Southern California CSU DNP Consortium

California State University, Fullerton
California State University, Long Beach
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IDENTIFYING CONTRIBUTING FACTORS TO EARLY CESSATION OF EXCLUSIVE BREASTFEEDING

A DOCTORAL PROJECT

Submitted in Partial Fulfillment of the Requirements

For the degree of

DOCTOR OF NURSING PRACTICE

By

Alexandra Barrera

Doctoral Project Committee Approval:

Christina Recinos, PhD, RN, NP, NEA-BC, Team Leader
Jean O'Neil, DNP, RN, FNP-BC, Team Member

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Author Note

Alexandra Barrera - https://orcid.org/0009-0007-8885-4105
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ABSTRACT

This pilot quality improvement project aims to understand the contributing factors of early cessation of exclusive breastfeeding at a small community hospital in Southern California. Breastfeeding cessation earlier than desired is a common challenge in the United States, with many mothers claiming to have much longer breastfeeding goals than they can achieve. As of 2019, the Centers for Disease Control and Prevention (CDC, 2019) reported that only 45.3% of infants were exclusively breastfed at three months old, and at six months old, only 24.9% of infants were exclusively breastfed. Multiple barriers to breastfeeding success have been identified, including-lack of-provider support, racial and ethnic disparities, difficulties with lactation, the effort associated with breastfeeding and pumping, maternal concern for infant nutritional status, as well as social and cultural influences (Sriraman, 2016; Odom et al., 2013; Louis-Jacques et al., 2017; Onat & Karakoc, 2020). In this project, mothers were offered voluntary participation regardless of delivery method or breastfeeding exclusivity at their two-to-three-week post-delivery follow-up clinic appointment. Anonymous surveys were distributed to 60 participants, and data such as infant age, breastfeeding exclusivity, initial breastfeeding goals during pregnancy, method, and delivery location, breastfeeding status at the time of survey, reasons for beginning formula supplementation, and infant age when formula supplementation began. Results of the survey were analyzed using correlational and descriptive statistics. Data analysis showed that 50% of mothers did not receive breastfeeding support despite available resources, and formula was typically started within the first four days of life, despite almost 90% of mothers claiming a desire to breastfeed for one year or more.

Keywords: breastfeeding, breastfeeding exclusivity, lactation, lactation support

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Background

Despite the well-documented maternal and infant benefits of exclusive breastfeeding, mothers in the United States struggle with exclusive breastfeeding for the first year of life. In the United States, approximately 46% of infants are exclusively breastfed at three months old, and by six months old, only 25% are exclusively breastfed (Centers for Disease Control and Prevention, 2019). Exclusive breastfeeding is typically defined as the infant receiving only breastmilk with no formula supplementation. The American Academy of Pediatrics recommends exclusively breastfeeding infants for the first six months of life and continuing until at least one year or beyond (AAP, 2022).

There are numerous maternal benefits associated with breastfeeding, including decreased chance of post-partum hemorrhage, reduced risk of post-partum depression, decreased incidence of virtually all maternal cancers, osteoporosis, diabetes mellitus, and hypertension (Horta & Victora, 2013). Breastfeeding offers protection against illness for children and mothers, thereby decreasing the risk of illness and reducing the potential cost of medical care (Walters et al., 2019).

Despite the benefits of breastfeeding, exclusive breastfeeding rates after hospital discharge are a challenge. The national average of exclusive breastfeeding at one month of life is 57.8% with inpatient breastfeeding rates typically higher than rates post-discharge (CDC, 2019). At the project facility, which is a small community-based hospital within a larger organization, inpatient breastfeeding rates have been as high as approximately 80%. However, BF rates fall as low as 30% within three to four weeks post-discharge. This decline in breastfeeding rates has long-term implications for mothers and babies.

There are several questions regarding the root cause of the decline of exclusive breastfeeding rates. At the project facility, all infants discharged between Monday and Friday receive a 'Great Starts' visit, which includes their post-discharge pediatrician follow-up appointment and a lactation consultation where they can be monitored for their breastfeeding success. Infants discharged on a Saturday or Sunday are required to be seen at the outpatient clinic location where lactation services are not available. Additionally, many readmissions occur from babies discharged on a Friday, which suggests that lack of feeding support on the weekend may contribute to jaundice, weight loss, and several other issues causing readmission. However, the research surrounding breastfeeding exclusivity suggests that it is a multifactorial issue, and that lack of breastfeeding support alone is not the only contributing factor. Therefore, this project aims to understand the factors contributing to early cessation of exclusive breastfeeding at the project facility.

Purpose Statement

The purpose of this project is to understand the contributing factors of decreased exclusive breastfeeding rates after discharge from a Southern California hospital and will be conducted in multiple phases. Phase I, and the topic of this paper, was conducted via an anonymous survey to understand why mothers stop exclusively breastfeeding when they do. Phase II, to be completed later, will implement interventions tailored to the findings in Phase I. It is widely documented that the more support a breastfeeding mother receives, the more successful she will be and the longer she will breastfeed (Binns et al., 2016; Nilsson et al., 2017; van Dellen et al., 2019). Approximately 130 newborns are seen each month at the project facility in the newborn clinic. Well-baby visits occur at scheduled intervals at one to three days after discharge, two to three weeks old, and two months old and beyond; however, for this project, the focus was

infants up to one month of life. By the second week of follow-up appointments, the number of infants still receiving breastmilk declines to less than 40%, and at one month, that number falls to approximately 30-40%.

Additionally, due to growth spurts, there are key times in an infant's growth when breastfeeding becomes more challenging (Odom et al., 2013). Infant growth spurts occur at approximately two weeks and one month old, and this can present specific challenges to maintaining breastfeeding and often requires extra support. Not receiving this support could result in the mothers discontinuing breastfeeding, which is demonstrated by the outpatient breastfeeding rates found at the project facility. Other factors contributing to breastfeeding challenges include complications after delivery, lack of maternal education surrounding breastfeeding, maternal perceived milk insufficiency, and several more (Odom et al., 2013).

