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The Effect of Breastfeeding Education in African American Women on Initiation and Duration of Breastfeeding

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This doctoral project, directed and approved by the candidate's committee, has been accepted by the College of Graduate and Professional Studies of Abilene Christian University in partial fulfillment of the requirements for the degree

Doctor of Nursing Practice

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of the requirements for the degree of

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by

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Dedication

I dedicate the work of this doctoral project to all of the Tara's, Nichelle's, Nicole's, and Lillian's who have endured their own battle against breast cancer. I will continue to educate others and fight in your honor.

Acknowledgments

I would first like to thank God for being that quiet voice that continued to encourage me to keep pursuing my dreams. I would like to thank my project committee for their support in this process. I would especially like to express my sincere gratitude to Dr. Tonya Sawyer-McGee for her support, guidance, and confidence in my ability to complete this journey. Thank you to my family, friends, and coworkers, who were supportive of my endeavor and offered words of encouragement. Most importantly, thank you to my number one support team, Rickie, Terry, and Toni Harris. Without you all supporting me the whole time, I never would have made it. Thank you with my whole heart.

Abstract

This Doctor of Nursing Practice scholarly project aimed to evaluate the effectiveness of breastfeeding education in African American women on the initiation and duration of breastfeeding. Studies demonstrated that breastfeeding education by providers and a breastfeeding support network positively influenced breastfeeding initiation and continuation in African American women. Breastfeeding education containing information on the decreased risk of breast cancer in African American women may be an even greater motivator for breastfeeding. Participants for this project were African American women, ages 18–50, in their last trimester of pregnancy. The project was approved to be implemented at an urban clinic in the Dallas–Fort Worth, Texas metroplex. Due to the COVID-19 pandemic, candidates for the study were recruited by word-of-mouth through mutual acquaintances. Participants were provided with a breastfeeding education program that contained information regarding the decreased breast cancer risk. The Breastfeeding Self-Efficacy Scale-Short Form was administered as a pretest before the breastfeeding education and as a posttest following the breastfeeding education. Participants were contacted postpartum for a brief survey at one, six, and 12 weeks postpartum.

Keywords: breastfeeding, breast cancer, breastfeeding self-efficacy, African American breastfeeding, breastfeeding education, triple-negative breast cancer

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Chapter 1: Introduction

Since the beginning of humankind, breastfeeding has been a natural method of feeding milk to infants from a mother's breast. During the first six months of an infant's life, breast milk is an adequate source of nutrition (American Academy of Pediatrics [AAP], 2012). According to the AAP (2012) and the World Health Organization (WHO, 2019), it is recommended that an infant be exclusively breastfed for the first six months of life. An infant who receives breast milk directly from the breast or by an alternate method to provide breast milk is considered breastfed (Eastin & Sharma, 2015). An infant who has received any amount of breast milk is labeled as breastfed (Eastin & Sharma, 2015). According to the WHO (2019), after six months, breastfeeding can continue with other nutritional supplements, such as baby food. Chapman and Pérez-Escamilla (2012) recommend breastfeeding for a minimum of 12 months, in addition to other nutritional supplements.

The Healthy People 2020 goal for women who have ever breastfed in the United States was 83.2% (target 82%; Centers for Disease Control and Prevention [CDC], 2018; Ganju et al., 2018). By day two of life, an average of 24% of infants that were breastfed in the United States received formula to supplement their breast milk feedings (Chapman & Pérez-Escamilla, 2012). The Healthy People 2020 goal for breastfeeding at six months and one year was 60.6% and 34.1%, respectively (CDC, 2018). During a 2015 survey, 57.6% and 35.9% of infants were breastfeeding at six months and one year, respectively (CDC, 2018).

Breastfeeding has many benefits for infants that lay a healthy foundation over the life of the infant (Danawi et al., 2016). The benefits of breastfeeding for the infant include reduced sudden infant death syndrome, respiratory illnesses, childhood obesity, allergies, immune system

problems, gastrointestinal issues, asthma, dermatitis, otitis media, and diabetes (Danawi et al., 2016; Eastin & Sharma, 2015; Nyange, 2018; Thomson et al., 2017).

A significant benefit not to be overlooked for mother and infant is the promotion of maternal-infant bonding. The bonding during breastfeeding has been found to increase feelings of calm that sustain lower blood pressures for postpartum women (Eastin & Sharma, 2015).

The risk of developing breast cancer is increased when a woman gives birth and does not breastfeed (Dietze et al., 2015). Historically, African American women have consistently lagged behind in breastfeeding compared to White and Hispanic women (Nyange, 2018). The link of breastfeeding to reduce breast cancer risk is continuing to increase interest in the areas of research and literature (Anstey et al., 2017).

Breast cancer that is estrogen receptor-negative (ER-), progesterone receptor-negative (PR-), and lacks expression of human epidermal growth factor receptor 2 (HER2) characterizes a particular subtype of breast cancer known as triple-negative breast cancer (TNBC; Dietze et al., 2015; John et al., 2018; Sturtz et al., 2014). According to John et al. (2018), "breastfeeding is one of the few factors that have been most consistently associated with a lower risk of TNBC" (p. 2280). The risk of developing TNBC phenotype is increased when a woman does not breastfeed (Dietz et al., 2015). A disproportionate number of African American women account for 22.5% of annual newly diagnosed TNBC phenotypes (John et al., 2018; Sturtz et al., 2014).

Problem Statement

In women under the age of 49, the risk of developing invasive breast cancer was 1 in 52 in the United States between 2011 to 2013 (American Cancer Society [ACS], 2017). Alterations in the breast associated with hormonal changes resulting from breastfeeding are associated with the mechanism of how breast cancer risk is reduced (Anstey et al., 2017). In the United States,

the incidence of breast cancer diagnosis and death are higher in African American women than any other ethnicity (DeSantis et al., 2017). African American women had a breast cancer death rate that was 40% higher than non-Hispanic White women from 2011 to 2014 (DeSantis et al., 2017; Williams et al., 2016). DeSantis et al. (2017) estimated that of the 252,710 new invasive breast cancer cases and 63,410 in situ breast carcinomas diagnosed in 2017, it was estimated that 40,610 women were expected to die from breast cancer. The ACS estimated that among African American women, there would be 33,840 new breast cancer cases, with approximately 6,540 breast cancer deaths in 2019 (DeSantis et al., 2019).

The incidence rate of TNBC for African American women is 125.5/100,000 (John et al., 2018), with a five-year survival rate of 77% (Sturtz et al., 2014). The mortality rate for African American women with TNBC is highest for any ethnic group (32.4/100,000; Sturtz et al., 2014). The mortality of African American women with breast cancer creates a national problem. As African American women have decreased breastfeeding rates, their incidence of TNBC is higher (Anstey et al., 2017).

Effective breastfeeding education by healthcare professionals may be the key to promoting the initiation of breastfeeding, a longer duration of breastfeeding, and improved breastfeeding self-efficacy (Cleveland & McCrone, 2005). Incorporating effective breastfeeding education can help improve breastfeeding rates and lower breast cancer rates for African American women. Breastfeeding education for African American women can have positive outcomes with increased breastfeeding duration to decrease breast cancer risk (Anstey et al., 2017). However, breastfeeding education should be culturally relevant, consistent, and engaging (Thomson et al., 2017).

Self-Efficacy and Breastfeeding

The desire to breastfeed also correlates with one's self-efficacy. The self-efficacy beliefs of an individual can lead to behaviors that produce the attainment of successful behavior (Cleveland & McCrone, 2005). Self-efficacy beliefs motivate a person beyond the knowledge of health and to persevere in maintaining a specific health behavior despite challenges (McCarter-Spaulding & Dennis, 2010). McCarter-Spaulding and Dennis (2010) report that "breastfeeding self-efficacy is a concept based on Bandura's social cognitive theory" (p. 112). A woman's breastfeeding self-efficacy is her confidence in her ability to breastfeed her infant (McCarter-Spaulding & Dennis, 2010). Breastfeeding self-efficacy is a modifiable variable shown in previous studies to predict a longer breastfeeding duration without supplementation (McCarter-Spaulding & Dennis, 2010).

A woman's ethnicity is also a variable that influences breastfeeding rates (McCarter-Spaulding & Dennis, 2010). Research suggests there are cultural differences among African American women related to breastfeeding that accounts for lower breastfeeding rates when compared with White women (McCarter-Spaulding & Dennis, 2010). A challenge is underway to increase breastfeeding self-efficacy in African American women to increase the number of African American women who choose to initiate breastfeeding and pursue breastfeeding over an extended amount of time (Cleveland & McCrone, 2005).

Background

The rates of breast cancer in women are continuing to increase. Breast cancer in women is the most commonly diagnosed cancer in the United States (Anstey et al., 2017) and follows lung cancer as the second most prevalent cause of cancer deaths (DeSantis et al., 2017). Invasive breast cancer cases were expected to number approximately 268,000 in 2019, with an estimated

62,930 noninvasive breast cancer cases (Breastcancer.org, 2019). For 2019, there was an estimated total of 41,760 deaths due to breast cancer in women (National Cancer Institute [NCI], 2019). An estimated 32% (33,840) of all cancers (104,240) diagnosed in African American women in 2019 were breast cancer (ACS, 2021). Breast cancer deaths in African American women for 2019 were estimated to be 18% (6,540) of all cancer deaths (36,190), second to 20% (7,270) for lung cancer (ACS, 2021).

Newcomb et al. (1994) concluded in a case-control study that there was a reduced risk of breast cancer in premenopausal women who had breastfed. The relative risk of breast cancer was .97 in women who had ever breastfed compared to women who had given birth but had never breastfed (Newcomb et al., 1994). The research by Newcomb et al. (1994) indicated a statistically significant ($p < .001$) reduced breast cancer risk for women who breastfeed for an extended length of time compared to women with a short course of breastfeeding or who had never breastfed. The reduction of breast cancer risk in premenopausal women was also associated with a longer course of an estimated 24 months or more of cumulative lactation (Newcomb et al., 1994).

A more recent descriptive cross-sectional survey study by Ganju et al. (2018) concluded that women's breastfeeding practices might be influenced by the knowledge of breast cancer risk reduction by breastfeeding. A total of 724 women aged 18–50 participated in the survey study by Ganju et al. (2018). African American women represented approximately 18% (130) of the study participants (Ganju et al., 2018). Out of the total survey participants, 92% (667) indicated that they had breastfed at least one child (Ganju et al., 2018). African American women who indicated that they had breastfed at least one child was 114 (87.7%; Ganju et al., 2018). Approximately 46.9% (61) of African American women in the study acknowledged that they

were aware of the reduced risk of breast cancer by breastfeeding (Ganju et al., 2018). In the entire survey group, 56 (8%) of women did not breastfeed, with 39 (69.6%) of those women indicating that they "were unaware of the association between breastfeeding and breast cancer risk reduction" (Ganju et al., 2018, p. 653). Of the 39 participants who did not breastfeed and were unaware of the reduction of breast cancer risk, 23 (59%) of those women indicated that knowledge of the reduction of breast cancer risk would have been an influential factor in their choice to breastfeed (Ganju et al., 2018). Women in the survey by Ganju et al. (2018) who were aware of the reduction of breast cancer risk by breastfeeding reported having obtained their information from magazines or books (31.8%), the Internet (29.6%), and their healthcare provider (16.6%). Ganju et al. (2018) concluded that counseling by healthcare providers on the reduced risk of breast cancer by breastfeeding served as a potential factor in improving the rates of breastfeeding initiation and prolong breastfeeding duration among all women.

Significance

Alterations in the breast associated with hormonal changes resulting from breastfeeding are associated with reduced breast cancer risk (Anstey et al., 2017). Mammary cells that are differentiated during pregnancy are less likely to become cancerous when breastfeeding occurs (Anstey et al., 2017). ElShamy (2016) indicated a positive correlation of TNBC in premenopausal African American women who had shorter lactation durations from epidemiological evidence.

During breastfeeding, there is a terminal differentiation of mammary cells (ElShamy, 2016; John et al., 2018). The involution process that occurs after breastfeeding is completed in a process by which the terminally differentiated mammary cells undergo a cell death that allows the breast to return to its "pre-pregnancy quiescent state" (ElShamy, 2016, p. 53942). More

extended periods of breastfeeding after pregnancy allow the terminal differentiation of progenitor mammary cells (ElShamy, 2016). Incomplete or absent differentiation may be a cause for progenitor mammary cells to be retained in an inflammatory environment during the weaning process (ElShamy, 2016). An inflammatory environment is ideal for TNBCs (ElShamy, 2016). The retained progenitor mammary cells are restructured into precursors for TNBCs postpartum (ElShamy, 2016). ElShamy (2016) concluded that pregnancy triggered an increased expression of an oncogene. The cells containing this oncogene expression must be eliminated during involution after breastfeeding (ElShamy, 2016). The forced involution caused by the lack of breastfeeding, or shorter length of time breastfeeding, could be a source of the undifferentiated cells continuing to survive and generate TNBCs (ElShamy, 2016).

