. However, the partners who did participate built trust with the peer supporters and midwives (Ingram, 2013).

Internet-based social networking. There was very limited evidence on how actual Internet-based social media platforms such as Facebook, Twitter, or blogging affected breastfeeding outcomes. Using a qualitative research design, Asiodu et al. (2015) studied the use of social media during antepartum and postpartum periods among 22 first-time African American mothers and their support persons. Asiodu et al. (2015) studied ethnotheories, which are beliefs about a topic that are shared by a sociocultural community such as African American mothers and grandmothers. African Americans have a strong bond of family, religion, and community. An African American mother may have an intense desire to breastfeed her infant; however, she will base her decision on the influence of family, friends, and society (Asiodu et al., 2015). The participants were observed interacting on social media platforms using mobile devices while attending baby showers, breastfeeding classes, and support groups. Some of the participants discussed minimal support with feelings of isolation and loneliness; therefore, the social media applications provided support and interaction from others (Asiodu et al., 2015).

West et al. (2011) evaluated the extent to which online blogs as a social support intervention were being used to support breastfeeding behaviors; however the researchers did not analyze breastfeeding practices and outcomes as Asiodu et al.'s (2015) research. Online blogs are an Internet-based location where people can come together and socialize, which usually

consist of personal opinions or recent experiences (West et al., 2011). In contrast to Asiodu et al. (2015), West et al. (2011) evaluated the responses to 32 active online blogs in reference to breastfeeding practices. The most prominent comments found in the blogging posts were breastfeeding attitudes and praise for breastfeeding (West et al., 2011). West et al. (2011) found that reporting one's behavior may motivate others to change and may also force dialogue whereas simply providing formal educational information was considered one-way pushing of information.

Both studies found that with society's ever-changing technology, the majority of individuals own phones, computers, or have Internet access even with limited resources (Asiodu et al., 2015; West et al., 2011). Both Asiodu et al. (2015) and West et al. (2011) found that online social networking was a positive and convenient way to obtain breastfeeding support. Furthermore, Internet-based platforms can be effective bringing people together to share experiences and elicit support for change (West et al., 2011).

Conclusion

Overall, the evidence supported the fact that the implementation of an online professionally mediated peer support group has a positive effect on new mothers' breastfeeding experiences. The review of literature suggested there is a definite gap between the recommended breastfeeding guidelines and actual breastfeeding practices (Tuan et al., 2014). Research has shown that many new mothers may discontinue breastfeeding prematurely (Arora et al., 2000; Asiodu et al., 2015; Cueva et al., 2017; Harari et al., 2017; Ingram, 2013; McCarter-Spaulding & Gore, 2012; Moudi et al., 2015; Prates et al., 2015; Tuan et al., 2014). Studies have found that new mothers need ample support to minimize barriers and stay committed to the adherence of breastfeeding (Arora et al., 2000; Tuan et al., 2014). The most common reasons for

discontinuation of exclusive breastfeeding were lack of awareness of the importance of breastfeeding, lack of supportive environments, breastfeeding difficulties, cultural beliefs, time constraints going back to work, and socioeconomic factors (Arora et al., 2000; Tuan et al., 2014). Mothers' personal efficacy on breastfeeding was positively affected by the intention to breastfeed and continuation of breastfeeding (Ingram, 2013; McCarter-Spaulding & Gore, 2012; Moudi et al., 2015; Prates et al., 2015). Peer support through health care professionals, family members, and friends enhances confidence and motivation to breastfeeding mothers (Ingram, 2013; McCarter-Spaulding & Gore, 2012; Moudi et al., 2015; Prates et al., 2015). Beliefs, myths, and cultural factors play a huge role in mothers' intent to breastfeed as well as perceived attitudes towards breastfeeding (Prates et al., 2015). This review of literature highlighted the effectiveness of various interventions that could be implemented to enhance breastfeeding self-efficacy resulting in longer duration of lactation. Maternal confidence is an important variable that needs to be continually evaluated.

Critique of evidence. There were several strengths and limitations to the articles reviewed. Gazmararian et al. (2014) conducted a prospective cohort study with strong evidence suggesting that an online texting system was well accepted by new breastfeeding mothers. Moudi et al. (2016) had strong evidence using a randomized controlled trial where the peer support for the mothers began during pregnancy and continued after delivery, which gave continuity of care. Tuan et al. (2014) and Arora et al. (2017) measured perceived barriers to optimal breastfeeding that has the potential to compliment postpartum support interventions. Even though their sample size was small, Arora et al. (2017) performed their study in a large family practice teaching facility, which provided a variety of participants of differing socioeconomic status. If Arora et al. (2017) studied a larger population, there would be less

variability with greater accuracy. Ingram (2013) was the only study that assessed the ease of incorporating social support with the mothers' partners. This aspect is extremely important as Arora et al. (2000) stressed that one of the major barriers affecting mothers' breastfeeding intentions were the partners' negative attitudes. Another strength of several of the studies was that they implemented their research during the antenatal and prenatal periods (Asiodu et al., 2015; Cueva et al., 2017; Gazmararian et al., 2014; Ingram, 2013; Moudi et al., 2016; Prates et al., 2015).

There were several studies that relied on qualitative data as the weakest level of evidence. However, the participants' responses may assist the researchers with a greater understanding of the complexities of breastfeeding support (Asiodu et al., 2015; Cueva et al., 2017; Ingram, 2013; Prates et al., 2015). Asiodu et al. (2015) based their research on a qualitative ethnographic approach within the contexts of family life course development theory and Black feminist theory, which set a foundation for the study. Ingram's (2013) study included women who had stopped breastfeeding within the first two weeks postnatally. Ingram (2013) found this to be a strength of the study because committed breastfeeding participants are usually only included in qualitative studies. The study performed by Harari et al. (2017) was also limited to one small-populated city and was designed to be a pilot study for larger research testing. Even though Harari et al. (2017) had strong evidence using a randomized controlled trial, they found their study to be underpowered detecting statistical significance, and the follow up interviews were not blinded to group allocation. Tuan et al.'s (2014) cross sectional design was not able to conclude causal relations between breastfeeding awareness and practices. In addition, the internal validity may have been threatened in Cueva et al.'s (2017) research method because of the recruitment strategies used for the focus groups at each site, and participants may have

refrained from more critical feedback not wanting to speak poorly of their employers or providers.

West et al. (2011) evaluated how online blogs as a social support intervention were being used to support breastfeeding practices; however, one limitation of the study was that they did not focus on actually exploring breastfeeding behaviors or outcomes. Similarly, Gazmararian et al. (2014) assessed the feasibility and acceptance of a text-messaging platform at two WIC clinics and did not analyze actual breastfeeding intentions or patterns. The follow up response rates of Gazmararian et al.'s (2014) research were low because the follow up interviews were made by telephone, which was concluded to be a barrier because several women did not have reliable phone services.

More research should be continually evaluated to investigate how the barriers to breastfeeding affect breastfeeding outcomes to provide best practices to lactating mothers (Arora et al., 2017; Tuan et al., 2014). Furthermore, research that evaluates the mother's character and her self-confidence levels as it affects breastfeeding self-efficacy is recommended (Moudi et al., 2016). As technology is ever-changing in our society, West et al. (2011) suggest that further research should be performed assessing the effects of how the Internet can potentially play a role improving breastfeeding support and guidance. In addition, West et al. (2011) emphasize that more research should focus on how different Internet platforms directly impact behavioral changes of breastfeeding practices. Several studies focused on minority populations; therefore, future research should be evaluated using more generalized participants including all aspects of age, race, and socioeconomic status (Asiodu et al., 2015; Cueva et al., 2017; Gazmararian et al., 2014; Ingram, 2013).

Implications for practice. There are a variety of successful educational tools to provide women the support they need to increase their self-efficacy and meet their breastfeeding goals. Mobile technology, texting, and social media can be utilized as a way to encourage pregnant women and new mothers to access educational materials in the convenience of their homes (Cueva et al., 2017; West et al., 2011). Online support groups and text messaging can enable strong professional and peer relationships while eliminating the transportation issues many new mothers encounter (Cueva et al., 2017). Furthermore, online support groups provide a cost-effective strategy to improve breastfeeding self-efficacy (West et al., 2011). The research findings have also suggested the importance of health care professionals meeting the social support networks of new mothers. The support of family, friends, and neighbors should be incorporated in breastfeeding educational programs (Prates et al., 2015).

Theoretical Framework

The Social Learning Theory developed by Albert Bandura was used as a framework to explain the barriers to breastfeeding associated with the decisions mothers make regarding breastfeeding intention and duration. The Social Learning Theory acknowledges how people are driven by continuous reciprocal interactions of personal and environmental determinants (Bandura, 1977). In addition, this theoretical approach explains how people are influenced by information received from symbolic, vicarious, and self-regulatory processes. Bandura (1977) suggests that all learning phenomena results from direct experiences by observing other people's behaviors and the consequences of them. Bandura (1997) proposes that individuals' self-efficacy beliefs are formulated by four sources of information: enactive mastery experiences, vicarious experiences, verbal persuasion and social influences, and physiological and affective

states. A variety of personal, social, and situational factors will affect how individuals interpret their experiences (Bandura, 1997).

The first principle of perceived self-efficacy is enactive mastery experiences, which are the most influential because they provide the most evidence of determining if they have the motivation to succeed as they master a skill (Bandura, 1997). Individuals need to have dedication and experiment with realistic goals. Meeting these goals through success will build one's self-efficacy, whereas failures will undermine self-efficacy. Bandura (1997) explains that self-efficacy requires perseverance to overcome obstacles. Furthermore, these obstacles can be used as opportunities for growth to build resilience and learn how to turn failure into success through refining one's capabilities to gain better control over the situation (Bandura, 1997). Mothers who have difficulty with latching onto breast and inadequate milk supply will influence future encounters with breastfeeding. Until the skill is mastered, the mother questions her perception of motherhood and needs confidence and the ability to work through her issues and learn from her mistakes. As the mother successfully acquires the skill of breastfeeding, an increase of self-efficacy develops. Conversely, a self-perpetuating cycle develops when a mother with low self-efficacy avoids the task she perceives as difficult and fails to learn knowledge and skills that may increase her breastfeeding competency.