Supporting Framework

Incorporating a conceptual framework is essential to the process of practice improvement and provides a pathway of succinct and relevant direction for implementing an intervention. Attempting a practice change can be quite an involved and challenging undertaking, and having a guiding framework is beneficial in multiple aspects. When implementing change, various factors must be considered to ensure the success of the project. When working with an interdisciplinary team and within a large facility, it is important to consider potential challenges and address them as thoroughly as possible. Some of these challenges may be conflicts in beliefs or opinions about processes or decisions for the project, managing interdisciplinary interactions, and implementing change in the most streamlined and cost-effective ways. Using a framework to guide this process results in less waste of vital resources that contribute to the organization, and

provides better use of time, financial resources, and assists in articulating ideas that stem from broad ideas to concrete concepts of change (Gawlinski & Rutledge, 2008).

The Iowa Model of Evidence-Based Practice was selected for this doctoral project because it aligns appropriately with the project. The conceptual framework model will be referred to as the Iowa Model for this project. Since its inception in the early 1990s, The Iowa Model has served as an important framework in guiding the process of evidence-based practice change and has been used in multiple evidence-based projects (Blair et al., 2017; Brown, 2014; Titler et al., 2001). A unique aspect of this model is that it is specifically designed for healthcare workers to have the tools necessary to improve care and move from ideas to implementation.

Several steps to the Iowa Model can be utilized to allow for streamlined practice change. The initial steps include identifying the triggering issues or opportunities for change (Titler et al., 2001). During this step, the issue is identified, the operating entity takes initiative by appraising data and new evidence, and philosophies of care are examined. After the statement of purpose, the Iowa model leads the user to decide whether the topic of improvement is a priority for the organization. In this way, it facilitates buy-in for the organization and encourages the project leaders and key stakeholders to communicate.

Once a team is formed, a thorough and systematic search of evidence is conducted to determine whether sufficient evidence supports the project (Titler et al., 2001). If it is determined that there is sufficient evidence, the team will then design and pilot the practice change. If it is determined that there is not sufficient evidence, further research is conducted, and the team is reassembled. Some key aspects of the pilot phase are engagement of patients, evaluating resources, collecting baseline data, developing an implementation plan, and promoting adoption of the project. If, at that point, the change is appropriate to be adopted into practice, it is

integrated, and the team works to sustain the practice change. At this stage, alternatives are considered if adjustments need to be made, which leads to a redesign of this step. The Iowa Model's final step is disseminating the results, which occurs after all steps have been completed.

Using The Iowa Model as a guide, key issues surrounding increasing exclusive breastfeeding in the outpatient clinic at the project facility were identified. While the project facility's inpatient exclusive breastfeeding rates vary, overall, they are much closer to the national average at 83% before discharge (CDC, 2019). However, there is a sharp decline after discharge, and when infants are seen again by two to three weeks of life, the exclusive breastfeeding rate falls to approximately 30%. This is a primary issue of concern at the project facility. Through interdisciplinary collaboration between the project leader and a pediatrician partner who leads the infant feeding team, the project aims were clarified. There are several triggering issues and opportunities for improvement, which include the imbalance between infants receiving lactation support Monday through Friday and not on the weekends, as well as the current data representing the drop in outpatient breastfeeding rates in the long term. There are several measures in place that validate the importance that the facility places on exclusive breastfeeding. Their mission addresses high-quality, affordable healthcare services that help in improving the health of their members and communities. Additionally, the Perinatal Core Measures require breastfeeding support after discharge for all infants as part of their adherence policy (The Joint Commission, 2022). After reviewing our current breastfeeding statistics in the clinic and meeting with the appropriate leadership, it was determined that improving the project facility's outpatient breastfeeding rates was a priority for the organization.

Team formation began after conceptualization of the project and included close collaboration with the outpatient Pediatrician team, which oversees our clinics in the facility, and

the Chief of Pediatrics began early on. Additionally, approval from the Chief Nursing Officer and the Assistant Medical Group Administrator was obtained. Additional team members included the licensed vocational nurses and registered nurses delivering the survey information to the patients. The next phase of the Iowa Model is to appraise and synthesize the evidence supporting the interventions (Titler et al., 2001). Through a comprehensive literature review which will be detailed later in this proposal, sufficient evidence was found to support the implementation of virtual lactation support groups, which will be implemented in Phase II. Women often experience various challenges that lessen breastfeeding success, like lack of partner support, judgement, and professional support (Brown & Regan, 2019). Virtual support groups offer breastfeeding women an environment where they feel less judged, anxious, and intimidated (Brown & Regan, 2019). Once the body of evidence was assembled and it was confirmed that significant evidence supported the improvement project, the pilot was designed. To understand the issues specific to our population, a survey was designed and disseminated to mothers seen in the outpatient clinic and would help determine the reasons for early cessation of breastfeeding. Before implementation, we educated outpatient physicians, weekday lactation nurses, medical assistants, and nurses in the clinic on the project and offered the survey to mothers who wished to participate.

Review of Literature

Overview

Utilizing literature and the most up-to-date research as the foundation of facilitating change in the clinical setting is fundamental to evidence-based practice and is the foundation of this project. The purpose of this project is to understand why mothers are implementing early cessation of breastfeeding at the project facility. After a thorough review of literature took place, five key themes emerged from the literature a) The importance of breastfeeding success, b) Barriers to breastfeeding success, c) Interventions to support breastfeeding, d) The role of lactation professionals and nurses, e) Virtual lactation support.

Methods of Literature Review

The literature review for this project was conducted via multiple databases, including PubMed, CINAHL, and EBSCO. The search terms utilized included: virtual lactation support, virtual breastfeeding support, telelactation, telehealth and breastfeeding, telehealth and lactation, lactation support and telemedicine, and online breastfeeding support. Other stipulations of the literature search included peer-reviewed journals, policy statements, and organizational position papers. International articles were selected if they pertained to the search terms. The publication dates ranged from 2008 to 2022, this wide range was used due to the limited number of articles found on the topic of lactation and virtual support. Reference lists of relevant studies were also used to search for additional research articles. Several themes emerged after the literature review was completed, which will be reviewed below.