Purpose of the Study

This project's primary goal was to increase the initiation and duration of breastfeeding in African American women. Breastfeeding rates among African American women continue to be lower than any other racial or ethnic group (Alghamdi et al., 2017). The 2018 CDC breastfeeding report indicated that compared to non-Hispanic White infants, there were fewer non-Hispanic Black infants that breastfed at all (85.9% compared to 69.4%).

With the use of an educational program, this project's secondary goal was to increase awareness of the benefit of breastfeeding of decreased risk of breast cancer. African American women may have the most to gain from the protection of TNBC by breastfeeding (Anstey et al., 2017). The lower risk of TNBC has been shown to have a consistent association with breastfeeding (John et al., 2018). Breastfeeding education that includes information about a reduced risk of TNBC can be a motivating factor for breastfeeding initiation. The knowledge and basic understanding of breastfeeding is not the only significant factor in increasing breastfeeding

rates (Alghamdi et al., 2017). In a study conducted by Ganju et al. (2018), women who did not breastfeed their infants indicated that if they were knowledgeable of the decreased risk of breast cancer by breastfeeding, they would have made a different decision.

PICOT Question

A well-defined research question helped to guide the appropriate literature review and develop a plan to implement change. In evidence-based medical research, this research question is defined as a PICOT (Melnyk & Fineout-Overholt, 2015). The *P* is related to the population or problem of interest (Melnyk & Fineout-Overholt, 2015). The *I* referred to the intervention or the issue of interest (Melnyk & Fineout-Overholt, 2015). The *C* is related to a comparison of the intervention or point of interest (Melnyk & Fineout-Overholt, 2015). The *O* was the outcome of interest (Melnyk & Fineout-Overholt, 2015). The *T* referred to the time frame allotted to accomplish the outcome of an intervention (Melnyk & Fineout-Overholt, 2015). The research question for this study was the following: Will an educational program on the importance of breastfeeding and breast cancer risk reduction for African American women of childbearing ages 18–50 in their last trimester of pregnancy increase their awareness of breastfeeding and initiation of breastfeeding three months postpartum? The components of the PICOT are further explained below:

Population: African American women ages 18–50 in their last trimester of pregnancy.

Intervention: Educational program on breastfeeding, the importance of breastfeeding, and breast cancer risk reduction.

Comparison: Breastfeeding self-efficacy before the educational program and breastfeeding self-efficacy after the educational program.

Outcome: Increase breastfeeding awareness and initiation of breastfeeding among African American female participants.

Time: Three months postpartum.

An effective PICOT question allowed for a thorough research process that yielded relevant information to guide this research study. The retrieved literature was evaluated against the PICOT question to determine relevance to the research topic. The literature was evaluated for purpose statements, research questions, sampling methods, sample sizes, designs, levels of evidence, findings, conclusions, practice and research implications, and limitations of the findings.

Definition of Key Terms

Throughout the discussion in this paper, there were key terms regarding this topic that were important to be identified. Operational definitions were given to facilitate the comprehension of the project.

African American female. Women of Black or African descent born outside or within the United States and self-identify as African American (Eastin & Sharma, 2015).

Breast cancer. Type of cancer that forms in tissues of the breast (NCI, 2011). Breast cancer is a "heterogeneous disease with various subtypes" (Islami et al., 2015, p. 2399), with each subtype associated with "various risk factors" (Anstey et al., 2017, p. S40).

Breastfeeding. Breastfeeding, also known as nursing, is the natural method of feeding a newborn the milk from a woman's breast (Eastin & Sharma, 2015). An infant who receives breast milk directly from the breast or by an alternate method using expressed milk is considered breastfed (Eastin & Sharma, 2015).

Childbearing. The process of a woman "conceiving, being pregnant with, and giving birth to a child(ren)" (Merriam-Webster, n.d.).

Complementary feeding. The feeding of an infant or child with a "combination of breast milk and other liquids and semi-solid or solid food" (McKinley & Turner, 2017, p. 95).

Gravida. The total number of times (past and present) a woman has been pregnant despite the outcome (American College of Obstetricians and Gynecologists [ACOG], 2014).

Para. The total number of pregnancies with a gestation that reaches 20 weeks and 0 days or more with no regard to the number of fetuses or the outcomes (ACOG, 2014).

Personal efficacy. The belief and confidence in one's ability to "manage thought, emotion, motivation, action, and environment to produce desired effects of her actions" (Cleveland & McCrone, 2005, p. 116).

Prenatal. The time when a woman is pregnant before birth occurs (NCI, 2011).

Self-efficacy. The belief "in one's capabilities to organize and execute the courses of action required to produce given attainments" (Cleveland & McCrone, 2005, p. 116).

Trimester. Pregnancy is divided into three equal phases. Each phase is a trimester that lasts approximately three months. Each trimester is divided into 14 weeks, with the last trimester from 29 to 42 weeks of pregnancy (Cunningham et al., 2014).

Triple-negative breast cancer. Triple-negative breast cancer (TNBC) is a tumor subtype of breast cancer (Sturtz et al., 2014). The TNBC phenotype of breast cancer is defined as estrogen receptor-negative (ER-), progesterone receptor-negative (PR-), and lack of expression of human epidermal growth factor receptor 2 (HER2; Dietze et al., 2015; John et al., 2018; Sturtz et al., 2014).

Nature of the Project

The structure of the PICOT question pivoted on the ability to provide education for African American women that would increase breastfeeding personal efficacy. An increase in breastfeeding personal efficacy served as an instrument to increase breastfeeding initiation and prolong the duration of breastfeeding in African American women. The PICOT question served as a concise direction in the assessment, application, and evaluation of a breastfeeding education program in breastfeeding initiation and duration. The PICOT question contained the following components: P (Affected Population): African American women of childbearing ages 18–50 in their last trimester of pregnancy; I (Proposed Intervention): Educational program on the importance of breastfeeding and breast cancer risk reduction; C (A Comparison): Breastfeeding self-efficacy before the breastfeeding education program and breastfeeding self-efficacy after the breastfeeding education program; O (Outcome): Increase breastfeeding awareness and initiation of breastfeeding among African American participants; T (Time Frame): Three months postpartum.

The impact of decreased breastfeeding rates in African American women has been reported in multiple research studies. Several of those studies concluded an association between decreased breastfeeding rates in African American women and TNBC. A correlational design method was utilized for this project. Each participant completed Dr. Cindy-Lee Dennis's BSES-SF instrument (see Appendix A). A brief breastfeeding education program was provided to study participants before completing the BSES-SF for a second time. The participants were pregnant African American women 18–50 years of age in their third trimester. The education program included information on breastfeeding, breastfeeding self-efficacy, benefits of breastfeeding for the infant, and benefits of breastfeeding for the mother. Emphasis was placed on the benefit of

decreased breast cancer risk with initiation and longer duration of breastfeeding. The goal was to increase breastfeeding knowledge and self-efficacy to encourage breastfeeding initiation in African American women with an expected longer duration of breastfeeding.

Hypothesis

An evaluation of the reduced national rate of breastfeeding in African American women and the link of increased breast cancer rates, specifically TNBC, is a significant problem of interest. Multiple studies have concluded that increased breastfeeding duration decreased the risk of TNBC in African American women. An increase in breastfeeding education with an emphasis on the reduced risk of breast cancer was an essential factor in increasing the awareness of this health benefit of breastfeeding. The PICOT question for this study was the following: Will an educational program on the importance of breastfeeding and breast cancer risk reduction for African American women of childbearing ages 18–50 in their last trimester of pregnancy increase their awareness of breastfeeding and initiation of breastfeeding three months postpartum? The PICOT hypothesis for this study was that a breastfeeding educational program that included information related to a reduced risk of breast cancer would increase the initiation and duration of breastfeeding in African American women.

Scope and Limitations

This study focused on African American women ages 18–50 in their last trimester of pregnancy. The study included English-speaking women who volunteered to be included in the study.

The study's limitations included participant sample, time limitation, and variation in the education level of the participants. The sample size of participants was not representative of the targeted population. The participants were from a convenience sample. The convenience sample

of possible participants was based on the knowledge of mutual acquaintances of individuals who met the specified criteria. Participant recruitment presented challenges due to the COVID-19 pandemic with limited person-to-person contact.

The time allotment for this study's data collection was limited to three months postpartum. The time period of three months allowed for breastfeeding evaluation during the standard amount of time utilized for the maternity leave of working mothers. After three months, if not before, working mothers return to work and alterations in lifestyle choices occur. Three months was also sufficient to establish if mothers would choose to initiate breastfeeding and if the mothers would continue breastfeeding.

Another limitation that presented was the variation of the education level of the participants. The breastfeeding education presentation was not tailored for specific learning disabilities. The breastfeeding education was available to the participants through a PowerPoint presentation. The participants were able to view the study's presentation and continue to use the information as needed postpartum. An indication of the lowest level of education within the participant group was not available before the construction of the presentation.

Chapter Summary

The U.S. national breastfeeding rates can be increased with additional breastfeeding education. The majority of pregnant women receive abbreviated education during their antepartum period from their healthcare provider about breastfeeding benefits. Unfortunately, the abbreviated breastfeeding education does not include the specific detail of decreased risk of TNBC with prolonged duration of breastfeeding. Breastfeeding education focused on increasing breastfeeding self-efficacy will encourage African American women to initiate and continue breastfeeding. The cost-effective use of education on breastfeeding's decreased risk of TNBC in

all women, but especially African American women, will influence the U.S. national breastfeeding rates to increase with the hope of reducing TNBC rates in African American women.

Chapter 2: Literature Review

The intent of this chapter is to provide a review of the literature that guided the doctoral project utilizing evidence-based support to investigate the PICOT question: Will an educational program on the importance of breastfeeding and breast cancer risk reduction for African American women of childbearing ages 18–50 in their last trimester of pregnancy increase their awareness of breastfeeding and initiation of breastfeeding for a minimum of three months postpartum? The variables identified for this doctoral project were developed from the PICOT question. The review consists of a comprehensive search reflective of scholarly research as it applied to breastfeeding, African American breastfeeding, African Americans and TNBC, breastfeeding personal efficacy, and breastfeeding education. A review of relevant literature provided evidence-based breastfeeding education associated with African American breastfeeding and decreased TNBC risk.

Literature Search Methods

I conducted a comprehensive review of scholarly literature as an overview of current breastfeeding trends, African American breastfeeding trends, and the impact of breastfeeding education. Search engines included CINAHL, MEDLINE, PubMed, Science Direct, Google Scholar, Cochrane Database, and Abilene Christian University's library database. The review included studies conducted in both the United States and internationally. The following key terms were used to conduct the review of literature: *breastfeeding*, *breast cancer*, *African Americans and breastfeeding*, *African Americans and breast cancer*, *triple-negative breast cancer phenotype*, *breastfeeding education*, and *African American breastfeeding education*. The initial research query populated over 500,000 results. Limiting the research query from 2012 to 2019, including the key terms and limited to peer-reviewed journals, 6,080 research articles

resulted. I reviewed only full-text articles for potential use. A review of bibliographies from relevant articles identified other possible articles not identified during the electronic search.

Historical Overview

The ideal nutrient for a human infant is human milk (Kim et al., 2017). Breastfeeding provides benefits to both mothers and infants that are physiological, psychological, and immunological (Asiodu et al., 2017). There are also economic benefits for society as a result of breastfeeding (Asiodu et al., 2017). In the past decades, breastfeeding has become a significant public health issue recognized around the world as a benefit for an infant's development, health, and survival (Jeihooni et al., 2019). In the United States, breast milk "is considered the gold standard of infant feeding" (Asiodu et al., 2017, p. 863). Breastfeeding is a natural human activity that is also a learned behavior (Jeihooni et al., 2019). Breastfeeding promotion must consider cultural differences of breastfeeding that are influenced by the woman's community, family support, and public health policies that protect breastfeeding (Jeihooni et al., 2019).

> Human breast milk is thus not only a perfectly adapted nutritional supply for the infant, but probably the most exquisitely specific personalized medicine that he or she is ever likely to receive, given at a time when gene expression is being fine-tuned for life. This is an opportunity for health imprinting that should not be missed. (Victora et al., 2016, p. 486)

Maternal Breastfeeding Benefits

Although the United States is the fourth most populated country globally, women suffer from many health conditions that "could be reduced by breastfeeding" (Danawi et al., 2016, p. 35). Conditions that could be reduced or improved with breastfeeding include diabetes, ovarian cancer, breast cancer, obesity, the risk for postpartum depression, and cardiovascular diseases

(Danawi et al., 2016; Jeihooni et al., 2019; Nyange, 2018). A continuation of breastfeeding has also been found to increase feelings of calm and sustain lower blood pressures (Eastin & Sharma, 2015). The risk of developing breast cancer is increased when a woman does not breastfeed (Dietze et al., 2015). The public health issue of decreased breast cancer risk with breastfeeding was an essential focus among the African American women involved in this project.