The second principle of perceived self-efficacy is vicarious experiences (Bandura, 1997). Vicarious experiences, or modeling others, play a large role in promoting personal efficacy by appraising one's capabilities in relation to the attainment of others (Bandura, 1997). In daily life, people compare themselves to others in similar situations with related goals; therefore, people persuade themselves that if others can complete a task, they also have the capabilities for high performance (Bandura, 1997). Furthermore, Bandura (1977) explains that people benefit from

the experiences of others. Lactating women can learn from each other by sharing accomplishments and offer suggestions through past breastfeeding mistakes and successes through their struggles.

Bandura (1997) suggests that the third principle to self-efficacy is both verbal persuasion and social influences. Bandura (1997) explains that people will sustain a sense of efficacy more easily when their significant others express faith in their capabilities rather than doubting them. Continuous support from health care professionals, family, and peers is needed in both the prenatal and postnatal periods to educate and guide new mothers to effective breastfeeding techniques. Bandura (1997) states that people need rules and strategies to master a skill; however, they also need to be persuaded that they have control by applying the strategies consistently and persistently. Therefore, new mothers need self-assurance for breastfeeding success. New mothers need motivation and encouragement that they are applying the taught knowledge appropriately. This reassurance given to new mothers is what will enable them to increase their maternal confidence. According to Moudi et al. (2016), positive verbal encouragement through active engagement and participation of people can reinforce self-efficacy in breastfeeding mothers.

Bandura (1997) explains that people rely on their physiological indicators to guide them in stressful and vulnerable situations. New mothers who are fatigued from lack of sleep or stressed about caring for their newborns will build up adverse thoughts that will produce the very dysfunctions that they fear. People's moods can also alter self-efficacy by affecting how events are interpreted and retrieved from memory (Bandura, 1997). Past experiences are stored as memories and provide a database on how judgments are made; therefore, a negative mood prompts feelings of previous failures, and a positive mood will prompt feelings of previous

accomplishments (Bandura, 1997). According to this concept, mothers determine their breastfeeding capabilities based on previous experiences of breastfeeding. Recognizing and implementing strategies to decrease this thought process will assist building perceived efficacy.

According to Bandura (1997), self-efficacy is not a characteristic that some people have and others do not have. He suggests that everyone has the ability to strengthen their perceptions of themselves regardless of past experiences or the current environment (Bandura, 1997). Applying these principles of self-efficacy will guide health care professionals to develop appropriate interventions to modify maternal confidence in breastfeeding.

Chapter II: Methodology

Needs Assessment

Human milk is the recommended source of nutrition for infants, and mothers are advised to exclusively breastfeed until the infant is six months old and continue to breastfeed until twelve months after the infant is introduced to solid foods (AAP, 2012; WHO, 2002). Studies have shown that there are bioactive components in breast milk that protect infants against infectious and chronic diseases as well as promote infant sensory and cognitive development (Arora et al., 2000; Robinson & Fall, 2012). Breastfeeding is also important for the physical well-being in mothers preventing disease (AAP, 2012; AWHONN, 2015; WHO, 2002). Moreover, breastfeeding has economical and ecological advantages for families and society (HHS, 2014).

The WIC program is a federally funded organization that promotes health and nutrition through a food assistance program ([redacted], n.d.). Criteria to join WIC include: women who are pregnant or have a child less than 5 years of age, meet WIC income guidelines, have a nutritional risk, and reside in the county ([redacted], n.d.). This program provides one-on-one and group nutritional education free of charge to ensure the proper growth of infants and children, provides breastfeeding education and guidance, assesses clients' eligibility to receive a free breast pump, provides free food coupons to supplement grocery food purchases, and assists pregnant women in obtaining health care coverage ([redacted], n.d.).

The 2016 Maternal and Child Report of a Midwestern health department revealed there were a total of 2,482 live births to the county residents in 2016 ([redacted], 2017a). The local WIC clinic serves the majority of their clients from three specific zip codes (M. Compton, personal communication, February 13, 2018). Within these zip codes, women received prenatal care in the first trimester of pregnancy below *Healthy People 2020* guidelines ([redacted], 2017a). In

addition, the percentage of overall low birth weight singleton deliveries in the specific zip codes was also increased to 12%, which exceeds *Healthy People 2020* goal of 7.8% ([redacted], 2017a). African American/Black women had the highest percentage of low birth weight singleton deliveries than any other racial group and more than double of Caucasian women ([redacted], 2017). Furthermore, the number of WIC clients exclusively breastfeeding at six months dropped to 5.6% in the year 2013. This number is a whole percentage drop from the year 2010 ([redacted], 2017a).

The most current data for the month of June 2018 portrays that there are 3,450 active participants who belong to the local Midwestern WIC clinic (Illinois Department of Human Services Cornerstone, 2018c). Out of this total, 189 are currently breastfeeding. The breastfeeding initiation rate is 59% with an alarming 15% still breastfeeding at 6 months and only 7% still breastfeeding at 12 months (Illinois Department of Human Services Cornerstone, 2018b).

Although the benefits of breastfeeding to both the mother and infant dyad have been recognized for decades, the national breastfeeding rates continue to be dramatically low, which forced the Surgeon General to make a Call to Action for health care professionals and communities to increase breastfeeding support (HHS, 2014). The synthesis of evidence has shown that the use of social media and technology can be used to encourage women to meet their breastfeeding goals by promoting breastfeeding education and guidance, thus increasing breastfeeding self-efficacy (Cueva et al., 2017; West et al., 2011). Additionally, online support groups provide cost-effective interventions to increase social networks and encouragement (Cueva et al., 2017).

This project provided an opportunity for health care professionals to interact with WIC

clients through an online intervention. Physiological and psychosocial needs of these mothers were enhanced. The county statistics portray that the women belonging to the local WIC clinic are at high-risk for low weight births and preterm deliveries ([redacted], 2017a). Further health promotion and disease prevention should be encouraged to this population of women to decrease health disparities. Meeting the social needs of these new mothers through peer support of similar backgrounds has the potential to promote health and increase their desire and motivation to breastfeed to the recommended guidelines (Cueva et al., 2017; Harari et al., 2017; Ingram, 2013; McCarter-Spaulding & Gore, 2012; Moudi et al., 2015; Prates et al., 2015).

Project Design

The implementation of the Facebook group was a pilot project to assist the development of the WIC program's future needs. This pilot project was used to evaluate the effectiveness of the private Facebook group increasing breastfeeding self-efficacy in lactating mothers. The independent variable of the Facebook support group and the dependent variables of breastfeeding self-efficacy and breastfeeding education were analyzed to evaluate the relationships between the variables.

Setting and Population

A convenience sample was recruited of two breastfeeding women currently participating in a local Midwestern WIC clinic. The population for the county is approximately 187,177 with predominantly Caucasians (75%) and African American/Black (17.7%) making up the majority of the population ([redacted], 2015). The percentage of both Asian (3.4%) and Hispanic (4.0%) races have doubled between the years 2000 and 2010 Census ([redacted], 2015). Roughly 10% have less than high school education, 30% have a high school diploma, and slightly under 30% have a bachelor's degree or higher. The median household income is $50,712 with the poverty

level right above 14% ([redacted], 2015). Family households consist of approximately 62% of the population. Data suggest that female as head of household is approximately 14%. Grandparents responsible for grandchildren is 46.4%, which is higher than both state and U.S. data ([redacted], 2015).

More specifically for the local Midwestern WIC clinic, nearly 35% of participants are Caucasian and non-Hispanic, approximately 57% are Black, 8% Hispanic, and only 0.16% are Asian or Pacific Islander (Illinois Department of Human Services Cornerstone, 2018a).

The inclusion criteria for the study included all mothers who were currently breastfeeding, actively enrolled in the WIC program, had Internet access, and fluent in English. The population of this study excluded all mothers not breastfeeding, refused to give consent for the project, did not have Internet access, illiterate in English, or had a medical condition that interfered with breastfeeding.

The target area for recruitment was at the one local WIC clinic. Intention was to expand the geographic area to include another nearby WIC clinic if participant enrollment was low; however, time constraints did not allow this to happen.

Instruments

Dennis and Faux (1999) developed the Breastfeeding Self-Efficacy Scale (BSES) based on Bandura's recommendations of using a behavior-specific approach when studying self-efficacy and define breastfeeding self-efficacy as "a woman's confidence in her ability to perform specific tasks and behaviors related to successful breastfeeding" (p. 406). Dennis (2003) condensed the 33-item BSES to a 14-item short form (BSES-SF) after consistently high Cronbach's alpha coefficient indicated item redundancy. The BSES-SF consists of 14 items that start with the phrase "I can always" and end with a 5-point Likert scale where 1 indicates "not at

all confident" and 5 indicates "always confident" (Dennis, 2003). The questions are presented in a positive manner and summarized to produce a total score ranging from 14 to 70. The higher scores will indicate higher levels of breastfeeding self-efficacy (Dennis, 2003) (see Appendix A for BSES-SF).

Very thorough reliability and validity have been tested on the BSES-SF (Dennis, 2003). The Cronbach's alpha coefficient was 0.94 for the BSES-SF (Dennis, 2003). Construct validity was tested using the factor analysis, group comparisons, and correlations, which all showed high validity (Dennis, 2003). Predictive validity is determined by the correlation between an instrument and even occurring before, during, or after the instrument is used (Dennis, 2003). Dennis (2003) evaluated the predictive validity through significant mean differences between breastfeeding and bottle-feeding mothers at four weeks postpartum ($p < .001$) and eight weeks postpartum ($p < .001$).