Importance of Breastfeeding Success

Breastfeeding has long since been established as the best source of infant nutrition and offers numerous maternal benefits (AAP, 2012; CDC, 2022). Infants who exclusively breastfeed

have lower rates of infant mortality, less overall illness and hospitalization, fewer cases of viral and bacterial infections, stronger immune systems, and become healthier children and adults, thus, lessening the burden on the healthcare system. Exclusively breastfed infants have decreased risk of respiratory syncytial virus, gastrointestinal issues, ear infections, bacterial meningitis, better vision, lower infant mortality, and lower rates of sudden infant death syndrome (AAP, 2012). Some of the maternal benefits include decreased risk of type two diabetes, decreased risk of female cancers including breast and ovarian cancer, decreased risk of cardiovascular disease and obesity, as well as fewer incidences of post-partum depression (Harder et al., 2005; Schwarz et al., 2009; CDC, 2019; Toledo et al., 2022). Among the decreased risk of multiple medical diagnoses for mothers is the decreased risk of post-partum depression in breastfeeding mothers. Post-partum depression is significantly less in women who successfully breastfeed (Toledo et al., 2022). Untreated post-partum depression can put mothers at a higher risk of anxiety later in life, as well as substance abuse and increased risk of maternal suicide and infant harm (Bernstein et al., 2008). Also, parents of breastfed children have six times less absenteeism from work (Cleveland Clinic, 2022). Due to the vast health benefits for mothers and infants, the risk of not breastfeeding can present additional health risks that contribute to an increased cost to the medical system.

There are various ways in which the lack of breastfeeding longevity increases cost to the healthcare system in the United States. Bartick and Reinhold (2010) predict that if 90% of American households could comply with the breastfeeding recommendations of the AAP of six months exclusively breastfeeding their infant, the United States would save approximately $13 billion per year and prevent almost 1,000 infant deaths. Additionally, infants who breastfeed successfully have a decreased risk of readmission for issues like diarrhea, childhood pneumonia,

and diabetes related issues (Walters et al., 2019). The average cost of a neonatal intensive care unit stay in the United States ranges based on gestational age but is estimated to be approximately 26.2 billion dollars a year in the United States (Cheah, 2019). Not only do infants and children have better outcomes and stay healthier, but so do mothers.

Barriers to Breastfeeding Success and Lack of Provider Support

Breastfeeding success can be highlighted by the lack of challenges and barriers to success a mother experiences. There are several reasons why a mother stops breastfeeding earlier than desired. Multiple barriers to breastfeeding success have been identified including-lack of provider support, racial and ethnic disparities, difficulties with lactation, the effort associated with breastfeeding and pumping, maternal concern for infant nutritional status, as well as social and cultural influences (Sriraman & Kellams, 2016; Odom et al., 2013; Louis-Jacques et al., 2017; Onat & Karakoc, 2020). The role of the provider is incredibly important in lactation, and despite the known benefits of breastfeeding for both infants and mothers, seeking support from their medical providers often leads mothers to a dead end. Providers often admit not knowing how to support a breastfeeding mother (Sriraman & Kellams, 2016). This issue highlights the importance of increased provider training and access to lactation professionals. A provider's personal beliefs, lack of training specific to lactation, and how information is relayed all play a role in the support the mother receives before and post-discharge (Sriraman & Kellams, 2016).

Racial and Ethnic Disparities

Racial and ethnic disparities also appear to decrease a mother's likelihood of breastfeeding long-term. In analyzing the rates of BF infants, Caucasian infants have 85.3%, Asian infants have 92.4%, and non-Hispanic Black infants have 75.5%, representing the lowest rates of any amount of breastfeeding reported (CDC, 2019). Additionally, infants eligible and

receiving Women, Infants, and Children (WIC) support are less likely than those not to breastfeed, with those who do being at a 76.9% ever breastfed rate compared to an 83.3% ever breastfed rate (CDC, 2019). Additionally, the issue of implicit bias and institutional inequality contributes negatively to the breastfeeding rates of Black and non-white breastfeeding mothers (Thomas, 2018). Also, mothers with lower income and less education have fewer documented breastfeeding days than those with higher (Onat & Karakoc, 2020). Social and cultural influences also affect how mothers obtain access to breastfeeding information and resources, maternal perception of breastfeeding benefits, and contributes to myths and perceptions between sexuality and functionality of breasts (Sriraman & Kellams, 2016).

Maternal Perception of Inadequate Supply

The concern for infant nutritional status has been identified as one of the primary reasons for discontinuing breastfeeding, which is commonly a maternal perception of inadequate milk supply rather than an actual physiologic problem, as less than 5% of mothers are unable to produce enough milk for their infants (Odom et al, 2013). Mothers believe that they cannot produce enough milk to nutritionally sustain their child. While the research on this perception is not robust, the data from the CDC reported rates (2019) do show a sharp decline in exclusive breastfeeding at one month (57.8%) as compared to those at birth (83.9%), which could speak to the decline in breastfeeding based on maternal perception of decreased milk supply surrounding the 2 week and 1 month growth spurts. While maternal perception of inadequate milk supply exists whether there is a milk supply challenge or not, actual breastfeeding challenges are another contributing factor to the decrease in breastfeeding longevity and the effort and time it takes to pump (Odom et al., 2013).

Community and Workplace Challenges

Community and workplace challenges are also likely to contribute to decreased breastfeeding success. The Healthy People 2020 goals include increasing the amount of lactation support in the workplace, and multiple public outcries have taken place addressing the need to increase lactation support in the workplace, including provisions within the Affordable Care Act (ACA), as well as the Surgeon General's Call to Action to Support Breastfeeding, (CDC, 2011) which addresses employer support of lactation. According to the Agency for Healthcare Research and Quality (AHRQ, 2018), some of these challenges include a lack of policy that supports a breastfeeding woman in the workplace, lack of maternal education regarding rights that protect a breastfeeding mother in the workplace, and lack of support for pumping in the workplace.

These barriers are contributing factors that cause women in the United States to breastfeed for much less time than the American Academy of Pediatrics recommends (Sriraman & Kellams, 2016). The American Academy of Pediatrics recommends that infants be breastfed exclusively for 6 months and up to one year and beyond; however, only 35% of infants are breastfed for one year of life (CDC, 2019), which is less than half of the American Academy of Pediatrics recommendations (AAP, 2012). While there are multiple challenges associated with breastfeeding for today's busy mothers, there are many interventions trained professionals can implement to support the breastfeeding mother.