Economic Benefits of Breastfeeding

The benefits of breastfeeding extend beyond having a healthy newborn and mother. According to the AAP (2012), the economic benefit of exclusively breastfeeding for six months resulted in a financial "savings of $13 billion per year" (p. e832). These annual financial savings were not related to missed work hours for parents or chronic illnesses of adults that were acquired during childhood (AAP, 2012). The financial savings from breastfeeding resulted from not incurring the costs of "infant care for gastroenteritis, lower respiratory infections, and childhood obesity" (McKinley & Turner, 2017, p. 97). Infants who are breastfed have protection against many of the health conditions of formula-fed infants (McKinley & Turner, 2017). A savings of approximately $3.7 billion per year for pediatric health costs would be possible, with 90% of U.S. mothers complying with the recommended six months of exclusive breastfeeding (McKinley & Turner, 2017).

The increased marketing and availability of free formula increased the likelihood of bottle-feeding (Rollins et al., 2016). Women enrolled in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) who are breastfeeding receive vouchers for food (McKinley & Turner, 2017). If a mother is not breastfeeding, she receives coupons for infant formula (McKinley & Turner, 2017). It is estimated that WIC distributed half of the infant formula used in the United States at no cost to the WIC participant (McKinley & Turner, 2017).

In 2018, the average monthly enrollment for WIC participants was 6.87 million (United States Department of Agriculture, 2021).

Decreased Risk of Breast Cancer

Several studies have suggested that the breastfeeding process offers specific protection against breast cancer (Kutty, 2016). Women who were carriers of the BRCA 1 mutation had a 32% decreased risk of breast cancer if they breastfed for a minimum of one year (*OR* = 0.68, 95% CI [0.52, 0.91], *p* = .008; Kutty, 2016). It was also suggested by Kutty (2016) that BRCA 1 mutation carriers had a greater risk of reduction if they breastfed for longer than two years (*OR* = 0.51, 95% CI [0.35, 0.74].

Alterations in the breast associated with hormonal changes as a result of breastfeeding were associated with a reduction of breast cancer risk (Anstey et al., 2017). Mammary cells that are differentiated during pregnancy are less likely to become cancerous when breastfeeding occurs (Anstey et al., 2017). During breastfeeding, there is terminal differentiation of mammary cells (ElShamy, 2016; John et al., 2018). The involution process that occurs after breastfeeding is completed is that the terminally differentiated mammary cells undergo a cell death that allows the breast to return to their "pre-pregnancy quiescent state" (ElShamy, 2016, p. 53942). An inflammatory environment is ideal for TNBCs (ElShamy, 2016). More extended periods of breastfeeding after pregnancy allow the terminal differentiation of progenitor mammary cells (ElShamy, 2016). Incomplete or absent differentiation may be because of the retention of progenitor mammary cells in an inflammatory environment during the weaning process (ElShamy, 2016). The retained progenitor mammary cells are restructured into precursors for TNBCs postpartum (ElShamy, 2016). ElShamy (2016) concluded that pregnancy triggers an increased expression of an oncogene. The cells containing this oncogene expression must be

eliminated during involution after breastfeeding (ElShamy, 2016). When breastfeeding does not occur, or there is a shorter duration of breastfeeding, it causes retention of the cells with oncogene expression that leads to TNBC phenotypes associated with pregnancy (ElShamy, 2016). A 2002 study of 50,000 breast cancer cases found a 4.3% reduction in breast cancer risk when a woman breastfeeds for 12 months (Anstey et al., 2017; ElShamy, 2016).

In 2013, several studies were conducted that inferred a 14% lower risk of having breast cancer if a woman has ever breastfed compared to a parous woman who has never breastfed (Anstey et al., 2017). The review further concluded that regardless of the number of births a woman had, there continued to be protective benefits of breastfeeding (Anstey et al., 2017). The protective benefits were a 28% lower risk of breast cancer with an accumulated 12 months or longer breastfeeding (Anstey et al., 2017). In premenopausal women who had accumulated 24 months or longer of breastfeeding, the relative risk of breast cancer was .72 compared to women who had never breastfed (Newcomb et al., 1994). The accumulated 24 months of breastfeeding by every woman who gives birth to a child could decrease the incidence of breast cancer by 25% (Newcomb et al., 1994). If a woman who does not plan to breastfeed, or plans to breastfeed for only three months, is told to breastfeed for four to 12 months as a protective benefit from breast cancer, then the premenopausal rate of breast cancer could be decreased by as much as 11% (Newcomb et al., 1994).

Triple-negative breast cancer is a subtype of breast cancer that is characterized by being estrogen receptor-negative (ER-), progesterone receptor-negative (PR-), and lack of expression of the human epidermal growth factor receptor 2 (HER2; Dietze et al., 2015; John et al., 2018; Sturtz et al., 2014). The risk of developing TNBC phenotype is increased when a woman does not breastfeed (Dietz et al., 2015). Triple-negative breast cancer is aggressive (Dietze et al.,

2015) and has the worst prognosis of all breast cancer subtypes (John et al., 2018). Of all invasive breast cancers, 12% are of the TNBC phenotype (John et al., 2018). Risk factors for TNBC phenotype are "younger age at first menarche, younger age at first pregnancy, and higher abdominal adiposity" (Anstey et al., 2017, p. S42). In women under the age of 50, there was a two-fold increased risk of TNBC if they had given birth and never breastfed compared to women who had never been pregnant (*OR* = 2.02, 95% CI [1.12, 3.63]; John et al., 2018). A lifetime breastfeeding duration of greater than 24 months was associated with minimal reduced risk of TNBC (*OR* = 0.52, 95% CI [0.26, 1.04], $p_{\text{trend}} = 0.06$; John et al., 2018). Women who had three or more full-term pregnancies and did not breastfeed or breastfed for 12 months or less had a two-fold increased risk of TNBC compared to women who had 1–2 full-term pregnancies with a breastfeeding duration of 12 months or longer (*OR* = 2.56, 95% CI [1.22, 5.35]; John et al., 2018). In women under the age of 50, "breastfeeding is a modifiable behavioral factor that may lower TNBC risk" (John et al., 2018, p. 2274).

Financial Cost of Cancer

As costs related to the benefit of increasing breastfeeding rates, McKinley and Turner (2017) reported that "$13 billion per year is spent on infant care for gastroenteritis, lower respiratory infections, and childhood obesity" (p. 97). Furthermore, it is possible for the U.S. economy to save approximately $3.7 billion in pediatric healthcare costs per year if women breastfeed their infants for the recommended six months duration (McKinley & Turner, 2017). Direct and indirect maternal morbidity costs of as much as $859 million could be avoided if U.S. women choose to breastfeed their infant for at least one year (McKinley & Turner, 2017).

The cost-benefit of breastfeeding impedes the profit margins of formula companies. A U.S. breastfeeding rate of 90% would decrease the expenditure of funds on infant formula by

$3.9 billion annually (McKinley & Turner, 2017). To prevent this financial loss, infant formula companies have a stronghold in many maternity wards and with WIC. Formula companies advertised that infant formula provided the same nutrition as breast milk. There may be many additives to infant formula that allow infants to receive beneficial nutrition comparable to breast milk, but giving infant formula cannot lower a woman's risk of breast cancer.

The nation's financial costs for women who endured the cost of breast cancer care was $16.5 billion in 2010 (NCI, 2019). The cost of breast cancer care in 2020 was projected to have a base cost of $20.5 billion (NCI, 2019). The burden of the cost of breast cancer care would be decreased if more women chose to breastfeed. In this instance, the ones with the most to lose are the pharmaceutical companies. Our nation's health is in jeopardy, and pharmaceutical companies and infant formula companies are profiting at the expense of our health.

African American Women and Breastfeeding

The Healthy People 2020 goal for women who have ever breastfed in the United States was 83.2% (target 82%; CDC, 2018; Ganju et al., 2018). African American women have a much lower breastfeeding rate of 69.4% (CDC, 2018). Breastfeeding in African American women is at much lower rates compared to White and Hispanic women (Nyange, 2018), with rates as low as 50% lower at six and 12 months (Eastin & Sharma, 2015). By day two of life, an average of 24% of infants that are breastfed in the United States received formula to supplement their breast milk feedings (Chapman & Pérez-Escamilla, 2012). African American women make up 32% of mothers who use formula supplementation by day two of the infant's life (Chapman & Pérez-Escamilla, 2012).

Studies conducted related to African American women and breastfeeding indicated multiple factors in women's influence to breastfeed. Factors that played a significant role in

African American women's influence to breastfeed included social influences, quality of knowledge provided by healthcare providers, and women's perception of breastfeeding (Danawi et al., 2016; Nyange, 2018; Thomson et al., 2017).

Social Influences

Social influences included socioeconomic status, family support, and length of maternity leave (Nyange, 2018). African American women with lower socioeconomic status are less likely to receive breastfeeding support from lactation care providers (Anstey et al., 2017). African American women of lower socioeconomic status are readily referred to the WIC Supplemental Nutrition Program within their community for the opportunity to receive supplemental nutrition and formula (Anstey et al., 2017).

Kim et al. (2017) reported that women were less likely to initiate and continue breastfeeding due to a lack of support from family members or their significant other. A study conducted by Kim et al. (2017) suggested that participants identified their significant other as feeling neglected during the breastfeeding duration. The participants indicated that they were concerned about the feelings of their significant other and their ability to have a personal life (Kim et al., 2017).

In the study conducted by Kim et al. (2017), African American women reported having a struggle in their balance of breastfeeding and returning to work or school. Participants reported a lack of breastfeeding support from their employers (Kim et al., 2017). Some participants reported that there was not a designated location for pumping, except in the restroom (Kim et al., 2017). Although participants were permitted to take work breaks to pump, they indicated that they would "lose money" by taking multiple breaks because they were required to clock out for each break (Kim et al., 2017, S158).

Quality of Knowledge Provided

The WIC Supplemental Nutrition Program provides free formula to mothers registered for the program (Chapman & Pérez-Escamilla, 2012). Many African American women were comfortable using formula, considered formula feeding convenient, and indicated that they receive more substantial support to use formula (Nyange, 2018). Women registered with WIC services were more likely to receive information about formula feeding (Nyange, 2018).

Thomson et al. (2017) conducted a study in three Lower Mississippi Delta counties of 82 pregnant women with a 96% population of African American participants (the numbers of the total participants adjusted for exclusions and dropouts). The study utilized the Parents as Teachers curriculum as the control arm and the PAT-enhanced curriculum with the concept of Bandura's social cognitive theory (Thomson et al., 2017). The PAT curriculum utilized parent educators that performed "one-on-one home visits, optional monthly group meetings, developmental screenings," and served as a "resource network for families" (Thomson et al., 2017, p. 4).

The PATE curriculum included the same benefits as the PAT group. It included information on maternal diabetes prevention, prevention of early childhood obesity, and infant feeding activity and nutrition using culturally sensitive and individualized education taught in a one-on-one setting (Thomson et al., 2017). There was a significant increase in overall breastfeeding knowledge of 76% ($p < .001$) by the completion of the study (Thomson et al., 2017). At the study initiation, 98% (80 out of 82) of the participants responded that it was healthier for infants to breastfeed rather than feeding with formula (Thomson et al., 2017). Conclusions to the study indicated that "participants who indicated their intent was to exclusively breastfeed or mix breast with formula feeding were six times (95% Wald CL [1.38,

27.25] as likely to initiate breastfeeding than participants who indicated their intent was to formula feed" (Thomson et al., 2017, p. 8). At the conclusion of the study, 39% of participants had initiated breastfeeding, while after six months, only one participant in the study continued to breastfeed her infant (Thomson et al., 2017). Increasing breastfeeding knowledge was not found to be a sufficient source of empowerment in African American women living in the South for initiating and continuing breastfeeding (Thomson et al., 2017). These studies indicated that when proper knowledge and curriculums for providing knowledge on breastfeeding are presented, better outcomes are seen with breastfeeding.

Women's Perception of Breastfeeding

Many women in a study conducted by Kim et al. (2017) felt that breastfeeding provided more nutrients for their infant than formula. The participants also indicated that "breastfed babies are smarter" and allowed for a better "bonding experience" (Kim et al., 2017, p. S156). Some of the study participants reported that the ingredients on formula labels were difficult to pronounce and they did not trust the unfamiliar ingredients (Kim et al., 2017).

African American Women and Triple-Negative Breast Cancer

Women of African descent have a higher incidence of TNBC (Dietze et al., 2015). Women of African descent and carriers of the BRCA I gene have a higher prevalence of TNBC (Dietze et al., 2015). The TNBC phenotype is an aggressive type of breast cancer in African American women that also demonstrates significantly worse clinical development than in women with TNBC who were not of African descent (Dietze et al., 2015). Metastasis of cancer to the lungs, liver, and brain had a higher frequency in women with TNBC (Dietze et al., 2015).