I received a copy of the BSES-SF from Dr. Dennis to implement into the project to measure outcomes of breastfeeding self-efficacy (see Appendix B for Dr. Dennis's email). There was one question added to both pre- and post-questionnaires to evaluate if the participants gained breastfeeding knowledge from the Facebook group (see Appendix C for pre- and post-intervention questions).

Project Plan

A Facebook group exclusive to WIC breastfeeding clients was implemented to improve breastfeeding self-efficacy through professionally mediated peer support. This Facebook group was intended to complement the breastfeeding support already used at WIC to help increase positive breastfeeding outcomes. The Facebook group was constructed as a "secret" group so members' names and comments in the forum were only visible to those who had voluntarily

joined the group. Once the ethics committee approved the project, I formally introduced the Facebook group to the mothers who were currently attending WIC breastfeeding appointments. Flyers and handouts were intended to be distributed in the WIC waiting room to advertise the Facebook group (see Appendix D for flyer).

After the participants joined the Facebook group, they were asked to complete two self-reporting questionnaires online in the convenience of their own homes. Each questionnaire was accessed through a hyperlink attached to Facebook at the beginning of their enrollment of the Facebook group and again at the closure of the project. The participants were given their informed consent to be involved in a project and were able to opt out of the project at any time if they chose. Each client's name was put in a drawing for a small gift certificate to a local store as a token of appreciation for participating in the project. This drawing took place after both questionnaires were distributed and the enrollment was closed.

Outcomes. The main outcome of the project was to assist to achieve the goal of *Healthy People 2020* to increase the proportion of infants who are breastfed at six months to 60.6% ([redacted], 2015). The Facebook group aimed to increase breastfeeding mothers' confidence levels through social networking among women of similar backgrounds. The Facebook group was not only intended to provide social networking within the community of the WIC clients but also increase awareness, education, and access to outside resources within the community. The Facebook administrators posted educational links specific to breastfeeding and nutritional information. These educational materials were information promoted and approved by the WIC program such as proper latching or how to determine adequate milk supply. Weekly topics were also posted on the Facebook page to encourage conversation between the members. Outside

resources to connect with certified lactation consultants and health care professionals within the community as well as assistance with breast pumps was provided through Facebook.

Breastfeeding self-efficacy questionnaires were distributed prior to the implementation of the Facebook group and then post-implementation to analyze if the peer support group had a positive relationship on breastfeeding self-efficacy scores. There was one question added to the breastfeeding self-efficacy instrument to determine if the peer support group enabled the participants to gain breastfeeding knowledge and awareness of outside resources.

Data collection. I used the local university's survey software called Qualtrics to distribute the anonymous questionnaires. After the participants joined the Facebook group, they were asked to complete two self-reporting questionnaires formulated through Qualtrics to evaluate the outcomes of the project. The participants were asked to complete the questionnaires through a hyperlink attached to Facebook at the beginning of their enrollment in the Facebook group and again after the closure of the project. The participants had informed consent that they would be involved in a pilot project and would be able to opt out of the project at any time if they choose.

Evaluation and sustainability plan. This pilot project for a local Midwestern WIC clinic was intended to assist with an innovative intervention to increase breastfeeding support for lactating mothers. In addition, it has the capability to contribute to long-term outcomes beyond the period of the project. This project was developed in collaboration of the WIC staff and local lactation consultants focusing on future implementation to sustain the Facebook support group. After analyzing the results of this pilot project, evaluation strategies and recommendations were discussed with the collaborators. Building relationships with other health care professionals was essential to make this project a success; therefore, continued community support from local

lactation consultants who are administers for their own Facebook support groups were pursued. Reassessing the WIC program's needs required attention to provide a safe environment where the mothers could ask questions or share concerns with peers or professionals. The WIC peer counselor discussed with her clients their thoughts and opinions of the support group with possible suggestions to make the intervention successful (L. Smith, personal communication, February 2, 2018). Through cooperation within communities, health organizations, and government bodies, this project has the potential to meet long-term inspirations of expanding not only to this one Midwestern WIC clinic but also to other WIC clinics.

Timeline. The Facebook group was officially launched on July 24, 2018 after receiving appropriate IRB and state approval. The recruitment period was extended from July 24, 2018 through December 31, 2018 for the opportunity to gain more participants. The duration of the implementation period was a total of 3 months from January 1, 2019 through March 31, 2019. I officially closed the questionnaires on Qualtrics on March 31, 2019, and evaluation of the results took place (see Appendix E for timeline of project).

Data Collection

Descriptive statistics using means and standard deviations were used to evaluate the outcomes. After consulting with the creator of the SBES-SF, Dr. Dennis, there were no evaluation methods specific for the tool. Descriptive statistics using means, standard deviations, and paired *t*-tests were used to measure self-efficacy scores from pre- to post-intervention. A conclusion was made after computing the *t*-tests in the Statistical Package for the Social Sciences (SPSS) and determining statistical significance looking at a p-value of .05 (Kellar & Kelvin, 2013).

Ethical Issues

Human subject is defined as "a living individual about whom an investigator whether professional or student conducting research obtains data through intervention or interaction with an individual or identifiable private information" (U.S. Department of Health and Human Services, 2009, p. 4). Special considerations were taken to ensure human subject protection during the implementation of the Facebook support group. All human subjects' rights were preserved by abiding by the principles of respect for persons, beneficence, and justice (Harris, Roussel, Dearman, & Thomas, 2016).

As the WIC clients joined the Facebook group, there was an explanation of the purpose of the project with Terms and Conditions that were presented in the "About" section of Facebook. These Terms and Conditions replaced a paper consent form document. The WIC clients were required to read and accept the Terms and Conditions prior to participating in the group (see Appendix F for Terms and Conditions). The Terms and Conditions explained the entire process of the project as well as potential risks and benefits of their contribution. The participants were encouraged to ask questions about the project and then asked to voluntarily accept the Terms and Conditions acknowledging that they completely understood the scope of the project. In addition, a disclaimer was attached to the Facebook page explaining the purpose of the Facebook group along with rules, regulations, and expectations of all parties. The disclaimer also included contact numbers for participants to easily access if needed (see Appendix G for Facebook disclaimer).

The participants were able to opt out of the project at any time and for any reason. The data gathered from the project was kept anonymous with no personal identifiers on the questionnaires. All possible harms to the participants were considered and explained to the participants. For example, some new mothers in the early postpartum stage could have been

suffering from fatigue and hormonal changes; therefore, these emotional states could cause the completion of a questionnaire to be emotionally difficult. There also could have been some inconvenience to the participants having to complete two questionnaires in their own personal time. Moreover, the process of participant selection was intended to be fair and not discriminate of any social, racial, or ethnic group (Harris et al., 2016).

The WIC program is designed to improve nutrition and health to targeted high-risk populations of those individuals who qualify according to income and nutritional risk ([redacted], n.d.). Therefore, I took precautions to protect the rights of this vulnerable population. A special project request was submitted to the state's Department of Human Services for approval (see Appendix H for special project request).

Institutional Review Board Approval

Initial institutional review board (IRB) approval was received on May 31, 2018 from the University of Illinois College of Medicine at Peoria IRB (see Appendix I for IRB approval letter). The university has a reliance agreement with the Community IRB so the university's Committee on the Use of Human Subjects in Research (CUHSR) automatically approved the project. The breastfeeding Facebook group officially launched on July 24, 2018 after the final mandate from the state (see Appendix J for state approval letter).

Chapter III: Organizational Assessment and Cost-Effectiveness Analysis

The WIC supervisor and one breastfeeding peer counselor were involved in this project to increase breastfeeding support. The WIC director plans, coordinates, and evaluates a variety of services that are offered by the WIC program that is located at the local health department (M. Compton, personal communication, February 3, 2018). When a new project or service is suggested, she seeks approval from the state WIC supervisor at the Illinois Department of Health and Human Services (IDHS) (M. Compton, personal communication, February 3, 2018). The IDHS approved the project and views the project with sustainability for other surrounding counties to benefit increasing breastfeeding rates. The health department's administrator has also signed an organizational agreement between the health department and my university (see Appendix K for agreement letter). The breastfeeding peer counselor has direct contact with breastfeeding WIC clients. The peer counselor offers support, encouragement, and basic breastfeeding information to the clients either in person or by telephone (L. Smith, personal communication, February 3, 2018). Both the WIC director and breastfeeding peer counselor are very active in community breastfeeding task forces.

Readiness for Change

The statistics portray that breastfeeding rates in the WIC organization continue to be significantly below the recommended guidelines (HHS, 2018). The WIC director communicated a need to implement more breastfeeding support to assist mothers to continue breastfeeding to the recommended guidelines of at least six months (M. Compton, personal communication, February 3, 2018). The Facebook support group was intended to complement the outpatient support group that they have just recently implemented (M. Compton, personal communication, February 3, 2018). The WIC director would like to offer breastfeeding support

and services congruent with other local breastfeeding groups. This project provided the perfect opportunity to collaborate with the community and meet the special needs of WIC clients.

Barriers

There were several barriers to consider as the Facebook support group was implemented. These barriers include various demographic, social, and personal factors that may hinder a woman's desire to breastfeed (Arora et al., 2000; Dennis, 2003; Tuan et al, 2014). Dennis (2003) emphasized that factors such as maternal age, educational level, marital status, and socioeconomic status are consistently related to breastfeeding duration. Confidence in breastfeeding is also correlated with maternal perceptions of low milk supply, which is a leading cause of formula supplementation (Dennis, 2003). Barriers to mothers enrolled in WIC programs are associated with embarrassment to breastfeed in front of others, time and social constraints, and lack of social support (M. Compton, personal communication, February 3, 2018; Harari et al, 2017;). The Facebook support group was designed and tailored exclusively to the mothers enrolled in the WIC program to address these perceived barriers.