Interventions to Support Breastfeeding

The more intervention a mother receives to support breastfeeding, the more successful she is (van Dellen et al., 2019; McCoy et al., 2018; Nilsson et al., 2016). Interventions can be categorized by many features: those performed by hospital staff, support from peer groups, or

education by lactation specialists. There is a clinically significant direct relationship between the number of interventions the hospital has that support breastfeeding before discharge and their exclusive breastfeeding rates. In a study by Barrera et al. (2019), the Maternity Practice in Infant Nutrition and Care (mPINC) scores were utilized to demonstrate how interventions within the hospital setting improved exclusive breastfeeding rates. Scores are reported out typically by the unit manager and reflect the number of interventions the hospital has in place that directly support breastfeeding. Such interventions include early initiation and support of breastfeeding, skin-to-skin, rooming in, and even post-discharge breastfeeding support (Barrera et al., 2019). Barrera et al., 2019 showed that hospitals that reported lower mPINC scores had lower exclusive breastfeeding rates, and as mPINC scores increased in each quartile, so did exclusive breastfeeding rates ($p<0.0001$).

Additionally, the implementation of hospital policies and support programs, both inpatient and after discharge, improve maternal health outcomes in developed countries (AHRQ, 2018). One of the most widely known programs in support of breastfeeding is the Baby Friendly Hospital Initiative's (BFHI) Ten Steps to Successful Breastfeeding, which originated in 1991 with the support of the World Health Organization and United Nations Children's Fund. The goal of the BFHI was to improve breastfeeding rates by creating an environment of increased education of breastfeeding mothers and increased education of hospital staff through implementing their Ten Steps to Successful Breastfeeding (BFHI, 1991). Whether there is a formal program like the BFHI in place or not, facility policies that increase staff education, increase guidelines in support of breastfeeding, and provide outpatient breastfeeding support all have been shown to increase breastfeeding longevity in their patient populations (AHRQ, 2018).

In addition to hospital support, peer-to-peer support has been shown to increase breastfeeding duration as well.

Peer-to-Peer Support

Peer-to-Peer support can be defined as the support a mother receives from another mother within the community who may not necessarily be formally trained in lactation (McCoy et al., 2018). Peer-to-Peer support leads to decreased risk of discontinuation of breastfeeding, increased likelihood of breastfeeding continuation through 12 months of life and is most beneficial in communities with already low breastfeeding initiation rates and is particularly beneficial in areas that may lack professional lactation support like that of a Lactation Educator or Lactation Consultant (McCoy et al., 2018). Peer-to-Peer support can be facilitated in an organized and structured environment, like a clinic or hospital facility, or in a less formal environment, like meetings facilitated through community support or 'moms-to-moms' groups. Breastfeeding counseling is also shown to be beneficial when early discharge from the inpatient setting after delivery is the norm, as is the case in the project facility, with higher rates of skin-to-skin, better latch, and positioning, increased exclusive breastfeeding rates at six months, fewer issues of infant weight loss or dehydration, and enhanced paternal involvement in the breastfeeding experience (Nilsson et al., 2016). Peer-to-Peer support also appears to be particularly beneficial amongst populations at a higher risk of shorter breastfeeding durations, like Black and Hispanic breastfeeding mothers. (McCoy et al., 2018). In addition to the broad range of breastfeeding support accessible to nursing mothers, lactation professionals are a vital component of the breastfeeding couplet and offer a broad range of specialized skills that are well-documented to support breastfeeding mothers and infants.

The Role of Lactation Professionals and Nurses

Lactation professionals and nurses are important in breastfeeding longevity and maternal support (Nilsson et al., 2016; Spatz, 2010; van Dellen et al., 2019). While there are a variety of different professionals that can be trained in lactation support both in the inpatient setting and in the outpatient setting, the International Board Certified Lactation Consultant (IBCLC) is specially trained to support breastfeeding through a specific skill set, and IBCLCs have been shown to improve the breastfeeding process for breastfeeding couplets in a variety of ways, including positively affecting the longevity and experience of the breastfeeding mother (Morris & Gutowski, 2015; Patel & Patel, 2015). While the research suggests that the more interventions the mother receives in support of breastfeeding as previously discussed in this review of literature, lactation consultants and certified lactation counselors (CLCs) are the most effective in support of breastfeeding. Mothers seen by IBCLCs and CLCs compared to those who didn't have higher breastfeeding initiation rates, increased breastfeeding duration, increased numbers of any breastfeeding reported, increased exclusive breastfeeding rates, and better maternal and infant health outcomes (Patel & Patel, 2015).

Nurses trained in lactation support are also very important to breastfeeding success, and while very little lactation education is typical during nursing school, several programs are available for nurses to become lactation educators or lactation consultants, including the University of California, San Diego lactation programs, as well as some local to the project facility, like the Grow Your Own program. Nurses also receive education through their work facility. Programs like the (BFHI) require specific steps that a facility must complete to be certified as 'Baby Friendly' (Baby Friendly USA, 1991). All education and training are given to those working with breastfeeding mothers directly affect the outcome of their breastfeeding

experience. The more support a mother receives by someone given specialized training, the more likely she is to have a more positive experience and breastfeed longer. While breastfeeding support can occur in person, virtual support, as was demonstrated through the Covid-19 pandemic and the long-time use of telemedicine, shows great potential in offering breastfeeding support to breastfeeding mothers.

Virtual Lactation Support

Telelactation provides clinical lactation assistance virtually and has proven to be a feasible method of delivering lactation support in the face of limited resources (Demirci et al., 2019; Kapinos et al., 2019; Majors & Unangst, 2021; Uscher-Pines et al., 2019). While the utilization of telemedicine for a broad range of specialties only increases yearly, the Covid-19 pandemic forced facilities to be creative in their care. Many facilities saw an exponential increase in their utilization of telemedicine, far above the normal increases seen each year pre-pandemic (Friedman et al., 2021). While telemedicine originated many years ago, the idea of telelactation is a newer concept that has grown since Covid-19. It can be useful in increasing breastfeeding rates in the outpatient setting. Telelactation is a term derived from the virtual support of breastfeeding mothers, and allows for expert advice, virtual lactation support, the troubleshooting of breastfeeding challenges, and access to specially trained lactation professionals via the internet or app support. Telelactation can be especially useful in mothers who live remotely or cannot be physically present in a clinical or hospital setting and may help increase the breastfeeding rates of high-risk mothers.