African American women have had a disparity in access to healthcare and treatment (Dietze et al., 2015). A lack of access to healthcare impeded early breast cancer detection,

delayed breast cancer diagnosis, and resulted in limited and timely oncology care (Dietze et al., 2015). This delay in medical treatment contributed to the "higher overall breast cancer mortality compared with women of European descent" (Dietze et al., 2015, p. 249).

Theoretical Framework Discussion

Albert Bandura's social cognitive theory was a useful theoretical framework in predicting the "initiation and duration of breastfeeding in African American women" (Eastin & Sharma, 2015, p. 197). A characteristic of human behavior is a person's ability to control their own thoughts, motivations, and actions (Bandura, 1989). The cognitive processes through Bandura's self-belief of efficacy are regulated by self-appraisal of personal goals and capabilities (Bandura, 1989). Challenging goals increase one's motivation and level of performance to accomplish their goals (Bandura, 1989). Individuals with a high sense of self-efficacy were likely to anticipate positive performances (Bandura, 1989). Individuals with a sense of ineffective self-efficacy were likely to have negative thoughts in anticipation of failure (Bandura, 1989).

An individual's self-efficacy belief is a direct determinant of motivation (Bandura, 1989). Higher self-efficacy belief motivated individuals to persevere in the face of difficult situations and self-doubt (Bandura, 1989). Bandura (1989) believed an individual's level of motivation and their feelings of self-efficacy affected the amount of stress and depression experienced in difficult and complex situations. Low motivation led to the perception of the inability to control potential threats and impaired their level of functioning and course of thinking (Bandura, 1989). Goals that represented incentives guided the motivation for self-efficacy (Bandura, 1989). The individual used the motivation of the incentives as a choice in their effort expenditure and length of perseverance when difficulties arose (Bandura, 1989). Feedback mechanisms that produced

desired and expected outcomes supported feelings of self-efficacy and continued behavior (Bandura, 1989).

As a behavior change method, the relationship between personal factors, behavior, and environmental influences of Bandura's social cognitive theory was utilized (Eastin & Sharma, 2015). Bandura's social cognitive theory's five constructs are knowledge, expectations, self-efficacy, self-efficacy in overcoming barriers, and self-control (Eastin & Sharma, 2015). As part of this project, Bandura's five constructs relate to an African American woman's "knowledge of breastfeeding, expectations for initiation and continuation of breastfeeding, self-efficacy for initiation and continuation of breastfeeding, self-efficacy in overcoming barriers for initiation and continuation of breastfeeding, and self-control in initiation and continuation of breastfeeding" to predict her breastfeeding initiation and duration (Eastin & Sharma, 2015, p. 197).

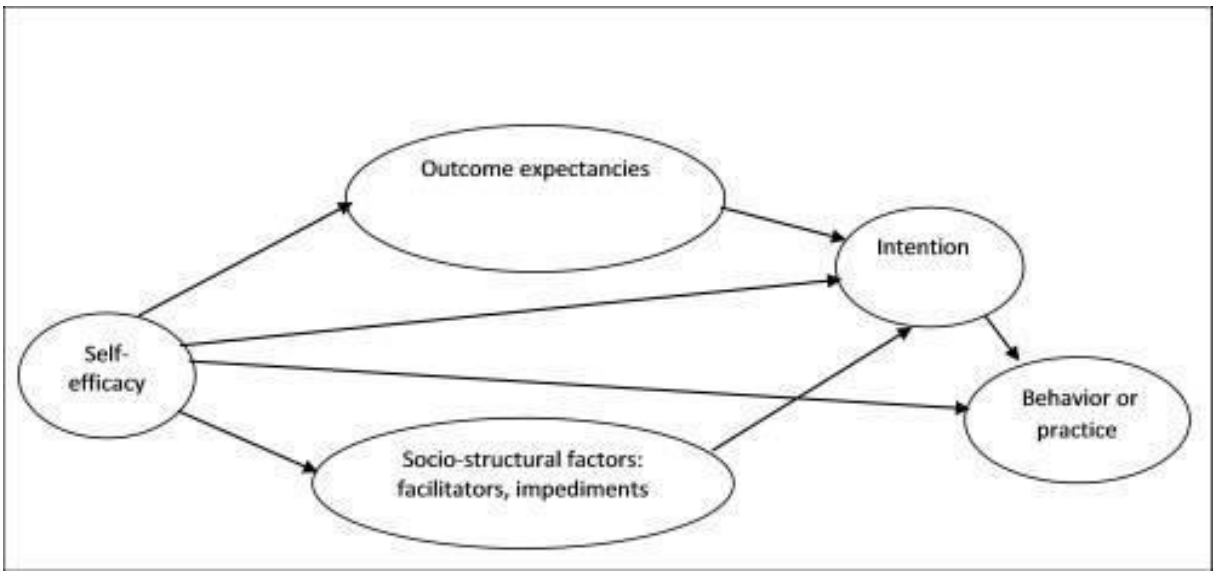
Significant predictors for the intent to breastfeed were found in the general area of self-efficacy ($p < .001$) and specifically in self-efficacy in overcoming possible barriers for initiation ($p < .001$; Eastin & Sharma, 2015). The self-efficacy to breastfeed for six months ($p < .001$) and self-control duration ($p = .013$) were supported as significant predictors with Bandura's social cognitive theory constructs (Eastin & Sharma, 2015). The study conducted by Eastin and Sharma (2015) concluded that African American women had little knowledge of breastfeeding and little expectations for breastfeeding outcomes. The constructs in these areas were found to have no significance in predicting African American breastfeeding initiation and duration (Eastin & Sharma, 2015).

Bandura's social cognitive theory indicated that human behavior was produced from a collection of a person's personal, behavioral, and environmental situations (Minas & Ganga-

Limando, 2016). Bandura's social cognitive theory has been used in multiple studies that indicated that behavior was determined by one's self-efficacy to produce specific successful behaviors (Minas & Ganga-Limando, 2016). A high sense of self-efficacy was associated with anticipated positive performances, and the performance of tasks was accompanied by the expectation of a positive desired behavior (Bandura, 1989). Individuals with a sense of ineffective self-efficacy have been found to have negative thoughts with the anticipation that their specific behaviors would result in failure to accomplish the desired goal (Bandura, 1989). An individual's self-efficacy belief was a direct determinant for their level of motivation to attempt a specific behavior (Bandura, 1989). Individuals with higher self-efficacy beliefs were motivated to persevere during difficult situations and times of self-doubt (Bandura, 1989). The human motivation for action is partly regulated by anticipated beneficial outcomes, but it could be negated by ineffective self-efficacy (Bandura, 1989).

Figure 1

Pictorial Illustration of Social Cognitive Theory



Note. From "Social-Cognitive Predictors of Exclusive Breastfeeding Among Primiparous Mothers in Addis Ababa, Ethiopia," by A. G. Minas and M. Ganga-Limando, 2016, *PLoS One, 11*(10), p. 3 (https://doi.org/10.1371/journal.pone.0164128). Copyright 2016 by PLoS. Reprinted with permission.

Figure 1 illustrated Bandura's social cognitive theory. Feedback mechanisms that produce desired and expected outcomes support feelings of self-efficacy and continued behavior (Bandura, 1989). An individual's self-efficacy increased by anticipating and visualizing a successful scenario of a particular behavior or action (Bandura, 1989). Self-doubt and impediments were easier to overcome with a sustained effort of practices and a "robust sense of personal efficacy" (Bandura, 1989, p. 1176). Self-efficacy influenced the life choices and challenges a person was willing to undertake (Bandura, 1989). Bandura (1989) explained that a low self-efficacy would cause a person to "avoid activities and situations they believe exceed their coping capabilities" (p. 1178).

Chapter Summary

Decreased breastfeeding in African American women is a national health issue (Cleveland & McCrone, 2005). The positive effects of breastfeeding for infants in boosting their health are among the many familiar benefits of breastfeeding. The prolonged duration of breastfeeding and reduced risk of breast cancer has been studied for over 20 years. The significance of breast cancer and breastfeeding duration has a strong correlation in African American women. Several valuable research studies have been conducted that impact the findings of decreased breastfeeding rates in African American women. The lower breastfeeding rates in African American women predispose them to an increased risk of TNBC.

The review of evidence-based information supports the problem of decreased breastfeeding in African American women and increased risk of TNBC. Increased education is mandatory to assist in closing the gap related to breast cancer risk between African American women and other ethnic groups. Educational programs geared toward optimal motivation and expectations for success are a challenge to be overcome to induce persistent breastfeeding behavior (Stockdale et al., 2013). Increased efforts aimed at decreasing the barriers to breastfeeding initiation and continuation should be addressed in a manner that is culturally relevant to African American women (Ganju et al., 2018). The relation of socioeconomic status, economic benefits, other health benefits, and premenopausal breast cancer is an area that can be explored in future studies (Williams et al., 2016).

The initiative for increased breastfeeding in African American women faces many barriers (McKinley & Turner, 2017). Bandura's social cognitive theory contains a valuable promise in assisting the efforts of improving breastfeeding rates (McKinley & Turner, 2017).

Bandura's self-efficacy concept can be utilized to increase breastfeeding personal efficacy to influence and attain successful breastfeeding behavior (Cleveland & McCrone, 2005).

The practice of breastfeeding is a natural process that can have many beneficial effects. The AAP (2012) recommends considering breastfeeding as a public health issue. The problem in the African American community is a decreased initiation and duration of breastfeeding (Kim et al., 2017). Compared to other racial or ethnic groups, the death rate of breast cancer for African American women is "markedly higher" (Williams et al., 2016, p. 2138). A national initiative for the promotion of breastfeeding among African American women is a possible solution. Healthcare providers can be instrumental in providing accurate and current breastfeeding information to encourage breastfeeding among African Americans. This information should also include information related to the decreased risk of breast cancer by breastfeeding. In particular, the information should include specific details of the incidence of TNBC in the African American community.

Chapter 3: Research Method

This doctoral project's purpose was to educate African American women on breastfeeding and the reduced risk of breast cancer using Bandura's social cognitive theory. An increase in women's breastfeeding self-efficacy will motivate African American women to initiate breastfeeding and continue breastfeeding for a longer duration. Several research studies have concluded that the decreased breastfeeding rates in African American women were associated with TNBCs. African American women relied significantly on the "opinions, values, and beliefs about breastfeeding" from their partners, families, and friends (Nyange, 2018, p. 15).

The last trimester of pregnancy is a significant time in pregnancy when women gather the information that will be useful during labor, delivery, and postpartum. Initiation of breastfeeding education in the prenatal period would allow the opportunity for women to gather breastfeeding information and retention of the educational information. Thus, formulating ways to increase breastfeeding initiatives is critical to help both a mother's and child's health. This chapter provides a detailed overview of the methodology and guidelines used to conduct this evidence-based project on increasing African American women's breastfeeding self-efficacy and initiatives.

Data Analysis

This research study utilized a paired-samples test design and the nonparametric test of Wilcoxon matched-pairs signed rank test (Wilcoxon matched-pairs test) to compare the BSES-SF instrument scores for each participant. The paired-samples test research design compared the means of the pretest and posttest BSES-SF instrument scores (Cronk, 2018). The nonparametric Wilcoxon matched-pairs test compared the median of the BSES-SF instrument scores for each participant (Kellar & Kelvin, 2013). I also utilized a chi-square data analysis to determine if

there was a significant difference in breastfeeding education and the choice to breastfeed for the duration of 12 weeks (Kellar & Kelvin, 2013).

A power analysis was a statistical calculation that informed me of the minimum number of research participants that should be included in the research that would give an adequate answer to the research question (Keele, 2011). The statistical calculation of a power analysis can be performed using online software or a power analysis table (Keele, 2011). A power analysis was conducted for this research project using the G-power app (Faul et al., 2007). The power analysis indicated that 133 individuals were needed in the study to yield a desirable level of significance. The effect size of the correlation needed to be large enough to establish a significant correlation between breastfeeding education and the initiation and duration of breastfeeding (Cronk, 2018). For this study, a convenience sample was used from mutual acquaintances due to the COVID-19 pandemic and limited person-to-person contact per the university. A small sample size could be difficult to generalize the results to a more extensive and varied population, but it did not negate this research's statistical findings (Kellar & Kelvin, 2013). Although a larger sample size was desirable to determine the research study's effect, the research results of the smaller sample size used in this study cannot be negated.

Research Study Activities

A letter of support from the practice site and clinic director was obtained and granted in written form before the COVID-19 pandemic (see Appendix B). A clinical site affiliation agreement between the university and the clinical practice site was declined by the clinical site with the onset of the COVID-19 pandemic.