There was risk of a low response rate to the project's participation needing to expand the geographical location to include more than one WIC clinic; however time constraints did not allow this to occur . Even though the WIC director felt that most WIC clients have Internet access and stable email addresses, some of the participants may not have access to computers or Internet (M. Compton, personal communication, February 3, 2018). Another barrier we took into consideration was realizing that the Facebook group could take time to be successful, and the participants may be hesitant to post questions or concerns for other members to view.

Risks or Unintended Consequences

The project was designed to minimize all risks to the participants. Possible risks such as recalling of traumatic or distressing events, mental fatigue, embarrassment, and invasion of privacy was clearly identified on the Terms and Conditions page so the participants could make an informed decision.

Role of Interprofessional Collaboration

I initiated interprofessional collaboration between the WIC director, WIC peer counselor, and community lactation consultants to facilitate long-lasting change to improve the health of WIC clients. I collaborated with a lactation consultant involved with the local La Leche League who recently developed and designed her own Facebook peer support page to her breastfeeding mothers belonging to her breastfeeding task force. La Leche League is an international, non-profit organization dedicated to provide education, mother-to-mother support, and encouragement to women who have the desire to breastfeed (La Leche League of Illinois, n.d.). Collaborative relationships were essential in the attempt to make this project a success for WIC clients.

Cost Effectiveness

There was essentially no cost to implement the Facebook support group. The potential cost in sustaining the Facebook support group was designating certain staff members as professional administrators monitoring members' comments, posting educational material, and offering breastfeeding support to the mothers. The WIC supervisor communicated that these are duties the WIC peer counselor already performs in her current role; therefore, additional staff time or costs were not foreseen (M. Compton, personal communication, February 2, 2018). I was responsible for providing one small gift card to a local retail store for the drawing, which was to give appreciation to the participants completing the questionnaires.

Chapter IV: Results

Analysis of Implementation Process

At all WIC appointments, the breastfeeding peer counselor discussed the Facebook group with the breastfeeding mothers and then sent the interested women email invitations to join the Facebook group. There was then a hyperlink on Facebook that directed the participants to agree to the Terms and Conditions and to complete the pre-questionnaire of breastfeeding self-efficacy and their knowledge of breastfeeding.

To assist with the recruitment process, I set up a table in the WIC waiting room on a weekly basis for a total of 4 weeks to meet the WIC clients and explain the project. All interested women wrote down their email addresses for the breastfeeding peer counselor to officially invite. I attended a breastfeeding education meeting held by the peer counselor to also have contact with the women; however, no one showed up for the meeting. In addition, I participated in the health department's annual breastfeeding month health fair to promote the Facebook group.

During the implementation period, the WIC breastfeeding counselor posted educational and motivational material on the private Facebook group to engage conversation and fellowship. I also wrote posts regarding breastfeeding to assist engaging conversation between the women. After the implementation period, I posted a hyperlink directing the participants to complete the post-questionnaire. I closed the questionnaire on Qualtrics once I received the data (see appendix L for IRB letter acknowledging closure to enrollment). There was only one participant who left her email address in the questionnaire, so she won the Wal-Mart gift card. I purchased and wrapped the gift card with a thank you letter and dropped off at the health department for her to collect. I also sent her an email stating she was the winner.

Analysis of Project Outcome Data

Quantitative data were collected from the pre- and post-questionnaires pertaining to self-efficacy and knowledge in breastfeeding. The participants included women actively involved in WIC.

Descriptive statistics for pre-questionnaire. Descriptive statistics were performed for the 14 pre-test items, the total pre-test score, and the breastfeeding education item. A higher mean score denotes greater confidence in the behavior described by the survey item. Women indicated the greatest confidence in the question regarding always being able to comfortably breastfeed with family members present ($M = 4.00$, $SD = 1.41$) and the question of always wanting to keep breastfeeding ($M = 4.00$, $SD = 1.41$). Women indicated the lowest confidence in the question regarding always managing the breastfeeding situation to their satisfaction ($M = 2.00$, $SD = 1.41$), followed by the question of always being satisfied with their breastfeeding experience ($M = 2.50$, $SD = 0.70$). The average pre-test education score was 3.50 ($SD = 0.70$). The total pre-test score for the BSES-SF questionnaire was 3.28 ($SD = 0.50$).

Descriptive statistics for post-questionnaire. Descriptive statistics were performed for the 14 post-test items, the total post-test score, and the post-breastfeeding education item. Women indicated the greatest confidence in the question of always comfortably breastfeeding with family members present ($M = 5.00$, $SD = .00$) and the question of always being satisfied with their breastfeeding experience ($M = 5.00$, $SD = .00$). Women indicated the lowest confidence in the item of always ensuring that baby is properly latched on for the whole feeding ($M = 3.50$, $SD = 0.70$), the question of always breastfeeding baby without using formula as a supplement ($M = 4.00$, $SD = 1.41$), and the question of always managing to breastfeed even if baby is crying ($M = 4.00$, $SD = .00$).

The average post-test education score was 5.00 (*SD* = .00). The total post-test score for the BSES-SF questionnaire was 4.75 (*SD* = 0.65).

Paired samples *t*-tests. The paired samples *t*-test was used to determine if the means of two sets of observations differed when the same groups of individuals were tested before and after the intervention. None of the 14 items in the questionnaire revealed statistical significance; therefore, the items that had the highest and lowest mean differences are highlighted. The two questions that had the highest mean difference were Item 5 and Item 9, whereas the three questions that had the lowest mean difference were Item 3, Item 4, and Item 7.

Survey item 5. The paired samples *t*-test was used to examine the difference between the pre-test and post-test score for the question of always managing the breastfeeding situation to their satisfaction. As seen in Table 1, the average pre-test score for this item was 2.00 (*SD* = 1.41) and the average post-test score for this item was 4.50 (*SD* = 0.70) indicating a mean difference of 2.50. The difference between the scores was not statistically significant ($t(1) = -5.00$, $p > .05$). The mean scores indicate that women' confidence increased from pre-test to post-intervention.

Table 1

Paired Samples T-Test Comparing Pre-Test and Post- Test Scores for Survey Item 5 (N = 2)

				95% Confidence Interval of the Difference				
Pair for Item 5	Mean	*SD*	S.E. Mean	Lower	Upper	*t*	*df*	*p*
Pre-Test Score	2.00	1.41	2.50	-8.85	3.85	-5.00	1	.12
Post-Test Score	4.50	0.70	0.50					

Survey item 9. The paired samples *t*-test was used to examine the difference between the pre-test and post-test score for the question of always being satisfied with their breastfeeding

experience. As seen in Table 2, the average pre-test score for this item was 2.50 (*SD* = 0.70) and the average post-test score for this item was 5.00 (*SD* = .00) indicating a mean difference of 2.50. However, the difference between the scores was not statistically significant ($t(1) = -5.00$, $p > .05$). The mean scores indicate that women' confidence increased from pre-test to post-intervention.

Table 2

Paired Samples T-Test Comparing Pre-Test and Post- Test Scores for Survey Item 9 (N = 2)

				95% Confidence Interval of the Difference				
Pair for Item 9	Mean	*SD*	S.E. Mean	Lower	Upper	*t*	*df*	*p*
Pre-Test Score	2.50	.70	.50	-4.85	7.85	-5.00	1	.12
Post-Test Score	5.00	.00	.00					

Survey item 3. The paired samples *t*-test was used to examine the difference between the pre-test and post-test score for the question of always breastfeeding baby without using formula as a supplement. As seen in Table 3, the average pre-test score for this item was 3.50 (*SD* = 2.12) and the average post-test score for this item was 4.00 (*SD* = 1.41) indicating a mean difference of .50. However, the difference between the scores was not statistically significant ($t(1) = -0.20$, $p > .05$). The mean scores indicate that women' confidence increased from pre-test to post-intervention.

Table 3

Paired Samples T-Test Comparing Pre-Test and Post- Test Scores for Survey Item 3 (N = 2)

Pair for Item 3	Mean	*SD*	S.E. Mean	95% Confidence Interval of the Difference Lower	Upper	*t*	*df*	*p*
Pre-Test Score	3.50	2.12	1.50	-32.26	31.26	-0.20	1	.87
Post-Test Score	4.00	1.41	1.00					

Survey item 4. The paired samples *t*-test was used to examine the difference between the pre-test and post-test score for the question of always ensuring that baby is properly latched on for the whole feeding. As seen in Table 4, the average pre-test score for this item was 3.00 (*SD* = .00) and the average post-test score for this item was 3.50 (*SD* = 0.70) indicating a mean difference of .50. However, the difference between the scores was not statistically significant ($t(1) = -1.00$, $p > .05$). The mean scores indicate that women' confidence increased from pre-test to post-intervention.

Table 4

Paired Samples T-Test Comparing Pre-Test and Post- Test Scores for Survey Item 4 (N = 2)

Pair for Item 4	Mean	*SD*	S.E. Mean	95% Confidence Interval of the Difference Lower	Upper	*t*	*df*	*p*
Pre-Test Score	3.00	.00	.00	-6.85	5.85	-1.00	1	.50
Post-Test Score	3.50	0.70	.50					

Survey item 7. The paired samples *t*-test was used to examine the difference between the pre-test and post-test score for the question of always wanting to keep breastfeeding. As seen in Table 5, the average pre-test score for this item was 4.00 (*SD* = 1.41) and the average post-test score for this item was 4.50 (*SD* = 0.70) indicating a mean difference of 0.50. However, the

difference between the scores was not statistically significant ($t(1) = -0.33$, $p > .05$). The mean scores indicate that women' confidence increased from pre-test to post-intervention.