Telelactation can contribute to increasing breastfeeding longevity in women who participate. Often, one contributing factor to decreased breastfeeding success is lack of access to vital resources and specially trained professionals who can assist with troubleshooting

challenging issues. Utilizing virtual lactation support, breastfeeding mothers can access assistance in the comfort and safety of their own homes. Additionally, in one study, mothers who received virtual lactation assistance had a 69% exclusive breastfeeding rate, higher than the national average of approximately 55% at six weeks of life (CDC, 2019; Stopsky & Benneche, 2021).

Telelactation may provide advantages that in-person consults do not. Several themes have emerged from the discussion of virtual lactation support with mothers, and while there is an increased need for additional support and security when delivering such sensitive care via the internet, overall, many of the maternal opinions regarding virtual lactation support are positive. Mothers verbalized feeling an increased level of support, knowing that someone was always available to help them and troubleshoot their challenges. These mothers enjoyed an increase in breastfeeding success, feelings of convenience due to the method of support provided virtually, ability to address a wide range of issues including latch and positioning, engorgement, and pain, as well as the ability to bridge the gap between discharge and pediatrician visits (Demirci et al., 2019. In addition to the maternal perception of the benefits, outpatient virtual lactation support has proven to be less costly than in-person visits, potentially leading to increased support of telelactation programs (Uscher-Pines et al., 2017). Some mothers may also feel an increased sense of comfort in receiving virtual support without the possibility of being physically touched, which can sometimes be a barrier to an in-person consultation (Uscher-Pines et al., 2017). Additionally, due to the nature of the virtual lactation consult, mothers may experience an increase in self-efficacy by receiving professional assistance by implementing those recommendations independently (Uscher-Pines et al., 2017). While virtual lactation support may

be a newer concept, there are many very promising aspects that suggest that its implementation can lead to increased breastfeeding success.

Methods

Currently, the average births per month at the project facility are approximately between 120 to 150. Patients receive lactation support Monday to Friday after discharge with no lactation support provided on the weekends. This project aims to understand the contributing factors of early cessation of breastfeeding at the outpatient clinic. Anonymous surveys were completed voluntarily by patients at their two to three week visit after discharge. All personal information was deidentified. Patients were given an informational flyer explaining the project that included a QR code that allowed the survey to be accessible virtually and in both Spanish and English.

Design

This Pilot Quality Improvement Project was implemented utilizing the Iowa Model and descriptive statistics to collect information regarding early breastfeeding cessation. All mothers regardless of breastfeeding status or breastfeeding exclusivity were offered to participate. Participants in this project were breastfeeding couplets who were discharged and seen at the outpatient clinic between two to three weeks of the infant's life. Data from the multiple-choice survey was gathered to evaluate the contributing factors surrounding the early cessation of breastfeeding, and some questions included in the survey highlighted desired length of breastfeeding, whether the mother had begun supplementing with formula by two to three or not, and provided an open space for the mother to type in her own words the reasons that she began formula supplementation.

Setting

The project facility is a 94-bed hospital that serves a low-income community with an average yearly salary of $26,804 per household (United States Census Bureau, 2019). The labor and delivery unit houses 11 beds that double as recovery and post-partum rooms and delivers

approximately 120 to 150 babies a month. Since December 2021, the inpatient breastfeeding rates have been greater than 75% exclusive breastfeeding, meaning no formula was given to 75% or more of our babies born every month. The unit houses 36 labor and delivery nurses and 19 post-partum nurses, 13 nursery nurses, five surgical techs, with two lactation consultants and no certified nursing assistants. The outpatient clinic where the survey was completed sees most newborns born at the project facility and comprises pediatricians, registered nurses, licensed vocational nurses, and medical assistants, all supporting patient care.

Participants

Most of the members at the project facility were low-income women who qualify for WIC. Women would qualify for the project if they delivered their babies during the hospital stay during the month that the project was taking place. They would be discharged and receive their follow-up care at the outpatient clinic associated with the project facility. Women would not be included in the project if they did not desire to do so. The project aimed to collect 60 couplets to participate. Couplets were gathered via convenience sampling.

Ethical Considerations

Internal Review Board approval was granted and permission to conduct the project was given by key stakeholders within the facility. Participation in this project was voluntary and mothers were open to decline. Mothers were able to discontinue their participation in the project at any time. An informational sheet about the project and survey was provided and all information regarding the project was relayed to the mother. The survey was completely anonymous with no identifying information included. All information was kept confidential, and password protected on a laptop in a locked lactation office.

Procedure

As guided by the Iowa model, this project began by identifying a clinical issue that was important to the organization: a decrease in breastfeeding rates after discharge. Currently, there is a significant decline in breastfeeding exclusivity from the inpatient breastfeeding rates, which hovers just below eighty percent, and from the time the infants are seen again in the clinic at two to three weeks of life, which is approximately thirty percent. Therefore, once the priority topic was identified, the supporting research was gathered. It was determined that there was sufficient research to support implementation of the project, and then a team was assembled. The team consisted of the project lead, who is an inpatient lactation and bedside nurse, a pediatrician who is the breastfeeding champion for the Riverside service area at the project facility, and the Chief of Pediatrics. The Pilot Quality Improvement Project was designed to consider the current process and how it could be improved. After Internal Review Board approval, recruitment was immediately started.

Upon discharge, qualifying mothers received an offer to participate in the project and were given an informational flyer with a description of the study and a QR code which made the survey accessible. Results of the survey were analyzed and interventions to improve breastfeeding rates will be tailored to the results of the survey. The breastfeeding rate is calculated by dividing the total number of infants born at the project facility in one month by the number of infants having only received breastmilk and no formula. Once the reasons of early cessation are determined, practice change will be integrated and sustained, and results will be disseminated.