The recruitment process was transitioned from person-to-person contact to word-of-mouth through known mutual associates to comply with university adjustments during the

COVID-19 pandemic. Recruitment was conducted between May 2020 and June 2020. Potential research participants were sent an informational flyer using the SurveyMonkey™ online platform. Potential research participants who agreed to participate in the study were sent a link to the consent to participate in the study and a 14-question demographic tool using the SurveyMonkey™ online platform. Permission was given by Dr. Cindy-Lee Dennis to use the BSES-SF in this study (see Appendix C). Research participants were sent the 14-question BSES-SF using the SurveyMonkey™ online survey platform as a pretest. A follow-up BSES-SF as a posttest was sent to each participant using the SurveyMonkey™ online survey platform with a link to the breastfeeding education presentation. Instructions were provided for the BSES-SF posttest to be completed after the completion of the breastfeeding presentation. The BSES-SF surveyed each participant's "perceived ability to carry out breastfeeding" in relation to initiation and duration (Tuthill et al., 2016, p. 36). Participants meeting the research inclusion criteria were the target population. Participants received full disclosure as to the study's aims and methods as part of the consent form. Any potential conflicts of interests, benefits, and potential risks were requested to be disclosed. Participants were given the right to withdraw their consent and participation at any time during the study.

All data obtained from participants were de-identified following the Health Insurance Portability and Accountability Act (HIPAA) guidelines to protect the privacy of participants (Moran et al., 2014). Only the principal investigator had access to the HIPAA-protected information. Data collected during this project was stored in a secure university learning management system under this investigator's name. This secure system storage was provided by the online graduate school for doctoral student research data and supported by the university's IT department for security purposes. All data obtained during implementation was maintained on a

password-protected computer and within the SurveyMonkey™ online survey platform. Only I had password access. Data will be kept according to federal regulations for protecting and maintaining human research participants' data that require raw data to be stored for three years. The protected data will be destroyed after the three-year time period.

The educational intervention was a breastfeeding education PowerPoint that included information on the decreased risk of breast cancer with breastfeeding. Breastfeeding has health benefits to mother and baby. Benefits for the infant include "fewer episodes of diarrhea, ear infections, and lower respiratory infections and a lower risk of sudden infant death, diabetes, asthma, and childhood obesity" (Anstey et al., 2017, p. S41). Health benefits a mother receives from breastfeeding include reduced risk for endometrial and ovarian cancers, hypertension, diabetes, and breast cancer (Anstey et al., 2017). Breastfeeding is a modifiable risk factor in the prevention of breast cancer (Anstey et al., 2017). In the United States, breast cancer ranks number one as the type of cancer diagnosed (DeSantis et al., 2017). Anstey et al. (2017) reported that the mortality rate related to breast cancer was higher in African American women compared to White women.

The outcome measured was the initiation and continuation of breastfeeding. The participant was contacted one week after delivery. A three-question survey was sent using the SurveyMonkey™ online survey platform to verify that breastfeeding was initiated. The three-question survey was again sent using the online platform of SurveyMonkey™ to follow up at six weeks postpartum and at three months (12 weeks) postpartum to assess continued breastfeeding by each participant. If breastfeeding had been discontinued, the date and reason for discontinuation would have been reported in the survey. Three months (12 weeks) postpartum was chosen as a target time period due to time limitations for the study and a reasonable time that

women change their routines to prepare to possibly return to work. A 2013 study concluded that compared to a woman who had given birth but never breastfed, there was a 14% reduced risk of breast cancer for a woman who had given birth and ever experienced breastfeeding (Anstey et al., 2017). A period of three months (12 weeks) fell into the category of having ever breastfed.

The CDC (2018) reported that less than half of infants exclusively breastfed continued to be exclusively breastfed by three months of age. If the participant was no longer breastfeeding during any of the follow-up contacts, then the reason for discontinuation was requested. Three months (12 weeks) duration was found to be a measurable goal beyond the initiation of breastfeeding. National studies have indicated that many women stopped breastfeeding within the first few weeks after giving birth (Stockdale et al., 2013). Frequent contact with the study participants possibly served as encouragement and reinforcement to continue breastfeeding for the three months of the study.

Instruments and Measurement Tools

The BSES-SF instrument was used to assess breastfeeding confidence in African American women as a prediction of breastfeeding initiation and duration. The affective characteristic of self-efficacy is "one of the strongest predictors of a range of behaviors, including breastfeeding" (Boateng et al., 2019, p. 2). A woman with higher self-efficacy levels has been hypothesized to predict the likelihood of a woman's ability to have a longer duration of breastfeeding (McCarter-Spaulding & Dennis, 2010). African American women with breastfeeding network support were found to have higher levels of breastfeeding self-efficacy (McCarter-Spaulding & Dennis, 2010). The BSES-SF instrument was selected because it utilized Bandura's social cognitive theory to assess various circumstances of breastfeeding. This instrument also assessed self-beliefs as it related to breastfeeding. Dennis (2003) and Boateng et

al. (2019) evaluated the cognitive components of self-efficacy that included the choice to breastfeed exclusively, the expenditure of breastfeeding efforts, perseverance through breastfeeding challenges, how she supported her breastfeeding efforts through positive or negative self-talk, and how she managed exclusive breastfeeding. The BSES-SF instrument also measured the participant's confidence in managing breastfeeding duration, technique, motivation, different environments, and possible challenges (Tuthill et al., 2016).

The author of the BSES-SF instrument chose to use a five-point Likert scale. The Likert scale was developed in the 1930s by Renis Likert to measure ordinal data (Kellar & Kelvin, 2013). The Likert scale is a common summative interval scale that allowed participants to express their "degree of agreement or disagreement with each statement" of the BSES-SF instrument (Keele, 2011, pp. 57–58). A five-point Likert scale was used in the BSES-SF instrument that indicated "1 = *not at all confident*, 2 = *not very confident*, 3 = *sometimes confident*, 4 = *confident*, and 5 = *very confident*" (Dennis, 2003, p. 740). By the participants selecting one category for each question, their feelings for each statement were more adequately reflected (Keele, 2011).

The target participant population for this project could have had issues with low literacy levels. According to Cohen et al. (2012), Blacks still lag behind in literacy compared to other races and ethnic groups due to the disparity in educational levels. The Likert scale is a discreet scale that was partially labeled with numbers at specific points and ending anchors that indicate *not at all confident* and *very confident* (Dennis, 2003). The Cronbach alpha coefficient measured in five recently published studies ranged between 0.86 to 0.93 (Tuthill et al., 2016). The Cronbach alpha coefficient is an indication of the internal consistency reliability of a scale (Kellar & Kelvin, 2013). According to Kellar and Kelvin (2013), the Cronbach alpha coefficient

measures the extent to which items in an instrument or tool relate to one another. A Cronbach alpha coefficient in the range of 0.76 to 0.95 is rated as moderate to excellent internal consistency reliability (Ghazanfarpour et al., 2018).

The purpose of the BSES-SF instrument was to establish a tool that would predict the likelihood that women would cease breastfeeding earlier based on their level of breastfeeding self-efficacy (Tuthill et al., 2016). The BSES-SF instrument was composed of 14 items with a five-point Likert scale used to score the results of the participants (Tuthill et al., 2016). A total breastfeeding self-efficacy score ranges from 14 to 70 (Tuthill et al., 2016). Higher BSES-SF instrument scores were associated with higher levels of breastfeeding self-efficacy (Tuthill et al., 2016).

The development of the BSES-SF instrument by Dr. Cindy-Lee Dennis (2003) served as a source of promoting breastfeeding research by identifying women at risk for not initiating breastfeeding or short duration of breastfeeding. The BSES-SF instrument supported the development of increasing breastfeeding self-efficacy to encourage breastfeeding (Boateng et al., 2019). The self-efficacy to breastfeed was assessed using the BSES-SF instrument (McCarter-Spaulding & Dennis, 2010). The reliability and validity of the BSES-SF instrument were demonstrated by Dennis (2003) in a breastfeeding research study in Canada. Another research article that utilized the BSES-SF instrument was *Breastfeeding Self-Efficacy: A Critical Review of Available Instruments* by Tuthill et al. (2016). Tuthill et al. (2016) found that measuring a woman's breastfeeding self-efficacy was a useful construct in predicting that a woman would initiate breastfeeding and continue over a long-term period. The BSES-SF instrument was used in postpartum women to identify two components of breastfeeding self-efficacy (Tuthill et al., 2016). The components were to capture a woman's self-efficacy belief that she was capable of

breastfeeding and that she had the conviction to continue breastfeeding for the desired duration (Tuthill et al., 2016).

McCarter-Spaulding and Dennis (2010) conducted a study using the BSES-SF instrument to assess breastfeeding in Black women of African descent. Previous studies that utilized the BSES-SF instrument hypothesized higher breastfeeding self-efficacy levels correlated to a longer duration of breastfeeding (McCarter-Spaulding & Dennis, 2010). Cronbach's alpha coefficient was 0.94 for the BSES-SF instrument utilized in the immediate postpartum period while patients were in the hospital (McCarter-Spaulding & Dennis, 2010). Higher breastfeeding self-efficacy levels correlated with continued breastfeeding at four and 24 weeks postpartum (McCarter-Spaulding & Dennis, 2010). The construct validity was assessed based on Bandura's self-efficacy concept and network support for breastfeeding (McCarter-Spalding & Dennis, 2010). A *t* test revealed that there were higher mean BSES-SF instrument scores (M = 54.8, SD = 11.0) of mothers with previous breastfeeding experience, $t(152) = -3.08$, $p < .001$, than mothers without previous breastfeeding experience (M = 49.0, SD = 12.1; McCarter-Spaulding & Dennis, 2010). A Spearman's rank-order correlation between BSES-SF scores and network breastfeeding support was .44 ($p < .001$) less than a week postpartum and .40 ($p < .001$) after one month postpartum (McCarter-Spaulding & Dennis, 2010). The Spearman's rank-order correlation supported higher BSES-SF scores with breastfeeding network support at less than one week postpartum and after one month postpartum (McCarter-Spaulding & Dennis, 2010).

In a systematic review of psychometric properties of the BSES-SF conducted by Ghazanfarpour et al. (2018), the reliability and validity of the instrument were measured. The systematic review by Ghazanfarpour et al. (2018) found the BSES-SF to have reliability and construct validity of excellent value. Cronbach's alpha ranged in the moderate to excellent range

of 0.76 to 0.95 during the systematic review (Ghazanfarpour et al., 2018). The interclass correlation coefficient (ICC) was found to be in a suitable range from 0.69 to 0.78 for studies that measured test–retest reliability (Ghazanfarpour et al., 2018). After reviewing 11 articles, the item-total correlation measured by Ghazanfarpour et al. (2018) ranged from 0.23 to 0.85. The study by Ghazanfarpour et al. (2018) provided evidence that the BSES-SF instrument "may be a valid and reliable measure of breastfeeding self-efficacy" (p. 8624).

The efficacy, reliability, and validity of the BSES-SF instrument were demonstrated in multiple studies. The BSES-SF instrument also supported and aligned with Bandura's social cognitive theory. As a result of these findings, the BSES-SF was chosen as the instrument used for the selected population of African American women to encourage breastfeeding behaviors and assessed self-efficacy related to breastfeeding behaviors.

Data Collection and Management

The technique used to compile and manage data collected for the project was the administration of a consent form, a demographic survey, the BSES-SF instrument, and follow-up breastfeeding surveys after delivery. The online platform SurveyMonkey™ was used to collect and manage data from the BSES-SF instrument, demographic information, and breastfeeding survey results. Demographic information collected included characteristics, such as age, marital status, gravida, para, household income, enrollment in WIC, level of education, previous breastfeeding experience, breastfeeding support, and family history of breast cancer (see Appendix D). SurveyMonkey™ was also used to provide a link to the breastfeeding education PowerPoint. I collected the mobile phone number of each participant on the demographic survey and used it to send reminders of incoming surveys to their email. I obtained email addresses during the participants' initial recruitment encounter if there was an interest in receiving

information about participating in the research study. The date of delivery was necessary to know when the participant had reached one, six, and 12 weeks postpartum to complete the breastfeeding surveys at those specific periods. I used the data collected to assess the mean and median of data related to the demographic survey and the initiation and continuance of breastfeeding.

An informed consent was provided through a link in SurveyMonkey™ before beginning the educational program. Each participant then completed the demographic survey and BSES-SF instrument in SurveyMonkey. After the breastfeeding education PowerPoint, participants completed the same BSES-SF instrument. I then uploaded the demographic survey and BSES-SF instrument results were uploaded to SPSS v.27.0 for analysis. The first telephone and email contact for follow-up occurred one week after each participant delivered. Subsequent telephone and email follow-up contact occurred at six weeks postpartum and 12 weeks postpartum. The follow-up contact was a three-part question of current breastfeeding status. The first question asked was the following: Are you still breastfeeding? Yes or No? If the participant replied "No," then I asked the second question: When did you stop? The reason for the discontinuation of breastfeeding was also requested if the participant was no longer breastfeeding. I compiled data collected from follow-up email surveys into an Excel spreadsheet and uploaded to SPSS v.27.0 for analysis.

Data collected during this project was stored in a secure university learning management system under my name. The university owns data in case access is needed at a future date. This secure system storage was provided by the online graduate school for doctoral student research data and supported by the university's IT department for security purposes. All data obtained during implementation was maintained on a password-protected computer, and only I had

password access. Data will be kept for at least three years according to federal regulations for protecting and maintaining data of human research participants. The protected data will be shredded and destroyed after three years. After completing data collection, I filed a data collection inactivation form to alert the university's IRB that the study was complete.