Table 5

Paired Samples T-Test Comparing Pre-Test and Post- Test Scores for Survey Item 7 (N = 2)

Pair for Item 7	Mean	*SD*	S.E. Mean	95% Confidence Interval of the Difference Lower	Upper	*t*	*df*	*p*
Pre-Test Score	4.00	1.41	1.00	-19.55	18.55	-0.33	1	.79
Post-Test Score	4.50	0.70	0.50					

Total pre-test and post-test breastfeeding self-efficacy scores. The first objective of this project was to increase breastfeeding self-efficacy through the Facebook intervention. The paired samples *t*-test was used to examine the difference between the total pre-test and post-test scores of the breastfeeding questionnaire. The total score was determined by calculating the mean across the 14 pre-test and post-test items. As seen in Table 6, the average pre-test total score was 3.28 ($SD = 0.50$) and the average post-test total score was 4.75 ($SD = 0.65$) indicating a mean difference of 1.46, which overall illustrates that women's confidence increased from pre-test to post-intervention, but the difference between the scores was not statistically significant ($t(1) = -1.78$, $p > .05$).

Table 6

Paired Samples T-Test Comparing Total Pre-Test and Post- Test Scores (N = 2)

Pair	Mean	*SD*	S.E. Mean	95% Confidence Interval of the Difference Lower	Upper	*t*	*df*	*p*
Total Pre-Test Score	3.28	0.50	.35	-11.90	8.97	-1.78	1	.32
Total Post-Test Score	4.75	0.65	.46					

Breastfeeding education scores. The second objective of this project was to increase breastfeeding awareness, education, and outside resources to the women through Facebook posts and links. To evaluate this objective, the paired samples *t*-test was used to examine the mean difference between the total pre-test and post-test responses to the item, "I have a good understanding of breastfeeding information and facts." As seen in Table 7, the average pre-test score for this item was 3.50 (*SD* = 0.70) and the average post-test total score was 5.00 (*SD* = .00) indicating a mean difference of 1.50. The participants felt more confident in understanding breastfeeding information and facts after the intervention; however, the difference between the scores was not statistically significant ($t(1) = -3.00$, $p > .05$).

Table 7

Paired Samples T-Test Comparing Total Pre-Test and Post- Test Scores (N = 2)

Pair	Mean	*SD*	S.E. Mean	95% Confidence Interval of the Difference Lower	Upper	*t*	*df*	*p*
PRE: I have a good understanding of breastfeeding information and facts.	3.50	0.70	.50	-7.85	4.85	-3.00	1	.20
POST: I have a good understanding of breastfeeding information and facts.	5.00	.00	.00					

Chapter V: Discussion

Summary of Major Findings

Breast milk is the recommended source of nutrition and can assist to reduce infant mortality (AAP, 2012; WHO, 2002). The American Academy of Pediatrics highly recommends mothers to breastfeed up to 6 months and continue to breastfeed after the infant is introduced to solid foods until at least 12 months of the infant's life (AAP, 2012; WHO, 2002). The purpose of this pilot was to explore the influence of a professionally mediated Facebook peer group to breastfeeding WIC clients.

Breastfeeding self-efficacy. The first objective was to increase breastfeeding self-efficacy to assist improving outcomes at a local WIC clinic. Self-efficacy is one of the many modifiable variables that can affect the continuation of lactation (Dennis, 2003) and has not been extensively studied in the WIC population. The BSES-SF used in this project was developed to examine mothers' confidence in their ability to breastfeed their babies (Dennis, 2003).

The data collected must be interpreted with caution due to the small sample size. While the results did not show statistically significant differences, they were still clinically significant in that every item increased from pre- to post-test. An examination of specific questions allows more insight into the confidence level of these women. Mothers indicated the highest confident levels in their satisfaction with breastfeeding experiences (M=5.00) and breastfeeding with family members present (M=5.00). Social support correlates to breastfeeding self-efficacy based on Bandura's Social Cognitive Theory (Bandura, 1997; Moudi et al., 2016) and may be the likelihood of these two questions having the highest mean difference. Bandura (1997) felt that verbal encouragement and active engagement, especially family members and significant others, can affect the emotional status of individuals. Not knowing the dynamics of these two women's

family and social lives, assumption can be made that the active engagement through the WIC family could have also influenced their attitudes.

The women had lower confidence problem-solving with breastfeeding struggles, such as determining if the baby was getting enough milk (*M*=4.50), time issues (*M*=4.50), finishing one breast before switching to the other breast (*M*=4.50), breastfeeding baby for every feeding (*M*=4.50), keeping up with baby's breastfeeding demands (*M*=4.50), and knowing when baby is finished breastfeeding (*M*=4.50). Ironically, even though they both portrayed the highest confidence in being satisfied with their breastfeeding experience, assumption can be made that due to possible breastfeeding struggles, they have accepted at least partial breastfeeding or may be feeding the baby pumped breast milk. In addition, Bandura (1997) explains how mastery experiences are the most influential in developing self-efficacy. Obstacles can provide opportunities for growth and turn a failure into a success; but until the skill is mastered, the mother may question her confidence level. Literature has suggested that women enrolled in WIC discontinue breastfeeding or supplement with formula due to time or social constraints while forced back to work or school, and lack of social support during obstacles (Harari et al., 2016).

Data indicated that the two mothers felt the least confident ensuring the baby was properly latched on for the whole feeding (*M*=3.50) and always breastfeeding without using formula (*M*=4.00). Mothers also conveyed the lowest confidence to manage breastfeeding even if the baby was crying (*M*=4.00). Moudi et al. (2015) and Tuan et al. (2014) suggest that major barriers resulting in the supplementation of formula are inadequate milk supply, perceived difficulties, and intention of feeding the infant formula. These barriers may be unforeseen events that may take place prenatally or in the early postpartum period that could not be controlled in this project. The data from this project complements the research that early support, especially

in the prenatal and early postpartum periods will assist to empower mothers to achieve their breastfeeding goals by problem solving through their struggles. In particular, Moudi et al. (2016) emphasize that interventions starting in the early prenatal period are more effective than interventions starting after birth because typically the commitment to breastfeed is made early in pregnancy and guidance to promote breastfeeding self-efficacy should be available after delivery.

Education. The second objective of this project was to increase breastfeeding awareness, education, and outside resources to the women through Facebook posts and links. Breastfeeding education and awareness is a key component to the intent and continuation of breastfeeding (Tuan et al., 2014). The programs that WIC clinics offer represent a standardized level of prenatal and postpartum education regarding breastfeeding (Cueva et al., 2017; Harari et al., 2017). Nutritionists along with breastfeeding peer counselors have a passion to influence their clients through their own experiences to encourage success.

Overall, the scores were increased in having a good understanding of breastfeeding facts after the intervention even though the results were not statistically significant (M=4.75). To master a skill, people need rules and strategies to learn how to be in control by applying the strategies consistently (Bandura, 1997). These results suggest that the information provided through Facebook may have complemented the knowledge the women had learned from their required breastfeeding classes and WIC appointments. Posting educational information through the Facebook links is an opportunity to reinforce learning and eliminate fictional data or myths.

With the considerably small sample size collected in this pilot project, the overall data is difficult to be conclusive. Future research should be implemented with considerably larger sample sizes measuring modifiable variables such as demographics, parity, age, character of the

participants, and family dynamics to continue decreasing the breastfeeding disparity (Moudi et al., 2016).

Limitations

The small sample size of only two participants was a substantial limitation. There may be various factors that could have influenced the low participation. The project team members had approximately 15 WIC clients who voiced a direct interest in participating in the project although they did not follow through joining Facebook. Their email may have changed or they lost Internet access, became too busy and forgot, or did not simply check their emails. I was informed that the local health department did not favor any advertisement flyers displayed in the WIC lobby, which decreased the promotion of the project. In addition, I was not allowed to invite WIC clients independently through email asking to join the Facebook group. To compensate this limitation, I would visit the WIC clinic and as the mothers had WIC appointments, they would visit my station in the WIC waiting room. I displayed the advertisement flyers during my visits.

At the end of the original recruitment period of June 31, 2018, I only had one participant and was given the opportunity to extend the time period to continue recruiting more participants. I was able to gain one more participant by the end of the recruitment period, which officially ended December 31, 2018 (see Appendix M for IRB approval letter to extend recruitment). Due to time constraints, I was not able to expand the project to other WIC clinics that were close geographically. To continue fulfilling IRB requirements, I submitted a progress report to extend my project beyond the original expiration date (see Appendix N for IRB continuing review approval letter).

Another limitation to the project was the wait period for approval from the state's Department of Human Services. A letter was immediately sent to the director of the state on June 6, 2018 with proof of IRB approval that was received on May 31, 2018. The state reviewed the project and gave the last mandate on July 23, 2018 to move forward with the project.

Implications

Data gathered from previous studies indicates that there are several barriers that contribute to the low breastfeeding disparity among WIC mothers. Socioeconomic status, mothers returning to work, inadequate milk supply, and breastfeeding difficulties are common reasons why breastfeeding is ceased early (Tuan et al., 2014). As health care professionals think of new innovative ways to increase breastfeeding support, there is limited research using the Internet and social media as an intervention. Breastfeeding self-efficacy has not been extensively studied in the WIC population even though maternal confidence is a major variable in the duration of breastfeeding.

This project can be used as a valuable resource for the future regarding breastfeeding-related confidence in underserved populations. As our society is ever-changing with sophisticated technology, online platforms should be further investigated to accommodate to the millennium generation and to the busy lives of new mothers (West et al., 2011). Larger and more controlled studies should be performed to measure the impact on social media or other online support increasing breastfeeding confidence.