Data Analysis and Evaluation

Data was collected by the project lead, who also entered, stored, and analyzed it in a password protected facility computer that was stored in a locked office, which only the project lead and other lactation nurses had access to. The data analyzed included descriptive statistics and information collected form the survey. Sixty surveys were collected over the course of one month in February 2023 from mothers whose infants age ranged from seven days to 21 days old. The information captured in the survey included method of delivery, age of the infant at the time the survey was completed, whether this was the mother's first baby or not, the mother's desired feeding plan, whether the mother participated in any breastfeeding education or not prior to delivery, any support received both inpatient and outpatient, their goal for duration of breastfeeding, and if they started supplementing what the reason for starting was. The project lead transcribed the information from the survey into Excel. Data was analyzed utilizing Intellectus, and demographic data was analyzed using descriptive statistics. Correlational statistics were utilized to determine a relationship among variables.

Results

Breastfeeding Support After Discharge and Breastfeeding Exclusivity

Results of the survey were analyzed using Intellectus software. A total of 60 surveys were collected anonymously from mothers whose infants ranged in age from less than seven days old to greater than twenty-eight days old. Descriptive statistics was utilized to analyze the data in addition to a Chi-square Test of Independence. The Chi-square Test of Independence was conducted to examine whether mothers who received breastfeeding support after discharge and breastfeeding exclusivity were independent and whether there was a relationship between breastfeeding exclusivity and whether it was the mothers' first baby or not.

The results of the Chi-square test for breastfeeding exclusivity and help after discharge were not significant based on an alpha value of .05, $\chi^2(1) = 0.63$, $p = .427$, suggesting mothers who received breastfeeding support after discharge breastfeeding exclusivity could be independent of one another. This implies that the observed frequencies were not significantly different from the expected frequencies.

Appendix D presents the results of the Chi-square test. Descriptive statistics were used to analyze survey results including reasons for supplementation, method of delivery, type of support received before and after discharge if any, age of the infant when formula use began, breastfeeding plan prior to delivery, current age of the baby at the time the survey was completed, status of breastfeeding exclusivity at time of survey completion, and goal of breastfeeding exclusivity prior to delivery. Of all sixty mothers surveyed, 52% received breastfeeding support after discharge, and 48% did not.

Breastfeeding Exclusivity and First Baby

Appendix E presents results of the Chi-square test examining whether there was a relationship between breastfeeding exclusivity and whether it was the mothers' first baby or not. The results of the Chi-square test were not significant based on an alpha value of .05, $\chi^2(1) = 0.90$, $p = .342$, suggesting that Is this your first baby and Breastfeeding exclusivity could be independent of one another. This implies that the observed frequencies were not significantly different than the expected frequencies. Table 2 presents the results of the Chi-square test.

Reasons for Formula Supplementation

Appendix F represents reasons stated by mothers for formula supplementation. Twenty-five percent of mothers stated that they gave formula because they believed that they were not making enough milk. 15% of mothers cited being told by their provider that they needed to supplement with formula, 10% stated it was their personal choice without citing what specific factors led to that choice, 6.68% stated they had problems with latching, and 2% stated they needed to return to work. The remaining 40% of mothers did not answer.

Place of Delivery, Age of Baby, Breastfeeding Support, and Breastfeeding Goals

Appendix G demonstrates findings for place of delivery, age of baby at the time the survey was conducted, breastfeeding support received in hospital and after discharge, and breastfeeding goals of the mother at the time the survey was completed. Of the 60 mothers anonymously surveyed, 73% stated they delivered at the project facility, and 27% stated they delivered at an outside facility. The most common age of babies was 15-21 days old with 43% falling into that category. 37% of babies were between 22-28 days old, and the remaining categories of 0-7 days old, eight to 14 days old, and greater than 28 days old all had 7% of infants. 90% of mothers stated that they received breastfeeding support of some kind during

hospitalization and 10% stated they did not, 52% stated they received breastfeeding support after discharge, and 48% did not. When asked their breastfeeding goals, 7% stated they wished to breastfeed for one month or longer, 5% stated they wished to breastfeed for two months or longer, 7% stated they wished to breastfeed for three months or longer, 3% stated they wished to breastfeed for four months or long, 5% stated they wished to breastfeed for 5 months or longer, 25% stated they wished to breastfeed for six months or longer, and 43% stated they wished to breastfeed for 12 months or longer. Five percent of mothers did not answer the question.

Delivery Method and Breastfeeding Exclusivity

Appendices H and I display data collected regarding breastfeeding exclusivity and method of delivery. The data was analyzed to determine if there was a relationship between breastfeeding exclusivity and delivery method, and results showed that there appeared to be no relationship between breastfeeding exclusivity and method of delivery. Of all 60 mothers surveyed, 22% delivered their infant by c-section. Of the mothers who delivered by c-section, 46% did not exclusively breastfeed, and 54% did, demonstrating an almost even distribution. The remaining 78% of mothers who delivered by vaginal delivery had an exclusive breastfeeding rate of 53%, 47% supplementing with formula. Again, these numbers demonstrated an almost 50% distribution among categories.

Age of Baby When Formula Was First Given

Appendix J demonstrates the age of infants when formula supplementation began. Of the 60 participants who completed the survey, 47% were formula-feeding. 32% of formula-feeding mothers did not answer the question regarding how old their infant was when formula was started. Formula-feeding mothers fell into six categories. 29% stated their baby was one day old when formula was first given, 11% stated their baby was two days old when formula was given,

11% stated their baby was three days old when formula was first given, seven percent stated their baby was four days old when formula was first given, seven percent stated their baby was one week old when formula was given, and four percent stated their baby was 16 days old when formula was first given.

Types of Breastfeeding Support Received

Appendix K demonstrates the various combinations of answers given by participants when asked about the type of breastfeeding support they received. Options included obstetrician office staff providing breastfeeding education, Obstetrician/ Gynecologist/ Pediatrician/ Midwife support and education, nurses in the unit they delivered providing breastfeeding support after delivery, the lactation nurse providing breastfeeding support after delivery, and an option for mothers to state any other resources they received in support of breastfeeding.