Methodology Appropriateness

A comparative research design was implemented for this project. The one-group pretest and posttest design allowed a comparison of the results, as the participants "served as their own controls" (Kellar & Kelvin, 2013, p. 129). I performed data analysis utilizing the paired-samples *t* test, the Wilcoxon matched-pairs test, and the chi-square measurements using SPSS v.27.0. The BSES-SF instrument was administered before the breastfeeding education PowerPoint as a pretest and again after the breastfeeding education PowerPoint as a posttest. The BSES-SF instrument scores were compared to the results of breastfeeding initiation and duration feedback surveys.

I provided electronic informed consent for each participant before beginning any part of this research study. The consent form was provided through a link in SurveyMonkey ™. If the participant agreed to be a part of the study, they were to mark *yes* on the survey question. Participants were given the right to withdraw their consent and participation at any time during the study without penalty.

Feasibility and Appropriateness

I am a certified nurse-midwife and provided the informed consent and BSES-SF instrument through the online platform SurveyMonkey™ and was responsible for analyzing the data collected. Dr. Cindy-Lee Dennis granted permission for the use of the BSES-SF instrument for this research, and there was no cost for its use. The author of the BSES-SF instrument

requested that she be given credit accordingly. The author's information was also provided for the appropriate reference at the end of each copy of the BSES-SF instrument. I absorbed any other costs associated with developing the project.

IRB Approval and Process

The IRB for research reviewed and approved all research involving human subjects to ensure compliance with all federal, institutional, and ethical guidelines to protect the health, well-being, and rights of individuals involved in medical research (United States Food and Drug Administration, 2019). A research study could not be conducted without the full approval of the IRB. Per institutional guidelines for the university, I was enrolled for doctoral studies, and approval was granted by the university's IRB. The proposed research project had to be approved first by the Doctor of Nursing Practice (DNP) project chair and committee. The DNP project chair was also involved in the application process for IRB approval at the university. An IRB course on research ethics was also required for DNP students to demonstrate the importance and seriousness of conducting research. Also, every member of the research team, including faculty research chairs, had to complete the required university and federal IRB course training. See Appendix E for the letter of approval from the university's IRB.

Interprofessional Collaboration

The interprofessional collaboration involved my collaboration with stakeholders from the university. At the time of the study, I was a DNP student and had the most vested interest in the research study. At the university, I collaborated with the DNP project chair, committee members, the DNP program director, university instructors, and the IRB committee.

Practice Setting

The study was to be conducted at a community-based outpatient women's clinic located in the urban area of the Dallas–Fort Worth metroplex during regular clinic hours (Monday through Friday). According to data received from the clinic administrator, the clinic averaged approximately 200–250 women annually for prenatal care and an estimated 83 women postpartum. Out of this number of patients seen, approximately 76% were African American women. I selected this clinic site because of the high percentage of African American patients. Due to the COVID-19 pandemic, the university provost granted researchers with IRB approval to modify research for data collection to a remote interaction that avoids face-to-face interactions. I selected the online platform of SurveyMonkey™ for the use of this research study.

Target Population

This DNP project's target population was African American childbearing women ages 18–50 in their last trimester of pregnancy. These potential participants freely and willingly provided informed consent. The exclusion factors included mentally disabled women, minors, women over the age of 50, men, non-African American ethnicity, and those who could not understand the questionnaires in English.

Risks and Benefits

There were no anticipated or known risks associated with the consent procedure, collection of the demographic data, completion of the BSES-SF instrument, quantitative data measurements, evidence dissemination, implications for practice, and initiatives for future research related to this research study.

Potential negligible risks may be involved as the basis of the study includes demographic data and a BSES-SF instrument. Research participants were encouraged to maintain anonymous

identities while participating in the study. Ethical principles of autonomy, beneficence, veracity, justice, fidelity, nonmaleficence, and confidentiality were maintained (Doody & Noonan, 2016). There were no identified conflicts of interest in this study. Initial communication with the volunteer subjects took place through a mutual associate via text message. Demographic and BSES-SF instrument data included voluntary responses by the participant via the online platform SurveyMonkey™ after informed consent was obtained. Communication for follow-up data took place via text message and email.

Any personally identifying data remained in the custody of the principal investigator. Collected data was stored on a password-protected website and the principal research investigator's password-protected computer. All participants were known by their email addresses and phone numbers (if provided). No other identifying information was utilized.

Benefits for participants engaging in this research included receiving valuable breastfeeding education provided in the study and increased breastfeeding self-efficacy. Breastfeeding education that contained information about the decreased risk of breast cancer with initiation and prolonged duration of breast cancer was provided to each participant. The participants acquired information beneficial to themselves and to others they know. Participants involved in this research study also benefited by gaining breastfeeding self-efficacy. The acquisition of new breastfeeding information related to decreased breast cancer risk was possibly a positive motivator in increasing breastfeeding self-efficacy. A higher level of breastfeeding self-efficacy was predicted to be a positive correlation to breastfeeding initiation and breastfeeding duration over time (Boateng et al., 2019).

There was no monetary compensation or other reward given for participation in the study. Participation had no adverse effect on the health of the research volunteers. Participation was by

voluntary informed consent and freely agreed. The refusal to participate did not have any bearing on healthcare treatment to which the individuals were otherwise entitled through their primary provider. Participating individuals could have backed out from the study at any time without penalty. All precautions were taken with the participant's personal information to protect their privacy and maintain confidentiality (Moran et al., 2014). Finally, there were no conflicts of interest for me in this research study.

Timeline

The project's development and implementation timeline was from the beginning of my DNP program in January 2019 until the end of the program in May 2021. The research study in the online platform setting occurred up to three months postpartum for each participant. Appendix F provides a timeline of the actual series of events that occurred for this study.

Chapter Summary

Bandura's social cognitive theory has a vital role in assessing women's breastfeeding efficacy and the predicted likelihood of African American women initiating breastfeeding and continuing breastfeeding behaviors. The BSES-SF instrument was "a significant predictor of breastfeeding outcomes in diverse samples" (McCarter-Spaulding & Dennis, 2010, p. 111). The BSES-SF instrument measured the participant's confidence in managing breastfeeding duration, technique, motivation, different environments, and possible challenges (Tuthill et al., 2016). The use of a specific research project design, paired samples *t*-test design, and the nonparametric test of the Wilcoxon matched-pairs signed rank test (Wilcoxon matched-pairs test) using SPSS v.27.0 for data analysis was appropriate to achieve the desired outcomes with the method used. Approval to conduct the research study was obtained following the university's IRB procedures.

Chapter 4: Results

For this project, a paired-samples *t*-test design and the nonparametric test of the Wilcoxon matched-pairs signed rank test (Wilcoxon matched-pairs test) was used to explore the relationship between pretest and posttest results of the BSES-SF instrument for each participant. I also utilized a chi-square data analysis to investigate if a significant difference existed between breastfeeding education and the choice to breastfeed for the duration of 12 weeks postpartum. There were changes identified in the pretest and posttest scores. There were nine participants recruited for the study, with five participants that completed the study in its entirety.

Purpose of the Project

The project's purpose was to increase the awareness of breastfeeding in African American women to promote the initiation and duration of breastfeeding. The BSES-SF instrument was administered as a pretest to assess the confidence of women's ability to breastfeed. An educational program was provided to increase the awareness of the benefits of breastfeeding that included information about a decreased risk of maternal TNBC. The purpose of the inclusion of the reduced risk of maternal TNBC for African American women in the breastfeeding education program was intended to be a motivating factor for the initiation and duration of breastfeeding. The BSES-SF instrument was administered after the educational program as a posttest to evaluate the women's breastfeeding confidence after receiving breastfeeding education.

Discussion of Demographics

The targeted population was African American women ages 18 to 50 years in their last trimester of pregnancy. The women participated in the study by word-of-mouth recruitment from mutual associates. A total of nine women were recruited to participate in the study. One

participant never consented to begin the study. One participant withdrew from the study after consent was obtained but before starting the pretest BSES-SF survey. Another participant withdrew from the study before completing the breastfeeding education or the posttest BSES-SF survey. A fourth participant voluntarily withdrew from the study after completing the breastfeeding education and the posttest survey, but before beginning the postpartum portion of the study.

I included the demographic data from eight of the participants that were recruited and completed the demographic survey. The majority of the participants were age 26–31 years (*N* = 5; 62.5%). Two individuals were ages 32–35 (25%), and one participant was age 36–40 (12.5%). The education level of the eight participants included one with some college with no degree (12.5%), one participant with an associate's degree (12.5%), three with a bachelor's degree (37.5%), and three with a graduate degree (37.5%). The employment status of the participants varied with one full-time student (12.5%), one student also employed part-time (working less than 40 hours per week; 12.5%), and six working full-time (at least 40 hours per week; 75%). The income status of the participants ranged from $40,000 per year to $100,000 and up per year. There were six married participants (75%), one divorcee (12.5%), and one single participant who was cohabitating with a significant other (12.5%). Five of the study participants had 1–2 previous births (62.5%), two participants were soon-to-be first-time mothers, and one participant had 3–4 previous births (12.5%). The two soon-to-be first-time mothers (25%) had no prior breastfeeding experience, and the other six participants (75%) had previous breastfeeding experience. Two participants (25%) were enrolled in the Women, Infants, and Children (WIC) Supplemental Nutrition Program, while six participants (75%) were not. There was a positive family history of breast cancer for two individuals (25%), and six participants (75%) indicated

no family history of breast cancer. Seven of the participants (87.5%) reported in their survey that they have breastfeeding support from family, a friend, or their partner. One participant (12.5%) reported not having breastfeeding support.

Data Analysis

A paired samples *t* test compared the two means from the same individual using a pretest-posttest design to examine the effect of the breastfeeding education intervention on the participants (Kellar & Kelvin, 2013). For this study, the two sample means compared were the results of the BSES-SF pretest and posttest surveys. The pretest and posttest of the five participants ($N = 5$) who completed all parts of the study were used for the paired samples *t* test. The paired samples *t* test showed the mean, standard deviation, and standard error of the pretest and posttest scores (see Table 1). Possible scores of the BSES-SF instrument range from 14 to 70. The mean showed the average of the pretest and posttest scores (Cronk, 2018). The mean of the pretest was 46.2, and the posttest mean was 61.2. The standard deviation measured the central tendency of the pretest and posttest scores (Cronk, 2018). The standard deviation for the pretest was 20.067, with a standard error mean value of 8.974. The standard deviation for the posttest was 6.140, with a standard error mean value of 2.746.

Table 1

Paired Samples Statistics

BSES-SF scores	*M*	*N*	*SD*	*SEM*
Pretest	46.2000	5	20.06739	8.97441
Posttest	61.2000	5	6.14003	2.74591

Note. $N = 5$ for the total participants to complete the study.

The BSES-SF instrument scores increased for each of the five participants after completing the breastfeeding educational program. The BSES-SF instrument scores of the pretest and posttest are in Table 2.

Table 2

Paired Samples t *Test Participant Scores*

Participant	Pretest	Posttest
1	55	62
2	42	53
3	53	59
4	14	62
5	67	70

Note. The pretest was administered via the SurveyMonkey™ online platform before access was given to the breastfeeding education program. Access to the posttest was granted after completion of the breastfeeding education.

Table 3 represents the paired samples test with an average of the mean, which was -15.00. The standard deviation was 18.668, including the mean, which was the average difference between the two variables (Kellar & Kelvin, 2013). Standard deviation indicated the difference of the pretest-posttest scores. The standard error mean was the estimated standard deviation of the sample mean (Kellar & Kelvin, 2013). The paired *t* statistic was -1.797 with a critical value of 2.776 (Kellar & Kelvin, 2013). The absolute value of the paired *t* statistic was less than the critical value, which indicated the difference in the pretest and posttest scores occurred by chance and were not statistically significant (Kellar & Kelvin, 2013). The lower limit of an interval was -38.180, which showed the approximation of the mean based on the pretest and

posttest *t* distribution with *n*-1 degrees of freedom (IBM Corp., 2020). The statistic *df* was 4 (*df* = *n*-1) because this was a paired samples *t* test, and the value of *df* is one less than the number of participants in the study (Kellar & Kelvin, 2013). The differences between pretest and posttest means were probably by chance due to the breastfeeding education program; therefore, the null hypothesis that there would be no difference in the means of the pretest and posttest was rejected (Kellar & Kelvin, 2013).

Table 3

Paired Samples Test

	Paired Differences							
				95% CI of the Difference				
Measure	*M*	*SD*	*SEM*	*LL*	*UL*	*t*	*df*	*Sig.* (2-tailed)
Pretest - Posttest	-15.00	18.668	8.349	-38.180	8.180	-1.797	4	.147

Note. The level of significance was $p = .05$, and the critical value for a 2-tailed test was 2.776 (Kellar & Kelvin, 2013).