Chapter VI: Conclusion

Value of the Project

The purpose of this project was to use a new and creative approach to bridge the breastfeeding disparity at a local WIC clinic. Communicating with motivation and fellowship along with breastfeeding facts has the potential to positively impact mothers who are struggling with breastfeeding (Cueva et al., 2017; Tuan et al., 2014; West et al., 2011). Because of the barriers faced of underserved populations, an intervention such as an online peer group may take much longer than this project was allowed. This intervention was created with sustainability in mind so that the WIC clinic could continue adding breastfeeding mothers to their "secret" group with the hope that the Facebook group will be a success in the near future. This pilot project should be suggestive of potential positive outcomes if the response rate was higher, and other organizations may have the opportunity to use this project as a guide to refine their own research and implement similar online support groups in a cost-effective manner.

DNP *Essentials*

This scholarly project met several of the Doctors of Nursing Practice (DNP) *Essentials* and has provided substantial personal and professional growth. The DNP *Essentials* provide doctorally-prepared nurses the tools and competencies they need to perform their roles at the highest level (Moran et al., 2017).

DNP *Essential I: Scientific Underpinnings for Practice.* The DNP student learns to integrate nursing science with organizational, biophysical, psychological, and analytical sciences to evaluate and enhance health care delivery to improve patient outcomes (American Association of Colleges of Nursing [AACN], 2006). I performed a systemic literature review and synthesis of evidence, which served as the scientific underpinnings to justify the need for an intervention

to increase breastfeeding self-efficacy. A conceptual framework to guide the project's implementation was based on The Social Learning Theory developed by Albert Bandura. Many elements of Bandura's model were used to develop strategies to improve breastfeeding outcomes at the WIC clinic.

DNP *Essential II: Organizational and Systems Leadership for Quality Improvement and Systems Thinking.* This *Essential* contributes to proficiency in quality improvement strategies by impacting practice policies and procedures in patient populations (AACN, 2006). I collaborated with other health care professionals assessing the current organizational policy and practices to identify the needs of the population and developed a cost-effective project that focused on improving breastfeeding outcomes of an underserved population. The project was produced to serve as a pilot project for other WIC clinics with the intention of expanding the Facebook group to other surrounding areas.

DNP *Essential III: Clinical Scholarship and Analytical Methods for Evidence-Based Practice.* The student's role in DNP *Essential III* involves translating research into practice by evaluating, translating, and disseminating evidence of new attained knowledge to guide improvements in practice and patient outcomes (AACN, 2006). I reviewed the available literature as well as synthesized and assessed the current evidence and guidelines related to increasing breastfeeding outcomes. I worked closely with team members to create a unique approach improving breastfeeding outcomes in their organization by protecting the human rights and privacy of the selected population.

DNP *Essential IV: Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Healthcare.* This DNP *Essential* prepares the student to utilize information and patient care technologies to support practice leadership and decision-

making (AACN, 2006). I met this *Essential* by evaluating a variety of online activities and constructing an online social media platform tailored to meet the needs of the WIC breastfeeding mothers. I also ensured that the web-based platform was congruent with the organizational standards at the local and state levels.

DNP *Essential VI: Interprofessional Collaboration for Improving Patient and Population Health Outcomes.* The DNP student learns to lead interprofessional teams through effective communication and collaborative skills (AACN, 2006). I participated with my team members and other health care professionals in the leadership role by initiating meetings, designing the Facebook group, and discussing pearls after data was analyzed.

DNP *Essential VII: Clinical Prevention and Population Health for Improving the Nation's Health.* This DNP *Essential* prepares the student to synthesize the psychosocial dimensions and cultural aspects related to population health by evaluating epidemiological, biostatistical, occupational, and environmental information to improve health outcomes of both the individual and the community (AACN, 2006). I identified a gap in breastfeeding support and created strategies based on *Healthy People 2020* goals to increase breastfeeding rates. The project promoted breastfeeding through a social media platform that will continue to be used in the organization and has added to the available evidence to assist decreasing the disparity of low breastfeeding rates.

Plan for Dissemination

The plan for dissemination of this project will include an oral presentation at Bradley University. Faculty, administration, project team members, students, and fellow community members will be invited. Once the project is approved, submission to the DNP e-repository will be made. In addition, a final report of the project will be submitted to the local health

department, University of Illinois IRB, review board at Bradley University, and Health and Human Services.

Attainment of Personal and Professional Goals

This project was created because of my personal trials and tribulations with breastfeeding that I experienced as a mother myself along with caring frontline for struggling mothers who discontinued breastfeeding prematurely. My long-term goals as a registered nurse were always to become a nurse practitioner and advance my nursing degree. Life in general interfered, and my professional goals were put aside. Four years ago, I had some life changing events take place. My mother, who is also a registered nurse, encouraged me to pursue my advanced degree. Having been out of school for 22 years, I felt I was incapable of succeeding in graduate school; however, I took a leap of faith. After doing some research, I felt I should go all the way and obtain the terminal degree in nursing.

As I reflect back through my DNP journey, I appreciate the triumphs and struggles that have transformed me into the person I am today, both personally and professionally. I have gained self-confidence, and I have become emotionally intelligent, able to demonstrate self-awareness and empathy. This DNP project has forced me to feel vulnerable in certain situations and become more assertive. I have learned to prioritize and use effective time management skills to complete my required school tasks as well as stay competent as a mother.

As I near the end of my DNP program, working through the DNP *Essentials* has enabled me to understand how science influences clinical practice. I am proud to say that I now have a new passion for nursing, which I feel reflects in my every day life along with how I currently care for my patients and work with my colleagues. I plan to use perpetual curiosity to keep me moving forward professionally because I know my learning and leadership skills will be never-

ending. I am looking forward to use my newfound knowledge and experiences to support the nursing profession and provide optimal nursing care to my future patients.

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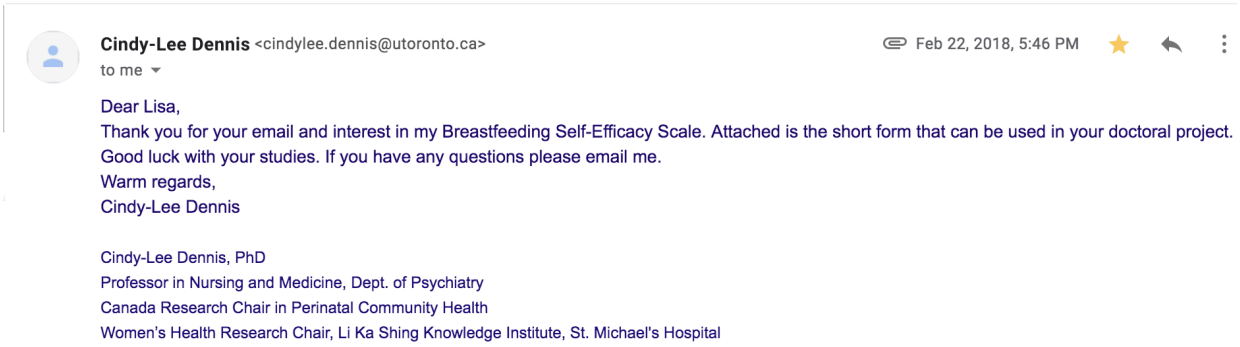
Appendix A

Breastfeeding Self-Efficacy Scale –Short Form

Appendix B



Cindy-Lee Dennis <cindylee.dennis@utoronto.ca> Feb 22, 2018, 5:46 PM

to me

Dear Lisa,
Thank you for your email and interest in my Breastfeeding Self-Efficacy Scale. Attached is the short form that can be used in your doctoral project.
Good luck with your studies. If you have any questions please email me.
Warm regards,
Cindy-Lee Dennis

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

Appendix C

Breastfeeding Education Pre-Intervention Question

For the following statement, please choose the answer that best describes how confident you are with breastfeeding. Please check 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

I have a good understanding of breastfeeding information and facts	1	2	3	4	5

Breastfeeding Education Post-Intervention Question

For the following statement, please choose the answer that best describes how confident you are with breastfeeding. Please check 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

I have a better understanding of breastfeeding information and facts after participating in the Facebook group	1	2	3	4	5

IRB-mar
Approved: 5/30/18

Appendix D


JOIN OUR NEW FACEBOOK BREASTFEEDING GROUP!
EXCLUSIVELY FOR BREASTFEEDING MOTHERS
WOULD YOU LIKE TO BE INVOLVED IN A SMALL PROJECT ALONG WITH A CHANCE TO WIN A GIFT CARD TO WAL-MART?
MAKE NEW FRIENDS, GIVE EACH OTHER BREASTFEEDING SUPPORT, SHARE BREASTFEEDING EXPERIENCES, RECEIVE ACCURATE BREASTFEEDING INFORMATION
BROUGHT TO YOU BY xxx WIC BREASTFEEDING TASK FORCE AND BRADLEY UNIVERSITY
CALL/TEXT LISHA @ xxx-xxx-xxx FOR MORE INFORMATION
THIS INSTITUTION IS AN EQUAL OPPORTUNITY EMPLOYER
BRADLEY University

Appendix E

Timeline

University of Illinois Institutional Review Board approved ……..…...… May 30, 2018

Department of Human Services approved …… July 23, 2018

Facebook launched ……...… July 24, 2019

Recruitment period …….July 24, 2019 – December 31, 2019

Implementation period ……..January 1, 2019 – March 31, 2019

Data analysis ……April 5, 2019 – May 12, 2019

Appendix F

Terms and Conditions

Study Title: *Social Media Intervention to Increase Breastfeeding Self-Efficacy*

I. Invitation to be part of a project:

You are invited to participate in a project. In order to participate you must be 18 years of age or older, currently breastfeeding, actively enrolled in the WIC program, have Internet access, and be able to speak and write the English language. Taking part in this project is voluntary.