Breastfeeding Goals Prior to Delivery and First Baby

Appendices L and M demonstrate the stated breastfeeding goals of mothers prior to delivery and whether it was their first baby or not. The three categories stated when asked how they planned to feed their baby was either exclusive breastfeeding, breastfeeding and formula, or exclusive formula. Approximately 62% of mothers stated that they desired to exclusively breastfeed their infants. 37% stated that they wished to formula feed and breastfeeding, and 2% stated they wished to feed their infant exclusively formula. Table 10 shows that of all 60 mothers surveyed, 40% were first time mothers and 60% were not.

Discussion and Recommendations

Implications

The findings of this survey were relevant to changing practice in the clinical setting at the project facility, and offered mothers an anonymous platform to discuss what challenges they were having with breastfeeding and how they might be fixed. Survey findings supported the research that suggests that there are several key reasons that mothers stop breastfeeding earlier than their desired goal. Survey results demonstrated that the most common reasons for early cessation of breastfeeding were maternal perception of insufficient supply, provider recommendation, and trouble with breastfeeding, which is supported by the research.

Additionally, findings of the survey suggest that formula supplementation is happening much sooner than was hypothesized by the project leads and for reasons other than was hypothesized as well. Originally, given the comparatively high exclusive breastfeeding rates of almost 80% inpatient, it was thought that formula was started between the time of discharge and the commonly struggled-through two-week growth spurt. However, the findings of this project suggest that formula is most commonly started before day of life four. There are several recommendations that were formulated because of this project, which will be discussed below.

Weekend Lactation Support

Several important findings relevant to change in clinical practice were made evident because of this pilot quality improvement project. One of the initial research questions focused on the idea of whether those that received outpatient lactation support would have higher exclusive breastfeeding rates than those that did not, and the project leads were of the assumption that because so many patients were not receiving breastfeeding assistance after discharge, this was negatively impacting our breastfeeding rates. Based on day of birth and pediatrician

recommendation, infants discharged and requiring a weekend appointment are currently not receiving lactation support after discharge. The results of this study demonstrated that approximately half of the patients seen in the outpatient clinic are not receiving lactation support. As a facility that prides itself on equal opportunity and equity for all patients and values preventative health and medicine heavily, we now have data that suggests that not all patients are receiving equal support, which would bring to light the recommendation that weekend lactation support begin at the project facility and that all patients, regardless of day of birth, are equally supported and offered the opportunity to see a lactation consultant.

Maternal Education on Appropriate Milk Supply

When asked to state reasons why formula was started, 25% of mothers stated that they perceived to have an inadequate supply. Based on these findings, it would be important to educate mothers on the expected daily intake of infants and the way in which that can vary according to days of life and growth spurts. Additionally, mothers would benefit from education regarding indications for formula supplementation and the normalcy of infant feeding patterns based on age.

Increased Prenatal Breastfeeding Education and Support

One interesting finding from the survey results was how soon that formula was started. Of the mothers who answered the question of how old their infant was when formula was started (29 mothers), 55% stated that they started formula within 4 days of life. This was much sooner than hypothesized by the project leads and would suggest that early prenatal education on the benefits of breastfeeding and potential risks of formula use would be very beneficial to the mothers delivering at the project facility. This recommendation is further supported by the fact

that only 62% of mothers stated they wished to exclusively breastfeed when asked prior to delivery.

Increased Pediatrician Education on Breastfeeding Support

The second most frequently occurring reason that mothers stated they began formula supplementation was due to provider recommendations. This leads to many questions and given the fact that the survey was anonymous would warrant further investigation. However, education and support for providers on breastfeeding benefits to mother and baby including benefits of exclusively breastfeeding and potential risks of formula use may be beneficial. This recommendation by providers also speaks the importance of early breastfeeding support and eliminating indications for formula use, such as excessive weight loss, decreased diaper output, complications of elevated bilirubin, and many more.

Limitations

This project had several limitations. This project was only able to include 60 surveys by mothers due to time constraints to collect the data and the amount of time it took to achieve Internal Review Board approval. The number of surveys collected represents approximately half the number of deliveries in a month, but had more time been allotted for data collection, the number of surveys would have been larger, providing a more substantial sample size and potentially allowing for increased statistical significance. Another limitation was that this project was based on self-reported subjective information and anonymously. While this did potentially increase the participants likelihood of being forthcoming and truthful, it removed any possibility of verifying the accuracy of the information received on the surveys. Additionally, surveys were collected at one outpatient clinic from a majority of patients who delivered at the same inpatient facility, and this lack of diversity in patient population decreases generalizability. The study

design created another limitation. The purpose of the survey was to determine the reasons why mothers were supplementing with formula and when. However, had the design of the study allowed for pre and post interventions, the results would potentially have been more reliable and had increased accuracy.

Conclusions

Although the benefits of breastfeeding to both mother and baby are widely known, mothers in the United States still appear to struggle with long-term exclusive breastfeeding. Many mothers stop breastfeeding sooner than desired and while the reasons for early cessation are also cited in the literature, the project facility still struggles with these issues. While we know that mothers stop breastfeeding sooner than desired, knowing the reasons why formula supplementation begins is vital to breastfeeding success. Early prenatal education on the benefits of breastfeeding to mother and baby can assist with increasing the likelihood of mothers desiring to breastfeed. Additionally, offering early and consistent support both during hospitalization for delivery and after discharge to all mothers and increasing provider education and support of breastfeeding is vital as well. Healthcare settings that serve the maternal child population need to be aware of the challenges new mothers are facing and increase support provided to address this unique and vulnerable patient population.