A chi-square computation was performed to determine the significant difference in breastfeeding education and the participant's choice to breastfeed for three months postpartum. The chi-square test compared the expected results to the observed results (Kellar & Kelvin, 2013). In Table 4, the chi-square tabulation indicated that 100% of the participants who completed the provided breastfeeding education also initiated breastfeeding after delivery and continued breastfeeding up to 12 weeks postpartum. Although the three assumptions of using the chi-square test were met, a measure of association was not computed due to at least one variable being a constant.

Table 4

Chi-Square Test of Breastfeeding Education Completed: Up to 12 Weeks Postpartum

Breastfeeding education effect			Up to 12 weeks Yes	Total
BF Education Completed	Yes	Count	5	5
		Expected Count	5.0	5.0
		% Within BF Education Completed	100.0%	100.0%
		% Within Up to 12 weeks	100.0%	100.0%
Total		Count	5	5
		Expected Count	5.0	5.0
		% Within BF Education Completed	100.0%	100.0%
		% Within Up to 12 weeks	100.0%	100.0%

Note. No measures of association were computed due to one of the crosstab variables being a constant.

The Wilcoxon matched-pairs test was used to compare the median of the pretest and posttest (see Table 5; Kellar & Kelvin, 2013). For the Wilcoxon matched-pairs test, the null hypothesis was that there would not be a difference between the distributions in the pretest and posttest BSES-SF instrument scores (Kellar & Kelvin, 2013). The smaller the test statistic in the Wilcoxon matched-pairs test, the lower the associated p-value. This indicated that the distribution differences were less likely to have been due to chance (Kellar & Kelvin 2013).

Table 5

Wilcoxon Matched-Pairs Test

Variables measured		*N*	Mean Rank	Sum of Ranks
After BF Education Before BF Education	Negative Ranks	0[a]	.00	.00
	Positive Ranks	5[b]	3.00	15.00
	Ties	0[c]		
	Total	5		

Note. [a] After BF Education < Before BF Education; [b] After BF Education > Before BF Education; [c] After BF Education = Before BF Education

In Table 5, the Wilcoxon matched-pairs test indicated positive ranks for all five participants. Positive ranks indicated an increase in BSES-SF posttest scores from pretest scores (Kellar & Kelvin, 2013). This further indicated that the null hypothesis for the Wilcoxon matched-pairs test that the posttest scores would be the same as the pretest scores is voided.

Question Guiding the Inquiry

The PICOT question contained the following components: P (Affected Population) - African American women of childbearing ages 18–50 in their last trimester of pregnancy; I (Proposed Intervention) - Educational program on the importance of breastfeeding and breast cancer risk reduction; C (A Comparison) - Breastfeeding self-efficacy before the breastfeeding education program and breastfeeding self-efficacy after the breastfeeding education program; O (Outcome) - Increased breastfeeding awareness and initiation of breastfeeding among African American female participants; T (Time Frame) - Three months postpartum. As related to the data analyzed, the BSES-SF instrument was used as a pretest and posttest to compare the breastfeeding self-efficacy of the study participants before and after the breastfeeding education intervention. The intervention of breastfeeding education increased the participants' knowledge and self-efficacy of breastfeeding. The breastfeeding education also provided information on the

decreased risk of breast cancer with the initiation and longer breastfeeding duration. The findings showed that the breastfeeding education provided to the participants increased their breastfeeding self-efficacy. Their increased breastfeeding self-efficacy led to breastfeeding initiation and continued breastfeeding up to three months postpartum for all five participants.

Reliability and Validity

The reliability and validity of the BSES-SF are explained in the literature review. Dennis (2003) developed the BSES-SF as a clinical tool to measure breastfeeding self-efficacy, assess breastfeeding behavior and understanding, identify women at risk for not breastfeeding, and guide the development of effective breastfeeding interventions. Dennis (2003) concluded that low BSES-SF scores imply a need for supplemental breastfeeding support. Tuthill et al. (2016) reported the Cronbach alpha score in several studies with the BSES-SF that ranged between 0.86 to 0.93. Ghazanfarpour et al. (2018) measured reliability and validity and found the BSES-SF instrument to have reliability and construct validity of excellent value. Cronbach's alpha ranged in the moderate to excellent range of 0.76 to 0.95 with an interclass correlation (ICC) in a suitable range from 0.69 to 0.78 for studies that measured test–retest reliability (Ghazanfarpour et al., 2018). Ghazanfarpour et al. (2018) provided evidence that the BSES-SF instrument "may be a valid and reliable measure of breastfeeding self-efficacy" (p. 8624).

Chapter Summary

The breastfeeding self-efficacy of African American women in their last trimester of pregnancy was examined using the BSES-SF instrument before and after breastfeeding education. The paired samples *t* test, Wilcoxon matched-pairs test, and chi-square test were used to determine the relationship between the pretest and posttest of the BSES-SF surveys. The paired samples *t* test and the Wilcoxon matched-pairs test indicated that the null hypothesis

should be rejected because there was an increase in BSES-SF posttest scores over the BSES-SF pretest scores. The chi-square test was unable to be tabulated due to the constant of one of the associated variables.

Chapter 5: Discussion, Conclusions, and Recommendations

This project's purpose was to educate African American women on breastfeeding to decrease their risk of breast cancer. I administered the BSES-SF instrument to each participant to assess breastfeeding self-efficacy before receiving breastfeeding education. The BSES-SF instrument was administered as a posttest after each participant completed the breastfeeding education intervention. The pretest and posttest scores were compared and noted to be different. The difference between the pretest and posttest scores indicated that the breastfeeding educational intervention increased the women's self-efficacy in breastfeeding. The breastfeeding education intervention was also instrumental in promoting the self-efficacy that encouraged 100% of participants to initiate breastfeeding and continue breastfeeding to three months postpartum. The total number of participants was five African American women between the ages of 26 and 40, who were recruited in their third trimester of pregnancy. In this chapter, the interpretation and inference of the findings and the implications of the study's analysis were examined. Recommendations for breastfeeding education were discussed that include decreasing breast cancer risk and future research.

Interpretation and Inference of the Findings

The research question was as follows, Will an educational program on the importance of breastfeeding and breast cancer risk reduction for African American women of childbearing ages 18–50 in their last trimester of pregnancy increase their awareness of breastfeeding and initiation of breastfeeding up to three months postpartum? The breastfeeding education provided information on breastfeeding and their decreased risk of breast cancer by first initiating breastfeeding and second by breastfeeding for a longer duration of time. The participants improved their breastfeeding self-efficacy through the information provided in the breastfeeding

education. This improvement was shown by the increase in the BSES-SF instrument's posttest scores after completing the breastfeeding education. Thus, the null hypothesis was rejected.

The findings are related to Bandura's social cognitive theory that an individual with a high sense of self-efficacy is likely to anticipate positive performances (Bandura, 1989). Bandura (1989) concluded that goals that represent incentives guide the motivation for self-efficacy. According to Bandura (1989), the incentives that motivated an individual determined the amount of effort expended and the length of perseverance during difficulties while pursuing their goal. Bandura's social cognitive theory was relevant to this study because the women could access the breastfeeding education that contained information on their decreased risk of breast cancer for repeated use whenever desired. The incentive of reduced breast cancer risk motivated the participants to initiate breastfeeding and continue breastfeeding three months postpartum. The results of the BSES-SF posttest scores showed that all of the participants had a high level of breastfeeding self-efficacy after accessing the breastfeeding education. The five constructs of Bandura's social cognitive theory related to "knowledge of breastfeeding, expectations for initiation and continuation of breastfeeding, self-efficacy for initiation and continuation of breastfeeding, self-efficacy in overcoming barriers for initiation and continuation of breastfeeding, and self-control in initiation and continuation of breastfeeding" predicted the breastfeeding initiation and duration for the African American women in this project (Eastin & Sharma, 2015, p. 197).

Limitations

The project's limitations were the low sample size. Participants were recruited for the study for approximately two months amidst the COVID-19 pandemic. A total of nine individuals expressed interest in participating in the study, but only five participants completed the study

through the three-month postpartum period. The low sample size affected the statistical evidence and the ability to generalize the findings to a larger population. Three women elected to withdraw from the study before the breastfeeding education intervention was provided. One individual removed herself from the study after accessing the breastfeeding education and after completing the BSES-SF posttest.

Another limitation of this research project was that all parts of the study were conducted through an online format. The online format prevented a group setting that could have possibly encouraged first-time mothers to ask questions and feel encouraged to continue in the study rather than withdraw.

Implications of Analysis for Leaders

This project showed how DNP leaders could help promote the health of African American women. This project showed that African American women need to be educated on breastfeeding to help decrease their risk of TNBC. This project's results provide nursing leaders with evidence that demonstrates the value of breastfeeding education that includes information about the reduced risk of breast cancer. It is essential for nursing leaders to promote breastfeeding education and breastfeeding in African American women to decrease their risk of TNBC. This project's results can serve as an example to nursing leadership that breastfeeding education targeted for African American women can be pivotal in increasing breastfeeding rates in African American women and decreasing African American breast cancer rates nationally.

Evidence-Based Practice Findings and Relationship to DNP Essentials

The relationship of the DNP Essentials can be seen by examining how each essential can influence the population change through direct or indirect patient care (VanderKooi et al., 2018). Zaccagnini & Pechacek (2019) reported that the practical application of this project could be

used as evidence to alter practice change. The DNP Essentials emphasized changes in practice based on health, human behavior, environment, actions, and processes that affect health (Zaccagnini & Pechacek, 2019). The following information explains how each essential related to this project.

Essential I: Scientific Underpinnings for Practice

The DNP graduate is equipped to utilize nursing discipline and theories to critically assess current practices and new practices (American Association of Colleges of Nursing [AACN], 2006). The DNP Essential I, Scientific Underpinnings for Practice, is related to the scientific underpinnings that correspond to a project idea (AACN, 2006). The literature review for this study assisted in assessing the current knowledge of breastfeeding and the reduction of TNBC. I utilized Bandura's social cognitive theory and self-efficacy concept as the foundation for this project. With this essential, breastfeeding education helped explain the scientific underpinnings of how breastfeeding can be a significant factor in decreasing the risk of TNBC in African American women.

Essential II: Organizational and Systems Leadership

The DNP Essential II emphasizes how the DNP graduate can improve organizational and system practices and procedures to positively enhance the delivery of healthcare (AACN, 2006). The doctoral level of nursing education prepares the DNP with the knowledge and ability to assess the care of populations and implement models of care that address population health and inequalities. This essential utilized current practice information for educating African American women about breastfeeding and incorporating information on decreasing the risk of TNBC for African American women by breastfeeding.

Essential III: Clinical Scholarship and Analytic Methods for Evidence-Based Practice

DNP Essential III relates to the analytic methods used to analyze data reviewed for this project to inform the need to improve or change clinical practice (Chism, 2016). I analyzed data collected for this project using the most current SPSS software to understand if the women who participated in the breastfeeding education were influenced by the inclusion of TNBC prevention to initiate and continue breastfeeding.

Essential IV: Information Systems or Technology and Patient Care Technology

DNP Essential IV shows the way information technology can improve patient care (Chism, 2016). This study's results relied on technology to recruit participants and to collect and analyze data. Technology proved to be a valuable asset for this study by providing breastfeeding education easily accessible to participants through personal devices at their demand. This DNP essential allowed for technology to evaluate healthcare consumer information for accuracy, timeliness, and appropriateness (Chism, 2016). Through Internet searches, TNBC risk factors for African American women were analyzed to determine that lack of breastfeeding posed a risk for developing TNBC in African American women.

Essential V: Healthcare Policy for Advocacy in Healthcare

The DNP Essential V looks at healthcare policy to evaluate needed change and development (Chism, 2016). The results of this study demonstrated the need to develop a policy at the systems level and clinic level to provide breastfeeding education that incorporates information on decreasing the risk of TNBC, especially for African American women, to reduce health disparities. There are health disparities among African American women related to increased risk of TNBC and increased mortality associated with TNBC. Policies that advocate

for education to help prevent and reduce TNBC by breastfeeding will improve the overall breast cancer outcomes in African American women.

Essential VI: Interprofessional Collaboration

The DNP graduate is prepared to function on multidisciplinary teams with patients and families to guide improvements in nursing practice (AACN, 2006). The AACN (2006) reported that DNP graduates are equipped to lead interprofessional teams through effective communication and collaborative skills by analyzing multifaceted practice and systems issues. For this study, there was a collaboration with various individuals, including the participants, to modify the recruitment, participation, and education interventions for this evidence-based study.