II. Key information regarding this project:

The purpose of this project is to help better understand if the Facebook group will increase breastfeeding support and improve confidence in breastfeeding. If you choose to participate, you will be asked to complete two questionnaires electronically, one at the beginning of joining the Facebook group and one approximately three months after participating in Facebook. This will take approximately 10 minutes. There are no known risks or discomforts from this project. The project will help provide you with extra breastfeeding support, education, and assistance. You may also develop new friendships through the Facebook group. Taking part in this project is voluntary. You do not have to participate and if you do, you can choose to stop at any time.

Please take the time to read this entire form and ask questions before deciding to participate in this project.

III. What is purpose of the project?

The purpose of this project is to help better understand if the Facebook group will increase breastfeeding support and improve confidence in breastfeeding.

IV. What will happen if you take part in this project?

If you agree to take part in this project, you will have the opportunity to join the private WIC Facebook group. You will be asked to complete two questionnaires electronically, one at the beginning of joining the Facebook group and one approximately three months after participating in the Facebook group. Each questionnaire will take approximately 10 minutes.

The first questionnaire will contain questions asking your comfort level and knowledge of breastfeeding. The second questionnaire will be similar to the first one.

There are no right or wrong answers.

You will then be able to participate on Facebook and make comments or ask breastfeeding questions on any topic of breastfeeding. All comments will be private and no one except the members of the group will be able to see your comments.

V. What are the risks of participating in the project?

We do not believe there are any risks associated with this project. You may feel slight inconvenience having to complete two online questionnaires that will take approximately five to ten minutes each to complete. You may feel slight fatigue being asked to complete a questionnaire if you have just delivered your baby. If you have any questions along the way, please do not hesitate to ask.

VI. What are the benefits of participating in the project?

You may benefit from participating in this project by receiving free breastfeeding support, advice, and discussions regarding issues on breastfeeding your baby. You may develop new friendships through the Facebook group. You will also receive educational materials from the WIC clinic through Facebook. If you choose to participate in this project, your name will be entered into a drawing to win a $10.00 Wal-Mart gift card.

VII. What other options are there if you choose not to participate in this project?

Even if you choose not to participate in the project, you may still have the option of joining the Facebook breastfeeding group.

VIII. What are the costs?

There are no costs for participation in this project.

X. After the study, what will happen to the data collected?

Information from the questionnaires that you complete online will be downloaded by the researcher onto her computer. The files will be protected with a password. Only the researcher and her faculty advisor will have access to your individual information and all electronic files will be deleted after the project is complete.

XI. Your participation in the study is voluntary.

Taking part in this project is voluntary. You may choose not to take part or may leave the project at any time. You do not need to answer any question you do not want to answer.

Your refusal to participate will involve no penalty or loss of benefits to you as a WIC client.

XII. Who should I contact with questions about my rights as a participant?

If you have questions about your rights as a participant, or wish to obtain information, ask questions, or discuss any concerns about this project with someone other than the researcher, please contact the following:

Committee on the Use of Human Subjects in Research (CUHSR)
[redacted]

XIII. Where can I get more information?

Additional information can be obtained from the researchers:

Peggy Flannigan PhD, RN (Faculty advisor)
[redacted]

Lisa Patel RN, BSN (student)
[redacted]

XIV. Your informed consent

By clicking I Agree, you are voluntarily making a decision to participate in this project. Your submission means that you have read and understood the information presented and have decided to participate. Your submission also means that the information on this consent form has been fully explained to you and all your questions have been answered to your satisfaction. If you think of any additional questions during the study, you should contact the researcher.

Appendix G

Facebook Disclaimer

Welcome to the [redacted] WIC breastfeeding Facebook page! The WIC department developed this group to offer breastfeeding women a place to connect, gather new information, and encourage one another through breastfeeding experiences.

This group is set up as a Facebook "Secret" group, which means non-members cannot search for the group on Facebook or see who is in the group. Non-members cannot join the group without permission from the WIC breastfeeding Facebook page administrators, cannot see what group members post, nor can they see that you are a member of the group from your Facebook group list.

Emergency Services: If you are experiencing an emergency or life-threatening situation, please call 911 or go to the nearest emergency room.

Medical Advice: The comments and content posted on this group do not necessarily represent the views and opinions of [redacted] WIC department. The group is meant to be peer-to-peer support and NOT a substitute for medical advice. Please contact your healthcare provider if you have specific questions regarding your personal medical needs.

If you need to reach a breastfeeding peer counselor, please call [redacted]

If you need to contact the WIC office, please call [redacted]

Privacy and Security: A social media site such as Facebook cannot be considered private or secure. You must take appropriate steps to protect your personal information on the Internet and on any social media site.

Personal Health Information: No one may use or disclose information of any person (except their own) of any kind on social media without the written permission of that person.

Removal of Content: Please be courteous to each individual in the group and realize that opinions may vary. What works for one individual or family may not work for another. The WIC department reserves the right to delete user posts or content for reasons including but not limited to: posts that contain confidential information, posts that conflict with WIC policies, posts that are disrespectful (violent, abusive, threatening, harassing, discriminatory, etc.), posts that contain misinformation about breastfeeding, and/or posts that discourage breastfeeding. Please follow the terms of use when participating in conversation on this page. If you do not wish to abide by these terms, please exit the site and remove yourself from the group list. Any member who does not follow these terms will be removed and blocked from the site.

Copyright/Trademark: Please only post or upload information that you have copyrighted or have permission to post from the original source.

Products/Endorsements: Please refrain from advertising any products or services for sale.

Thank you for supporting our Facebook page!

If you have any questions or comments, please send us a private message. You can also call [redacted]

Appendix H

February 2, 2018

Department of Human Services
[redacted]

To Whom It May Concern:

As a requirement for the Doctor of Nursing Practice Degree at Bradley University, I am submitting a request for a Women, Infant, Children (WIC) special project for approval: *Social Media Intervention to Improve Breastfeeding Outcomes*. I will be working with the [redacted] With collaboration from the WIC Supervisor and Breastfeeding Peer Counselor, I will formulate and implement a private Facebook group for WIC breastfeeding clients. This Facebook group will be compliant with the [redacted] mission and goals.

The purpose of the project is to improve breastfeeding self-efficacy through professionally mediated peer support to help increase breastfeeding outcomes in the WIC population at the [redacted] I plan to use this Facebook group to complement the breastfeeding support already used at WIC. The WIC breastfeeding clients will be offered to an opportunity to join the Facebook group. Members' names and comments in the forum will only be visible to those who have read the terms and conditions and voluntarily joined the group. I will use anonymous questionnaires with no personal identifiers to evaluate outcomes of my project. The self-efficacy questionnaires will be self-reporting using a 5-point Likert scale method that will be distributed to the participating clients before the Facebook group has been implemented and approximately three months after implementation. The WIC clients will provide informed consent that they will be involved in a small project. The participants will be able to opt out of the project at any time if they choose. I will also seek ethics approval from the appropriate Institutional Review Board with assistance from Bradley University.

After all approvals have been granted, I will collaborate with WIC staff to implement the Facebook group with a projected timeframe of late Spring, 2018. The questionnaires will remain at the [redacted] for me to review. After approximately three months, I will evaluate the questionnaires to complete my project.

The Facebook group will essentially be of no cost. The potential cost in sustaining the Facebook group will be designating certain staff members as professional administrators monitoring the Facebook group, posting educational material, and offering another form of communication for support to breastfeeding mothers. In speaking with the WIC Program Supervisor and Breastfeeding Peer Counselor, these are duties that the Peer Counselor already performs in her current role; therefore, I do not foresee any additional staff time or costs.

Thank you for your consideration.

Very Respectfully,
Lisa Patel, RN, BSN

Appendix I

UNIVERSITY OF ILLINOIS
COLLEGE OF MEDICINE AT PEORIA

Institutional Review Board
One Illini Drive
Box 1649
Peoria, Illinois 61656-1649

FWA 00005172

IRB #00000688
IRB #00000689

DATE:	May 31, 2018
TO:	Lisa Patel, RN,BSN
FROM:	University of Illinois College of Medicine at Peoria IRB 1
STUDY TITLE:	[1239725-1] Social Media Intervention to Increase Breastfeeding Self-Efficacy
IRB REFERENCE #:	
SUBMISSION TYPE:	New Project
ACTION:	APPROVED
APPROVAL DATE:	May 30, 2018
EXPIRATION DATE:	May 9, 2019
REVIEW TYPE:	Expedited Review

Approval has been granted for one year pursuant to 45CFR46.110(a)(F)(7) "Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies."

This research meets the regulatory requirements for approval as specified in 45 CFR 46.111 and 21 CFR 56.111. Specifically, the risks to subjects are minimized and reasonable in relation to anticipated benefits to subjects and the importance of the knowledge that may reasonably be expected to result.

The IRB is waiving the requirement for the investigator to obtain a signed consent form for all subjects pursuant to 45CFR46.117(c)(2) "That the research presents no more than minimal risk of harm to subjects and involves no procedures for which written consent is normally required outside of the research context."

PLEASE NOTE: Research must be conducted according to the proposal that was approved by the IRB. Any revisions to the previously approved materials must be approved by this office prior to initiation. Please use the appropriate revision forms for this procedure.

When your study is complete, please submit a Final Report to IRBNet.

Please retain copies of all records pertaining to this study for a minimum of three (3) years from study closure.

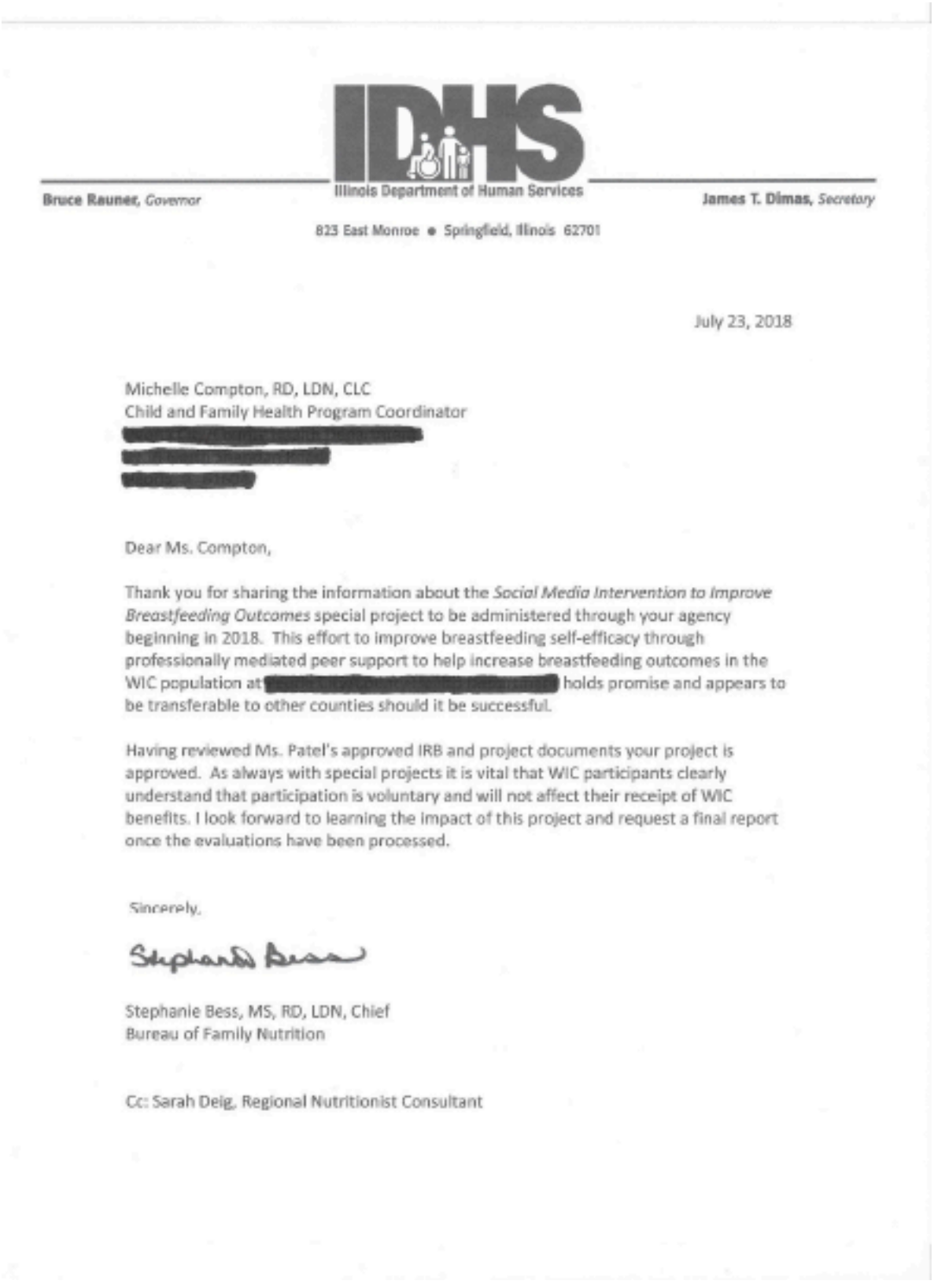
A Continuing Review will be requested prior to the end of one year of study.

This study will expire: 5/9/19.

This study will be reviewed at the 5/9/19 meeting of the IRB.

A completed Continuing Review Form is expected by: 4/28/19.

Appendix J



Illinois Department of Human Services

Bruce Rauner, *Governor* — James T. Dimas, *Secretary*

823 East Monroe • Springfield, Illinois 62701

July 23, 2018

Michelle Compton, RD, LDN, CLC
Child and Family Health Program Coordinator
[redacted]

Dear Ms. Compton,

Thank you for sharing the information about the *Social Media Intervention to Improve Breastfeeding Outcomes* special project to be administered through your agency beginning in 2018. This effort to improve breastfeeding self-efficacy through professionally mediated peer support to help increase breastfeeding outcomes in the WIC population at [redacted] holds promise and appears to be transferable to other counties should it be successful.

Having reviewed Ms. Patel's approved IRB and project documents your project is approved. As always with special projects it is vital that WIC participants clearly understand that participation is voluntary and will not affect their receipt of WIC benefits. I look forward to learning the impact of this project and request a final report once the evaluations have been processed.

Sincerely,

Stephanie Bess

Stephanie Bess, MS, RD, LDN, Chief
Bureau of Family Nutrition

Cc: Sarah Deig, Regional Nutritionist Consultant

Appendix K

Agreement Between Peoria County Board of Health

And

Bradley University

Memorandum of Understanding

Appendix L

Peoria Institutional Review Board
One Illini Drive
Peoria, Illinois 61605

FWA 00005172

IRB #00000688
IRB #00000689

DATE:	April 12, 2019
TO:	Lisa Patel, RN,BSN
FROM:	University of Illinois College of Medicine Peoria IRB 1
STUDY TITLE:	[1239725-4] Social Media Intervention to Increase Breastfeeding Self-Efficacy
IRB REFERENCE #:	
SUBMISSION TYPE:	Closure to Enrollment - 3/31/19 per Principal Investigator's request
ACTION:	ACKNOWLEDGED
APPROVAL DATE:	April 11, 2019
EXPIRATION DATE:	April 10, 2020
REVIEW TYPE:	Expedited Review

Thank you for your submission of Closure to Enrollment materials for this research study. University of Illinois College of Medicine Peoria IRB 1 has ACKNOWLEDGED your submission. This acknowledgement is based on an appropriate risk/benefit ratio and a study design wherein the risks have been minimized. All research must be conducted in accordance with this submission.

This submission has received Expedited Review based on the applicable federal regulation.

Based on the risks, this project requires Continuing Review by this office on an annual basis. Please use the appropriate renewal forms for this procedure.

If you have any questions, please contact Wendy Bucklin at (309) 680-8633 or wbucklin@uic.edu. Please include your study title and reference number in all correspondence with this office.

cc:

Appendix M

Peoria Institutional Review Board
One Illini Drive
Peoria, Illinois 61605

FWA 00005172

IRB #00000688
IRB #00000689

DATE:	October 9, 2018
TO:	Lisa Patel, RN,BSN
FROM:	University of Illinois College of Medicine at Peoria IRB 1
STUDY TITLE:	[1239725-2] Social Media Intervention to Increase Breastfeeding Self-Efficacy
IRB REFERENCE #:	
SUBMISSION TYPE:	Amendment/Modification -
	Amendment for recruitment process to proceed through December 31, 2018 or until at least 20 breastfeeding women are recruited from the WIC clinic.
	Project will then be implemented for three months. Project is more suitable for long-term outcomes therefore, extending the recruitment period is better than expanding the geographic area because the Facebook breastfeeding peer support group is exclusive to the one WIC clinic.
ACTION:	APPROVED
APPROVAL DATE:	September 26, 2018
EXPIRATION DATE:	May 9, 2019
REVIEW TYPE:	Expedited Review

Thank you for your submission of Amendment/Modification materials for this research study. University of Illinois College of Medicine at Peoria IRB 1 has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a study design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

This submission has received Expedited Review based on the applicable federal regulation.

Please remember that informed consent is a process beginning with a description of the study and insurance of participant understanding.

PLEASE NOTE: Research must be conducted according to the proposal that was approved by the IRB. Any revisions to the previously approved materials must be approved by this office prior to initiation. Please use the appropriate revision forms for this procedure.

Based on the risks, this project requires Continuing Review by this office on an annual basis. Please use the appropriate renewal forms for this procedure. When your study is complete, please submit a Final Report via IRBNet.

Appendix N

Peoria Institutional Review Board
One Illini Drive
Peoria, Illinois 61605

FWA 00005172

IRB #00000688
IRB #00000689

DATE:	May 10, 2019
TO:	Lisa Patel, RN,BSN
FROM:	University of Illinois College of Medicine Peoria IRB 1
STUDY TITLE:	[1239725-3] Social Media Intervention to Increase Breastfeeding Self-Efficacy
IRB REFERENCE #:	
SUBMISSION TYPE:	Continuing Review/Progress Report
ACTION:	APPROVED
APPROVAL DATE:	May 9, 2019
EXPIRATION DATE:	May 8, 2020
REVIEW TYPE:	Expedited Review

Thank you for your submission of Continuing Review/Progress Report materials for this research study. University of Illinois College of Medicine Peoria IRB 1 has approved your renewal submission for one year of study. This approval is based on an appropriate risk/benefit ratio and a study design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

This submission has received Expedited Review based on the applicable federal regulation.

Please remember that informed consent is a process beginning with a description of the study and insurance of participant understanding followed by a signed consent form. Informed consent must continue throughout the study via a dialogue between the researcher and research participant. Federal regulations require each participant receive a copy of the signed consent document.

PLEASE NOTE: Research must be conducted according to the proposal that was approved by the IRB. Any revisions to the previously approved materials must be approved by this office prior to initiation. Please use the appropriate revision forms for this procedure.

Based on the risks, this project requires Continuing Review by this office on an annual basis. Please use the appropriate renewal forms for this procedure.

When your study is complete, please submit a Final Report to IRBNet.

If this study is regulated by the HIPAA Privacy Rule, please retain copies of all records pertaining to this study for a minimum of six (6) years from study closure. Otherwise, please retain research records for a minimum of three (3) years from study closure.

The University of Illinois College of Medicine Peoria's (UICOMP) Office of Human Research Oversight (OHRO) will no longer accept local or non-local adverse events or safety reports for IRB review that do not meet the definition of an unanticipated problem involving risks to subjects or others (UPIRSO).