Essential VII: Clinical Prevention and Population Health

According to Chism (2016), health promotion, risk reduction, and prevention of illnesses for individuals and families were defined as clinical prevention. Chism (2016) characterized population health as "including all community, environmental, cultural, and socioeconomic aspects of health" (p. 19). The benefits of breastfeeding for infants have been widely circulated for many years. Although the decreased risk of breast cancer related to breastfeeding was apparent for decades, many African American women were not provided this information. African American women becoming more educated on breastfeeding decreasing the risk of TNBC could potentially increase breastfeeding initiation and lengthen the time of breastfeeding. The breastfeeding education in this study used health promotion to show the importance of breastfeeding for infants and mothers. DNP Essential VII shows how evaluating and interpreting data could improve the health status of individuals through health promotion and risk reduction for improved population health outcomes (Chism, 2016). This study's goal was to realize

improved breastfeeding outcomes in African American women by including the reduced risk of TNBC in breastfeeding education.

Essential VIII: Advanced Nursing Practice

DNP Essential VIII emphasizes that the DNP graduate utilizes advanced knowledge to conduct evidence-based nursing improvements (AACN, 2006). The DNP graduate is equipped to conduct a comprehensive needs assessment, review social determinants of health that impact the prevalence of TNBC, mentor other nurses, and guide the transition to practice (AACN, 2006). For this project, I utilized general breastfeeding education that included breast cancer information with the intention to improve the knowledge of breastfeeding to reduce the risk of TNBC and increase breastfeeding self-efficacy. National statistics have shown African American women to be least likely to initiate breastfeeding, continue breastfeeding over an extended duration, and more likely to develop TNBC. This study informs the nursing community of the need to utilize advanced knowledge to plan for increased breastfeeding education for African American women that explains their increased risk of developing TNBC by not breastfeeding.

Recommendations for Future Research and Clinical Practice

Triple-negative breast cancer will continue to negatively impact African American women if breastfeeding education is not targeted to their population to bring awareness of this benefit of breastfeeding. A larger sample size with a longer time frame for evaluating postpartum breastfeeding could possibly explain if the breastfeeding education would have encouraged breastfeeding beyond three months postpartum. A face-to-face presentation of breastfeeding education may have been beneficial for first-time mothers to ask questions in a group setting. A group setting could have also provided a sense of encouragement from other women who had previous breastfeeding experience.

DNP graduates are equipped with the knowledge and skills to change prenatal education practices with thorough breastfeeding education. DNP graduates who work in settings that have a high African American population should use targeted breastfeeding education. Breastfeeding education for African American women should be inclusive of information about their decreased risk of TNBC with initiation and longer duration of breastfeeding. While breast cancer is not preventable, African American women should be aware of their ability to reduce their risk.

The challenge for the DNP graduate is that the initiation and duration of breastfeeding are lowest in the African American community (Kim et al., 2017). The low rate of breastfeeding in African American women is associated with the possibility of an increased rate of TNBC, as the breast cancer death rate for African American women is "markedly higher" (Williams et al., 2016, p. 2138). This evidence-based information integrated into local and national breastfeeding education campaigns for African American women could be instrumental in increasing African American national breastfeeding rates.

DNP-educated healthcare providers should incorporate breastfeeding education in all prenatal education. Breastfeeding education that includes information related to decreasing the risk of TNBC should be a focus of breastfeeding education for African American women. Prenatal education should also have a BSES-SF survey early in pregnancy to allow the healthcare provider to target additional breastfeeding education in the areas of concern for the individual. An early assessment of breastfeeding concerns should provide time before delivery to assess situations and the results of interventions. The intervention of the breastfeeding education used in this project could be implemented on a larger scale to help improve the overall health and quality of life for African American women.

Chapter Summary

There are various approaches to helping women in the battle of breast cancer prevention. The prenatal time is an opportunity to present healthy choices to mothers for their babies and themselves. As breastfeeding is introduced as one of those healthy choices, breast cancer prevention should also be presented.

The purpose of this study was to increase awareness that a woman's risk of breast cancer is decreased if she breastfeeds her baby. The specific target for this study was African American women. Research data has shown that the breastfeeding rates of African American women are lower than any other ethnic group (Alghamdi et al., 2017). In addition, studies have shown that more African American women than any other ethnic group are dying at alarming rates from TNBC (Dietz et al., 2015).

This study targeted African American women in the third trimester of their pregnancy to educate them on breastfeeding. The breastfeeding education incorporated research data that indicated that an African American woman's risk of TNBC could be reduced by breastfeeding. The breastfeeding timeframe for this study was three months postpartum. The breastfeeding education included research data that indicated that an even longer duration of breastfeeding could further decrease the risk of TNBC (Newcomb et al., 1994). As a result of the breastfeeding education, 100% of the study participants initiated breastfeeding. At three-month's postpartum, 100% of all participants had continued to breastfeed. The breastfeeding education provided a new incentive for breastfeeding initiation and continuation.

Future plans for this study include considering a larger sample size and journal publication. This data needs to be circulated in the African American community. In order to do this, the DNP clinician should incorporate various modalities of sharing this research within the

healthcare community to reach the target audience. A collaborative effort with the DNP clinician, politicians, government agencies, healthcare leaders, and other arenas would help spread awareness of this particular health disparity in African American women. With the spread of awareness, there can be combined efforts to reduce the health disparity by increasing breastfeeding education and improving health outcomes in the African American community.

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Appendix A: Breastfeeding Self-Efficacy Scale-Short Form

Breastfeeding Self-Efficacy Scale – Short Form

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

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

		Not at all Confident				Very Confident
1	I can always determine that my baby is getting enough milk	1	2	3	4	5
2	I can always successfully cope with breastfeeding like I have with other challenging tasks	1	2	3	4	5
3	I can always breastfeed my baby without using formula as a supplement	1	2	3	4	5
4	I can always ensure that my baby is properly latched on for the whole feeding	1	2	3	4	5
5	I can always manage the breastfeeding situation to my satisfaction	1	2	3	4	5
6	I can always manage to breastfeed even if my baby is crying	1	2	3	4	5
7	I can always keep wanting to breastfeed	1	2	3	4	5
8	I can always comfortably breastfeed with my family members present	1	2	3	4	5
9	I can always be satisfied with my breastfeeding experience	1	2	3	4	5
10	I can always deal with the fact that breastfeeding can be time consuming	1	2	3	4	5
11	I can always finish feeding my baby on one breast before switching to the other breast	1	2	3	4	5
12	I can always continue to breastfeed my baby for every feeding	1	2	3	4	5
13	I can always manage to keep up with my baby's breastfeeding demands	1	2	3	4	5
14	I can always tell when my baby is finished breastfeeding	1	2	3	4	5

Appendix B: Facility Support Letter

[redacted] Family Health Centers

Patients are First. Your Health and Wellness are Foremost.

[redacted]

[redacted]

Dallas, Texas [redacted]

[redacted]

ABILENE CHRISTIAN UNIVERSITY
16633 North Dallas Parkway
Suite 800
Addison, Texas 75001

July 7, 2019

Dear Dr. Tonya Sawyer-McGee:

This letter is written confirmation of our intended support for the project proposed by Shalawn Harris, a doctoral student of Abilene Christian University. She would like to complete her DNP scholarly project with the [redacted] clinic in Dallas. The focus is an initiative to increase breastfeeding in African American women.

ACU's mission is dedicated to educating students for leadership and service throughout the world, and her focus of breastfeeding awareness in our African American mothers is of high importance. For this reason, it is our pleasure to support this project. Her project outline, implementation, and analyses will prove useful for both current and future research with our centers and with others.

We are excited to support Ms. Harris and her initiative to engage and develop this capstone project. If you have any questions or concerns, please do not hesitate to contact me.

Sincerely,

[redacted]

[redacted] *Associate Medical Director*

[redacted]

Appendix C: Permission to Use BSES-SF Tool

Shalawn Harris

From: Cindy-Lee Dennis <cindylee.dennis[redacted]
Sent: Friday, July 19, 2019 4:45 PM
To: Shalawn Harris
Subject: RE: Breastfeeding Self-Efficacy Scale-Short Form
Attachments: BSES-SF.DOC

Dear Shalawn
Thank you for your email and interest in my Breastfeeding Self-Efficacy Scale. I have attached the short-form to be used in your scholarly project. Good luck with your research.
Warm regards
Cindy-Lee Dennis

Cindy-Lee Dennis, PhD, FCAHS
[redacted]
University of Toronto
[redacted]

Mothering Transitions RESEARCH

From: Shalawn Harris [redacted]
Sent: July 10, 2019 6:42 PM
To: Cindy-Lee Dennis [redacted]
Subject: Breastfeeding Self-Efficacy Scale-Short Form

Hello Dr. Dennis,

My name is Shalawn Harris. I am currently enrolled at Abilene Christian University in their DNP program. I am conducting my DNP scholarly project on the subject of breastfeeding initiation and duration. Your BSES-SF instrument would be of excellent use for my study. I am requesting permission to use your BSES-SF instrument for the purpose of my DNP scholarly project. If you are in agreement, would you please attach the BSES-SF instrument to your email.

Thank you,
Shalawn Harris
DNP student at Abilene Christian University

Appendix D: Sample Demographic Inquiry

Participant Characteristics

Age
- 18-21
- 22-25
- 28-31
- 32-35
- 36-40
- 41-45
- 46-50

Due Date

Highest Level of Education
- Less than high school degree
- High school or General Equivalency Diploma (GED)
- Some college but no degree
- Associate degree
- Technical or Trade school
- Bachelor's degree
- Graduate degree

Employment
- Unemployed
- Employed working 40 or more hours per week (full-time)
- Employed working 1-39 hours per week (part-time)
- Employed and a student
- Full-time student

Combined annual household income
- $0 to $19,999
- $20,000 to $39,999
- $40,000 to $59,999
- $60,000 to $79,999
- $80,000 to $99,999
- $100,000 and up

Ethnicity
- African American or Black
- Mixed – African American or Black with other

Current relationship status
- Married
- Widowed
- Divorced
- Separated

Single, but cohabitating with a significant other
Single

Number of children given birth to
0
1-2
3-4
5-6

Breastfed previously
Yes
No

Enrolled in WIC
Yes
No

Family history of breast cancer
Yes
No

Family, friend, or partner breastfeeding support
Yes
No

Phone number for follow up text for survey links:

Appendix E: IRB Approval Letter

ABILENE CHRISTIAN UNIVERSITY
Educating Students for Christian Service and Leadership Throughout the World

Office of Research and Sponsored Programs
320 Hardin Administration Building, ACU Box 29103, Abilene, Texas 79699-9103
325-674-2885

February 20, 2020

Shalawn Harris
Department of Nursing
Abilene Christian University

Dear Shalawn,

On behalf of the Institutional Review Board, I am pleased to inform you that your project titled "The Effect of Breastfeeding Education in African American Women on Initiation and Duration of Breastfeeding",

(IRB# 20-015)is exempt from review under Federal Policy for the Protection of Human Subjects.

If at any time the details of this project change, please resubmit to the IRB so the committee can determine whether or not the exempt status is still applicable.

I wish you well with your work.

Sincerely,

Megan Roth

Megan Roth, Ph.D.
Director of Research and Sponsored Programs

Appendix F: DNP Project Timeline

Task Date Month and Year Completed	Project Task
January 2019	Began development of research project PICOT question
May 2019	Secured research project chair and committee members; completed project chair and committee form and submitted form to Associate Dissertation and Project Manager in NURS 755
May 2019	First meeting with project chair to discuss research
June 2019	Began theoretical framework
June 2019	Began literature review
June 2019	Secured clinical site to conduct research
June 2019	Meeting with project chair to discuss securing support letter, project tool and instrument, and working on Chapters 1–3 of DNP project
July 2019	Meeting with project chair to discuss the finalized theoretical framework, securing support letter from the clinical site
July 2019	Received signed letter of support from the clinical site
July 2019	Continued work on Chapters 1–3 of DNP project
August 2019	Received signatures for approval of the mini proposal
August 2019	Ongoing work on methodology
August 2019	Meeting with project chair to discuss education presentation, consent form, recruitment flyers, and statistical analysis
September 2019	Continued work on Chapters 1–3 of DNP project
October 2019	Defense Proposal PowerPoint; continued work on Chapters 1–3 of DNP project
November 2019	Completion of DNP project committee; continued work on Chapters 1–3 of DNP project; meeting with project chair to discuss defense proposal
November 2019	Defense proposal with the project committee
December 2019	Requested corrections for DNP project paper
January 2020	IRB application submitted
February 2020	IRB approval
March 2020	COVID-19 pandemic modifications implemented
May–June 2020	Recruitment, project implementation, and data collection started with study participants
August 2020	Recruitment ended for study participants
August–November 2020	Project implementation, continued data collection, and data analysis
November 2020	Completion of data collection; data analysis
November 2020	Meeting with project chair to discuss project progress
December 2020	Inactivation form submitted to IRB
December 2020	Data analysis; development of Chapters 4 and 5 of DNP project paper

January 2021	Meetings with project chair to discuss project paper progress
January 2021	Revisions of Chapters 4 and 5 of DNP project paper
January 2021	Final project defense PowerPoint
February 2021	Meeting with project chair to discuss final project defense
February 2021	Final project defense with the project committee
February 2021	DNP project paper edits for editorial review
March 2021	Final DNP project paper edits for editorial review
March–April 2021	Journal manuscript development