References

Agency for Healthcare Research and Quality. (2018). Breastfeeding programs and policies, breastfeeding uptake, and maternal health outcomes in developed countries. https://www.ncbi.nlm.nih.gov/books/NBK525106/

American Academy of Pediatrics. (2012). Breastfeeding and the use of human milk. https://publications.aap.org/pediatrics/article/129/3/e827/31785/Breastfeeding-and-the-Use-of-Human-Milk

American Academy of Pediatrics. (2022). Policy statement: Breastfeeding and the use of human milk. https://publications.aap.org/pediatrics/article/150/1/e2022057988/188347/Policy-Statement-Breastfeeding-and-the-Use-of?autologincheck=redirected&_ga=2.174856682.915339506.1684297822-1715829916.1684297821

Baby Friendly USA. (1996). The ten steps to successful breastfeeding. https://www.babyfriendlyusa.org/

Barrera, C., Beauregard, J., Nelson, J., & Perrine, C. (2019). Association of maternity care practices and policies with in-hospital exclusive breastfeeding in the United States. *Public Health and Policy, 14*(4), 243-248. https://doi.org/10.1089/bfm.2018.0196

Bartick, M & Reinhold, A. (2010). The burden of suboptimal breastfeeding in the United States: a pediatric cost analysis. *Pediatrics*, *125*(5), e1048-56. https://doi.org/10.1542/peds.2009-1616

Bernstein, I., Rush, A., Yonkers, K., Carmody, T., Woo, A., McConnell, K., & Trivedi, M. (2008). Symptom features of post-partum depression: Are they distinct? *Depression and Anxiety*, *25*(1), 20–26. https://doi.org/10.1002/da.20276

Binns, C., Lee, M., & Low, W. (2016). The long-term public health benefits of breastfeeding. *Asia-Pacific Journal of Public Health, 28*(1), 7-14. https://doi.org/10.1177/1010539515624964

Blair, K., Eccleston, S., Binder, H., & McCarthy, M. (2017). Improving the patient experience by implementing an ICU diary for those at risk of post-intensive care syndrome. *Journal of Patient Experience, 4* (4-9). https://doi.org/10.1177/2374373517692927

Brown, C. (2014). The Iowa model of evidence-based practice to promote quality care: An illustrated example in oncology nursing. *Clinical Journal of Oncology Nursing*, *18*(2), 157-159. https://doi.org/10.1188/14.cjon.157-159

Brown, A. & Regan, S. (2019). Experiences of online breastfeeding support: Support and reassurance versus judgement and misinformation. *Maternal and Child Nutrition, 15*(4). https://doi.org/10.1111/mcn.12874

Centers for Disease Control and Prevention. (2011). The surgeon general's call to action to support breastfeeding. https://www.cdc.gov/breastfeeding/resources/calltoaction.htm

Centers for Disease Control and Prevention. (2019). Breastfeeding among U.S. born 2012-2019 CDC national immunization survey. https://www.cdc.gov/breastfeeding/data/nis_data/results.html

Centers for Disease Control and Prevention. (2022). *Nutrition, physical activity, and obesity: data, trends, and maps.* https://www.maps.cdc.gov.https://nccd.cdc.gov/dnpao_dtm/rdPage.aspx?rdReport=DNPAO_DTM.ExploreByLocation&rdRequestForwarding= Form

Cheah, I. (2019). Economic assessment of neonatal intensive care. *Translational Pediatrics, 8*(3), 246-256. https://doi.org/10.21037/tp.2019.07.03

Cleveland Clinic. (2022). The Benefits of Breastfeeding for Baby & for Mom. https://my.clevelandclinic.org/health/articles/15274-the-benefits-of-breastfeeding-for-baby--for-mom

Demirci, J., Kotzias, V., Bogen, D., Ray, K., & Uscher-Pines, T. (2019). Telelactation via mobile app: perspectives of rural mothers, their care providers, and lactation consultants. *Telemedicine and E-Health 25*(9), 853-858. https://doi.org/10.1089/tmj.2018.0113

Friedman, A., Gervasi, S., Song, H., Bond, A., Chen, A., Bergman, A., David, G., Bailey, J., Brooks, R., & Smith-McLallen, A. (2021). Telemedicine catches on: Changes in the utilization of telemedicine services during the COVID-19 pandemic. *American Journal of Managed Care, 28*(1), e1-e6. https://doi.org/10.37765/ajmc.2022.88771

Gawlinski, A. & Rutledge, D. (2008). Selecting a model for evidence-based practice changes. *AACN Advanced Critical Care, 19*(3), 291-300. https://doi.org/10.1097/01.AACN.0000330380.41766.63

Harder, T., Bergmann, R., Kallischnigg, G., & Plagemann, A. (2005). Duration of breastfeeding and risk of overweight: A meta-analysis. *American Journal of Epidemiology, 162*(5), 397-403. https://doi.org/10.1093/aje/kwi222

Horta, B., & Victora, C. (2013). The long-term effects of breastfeeding: A systematic review. *World Health Organization.* https://apps.who.int/iris/handle/10665/79198

The Joint Commission. (2022). Perinatal core measures. https://www.jointcommission.org/measurement/measures/perinatal-care/

Kapinos, K., Kotzias, V., & Bogen, D. (2019). The use of and experiences with telelactation among rural breastfeeding mothers: secondary analysis of a randomized controlled trial. *Journal of Medical Internet Research, 21*(9), 1-8. https://doi.org/10.2196/13967

Louis-Jacques, A., Deubel, T., Taylor, M., & Stuebe, A. (2017). Racial and ethnic disparities in U.S. breastfeeding and implications for maternal and child health outcomes. *Seminars in Perinatology, 41, 299-307.* http://doi.org/10.1053/j.semperi.2017.04.007

Majors, L., & Unangst, M. (2021). Retrospective analysis of a nationwide telelactation program. *Clinical Lactation*, *12*(2), 91–100. https://doi.org/10.1891/CLINLACT-D-20-00009

McCoy, M., Geppert, J., Dech, L., & Richardson, M. (2018). Associations between peer counseling and breastfeeding initiation and duration: An analysis of Minnesota participants in the special supplemental nutrition program for women, infants, and children (WIC). *Maternal Child Health, 22*, 71-81. https://doi.org/10.1007/s10995-017-2356-2

Morris, C., Gutowski, J. (2015). The effect of an international board-certified lactation consultant in the pediatric primary care setting on breastfeeding duration and exclusivity during the first year of life. *Clinical Lactation* 6(3), 109-116. https://doi.org/10.1891/2158-0782.6.3.109

Nilsson, I., Standberg-Larsen, K., Knight, C., Hansen, A., & Kronborg, H. (2017). Focused breastfeeding counselling improves short and long-term success in an early-discharge setting: A randomized study. *Maternal and Child Nutrition, 13*(12), 1-10. https://doi.org/10.1111/mcn.12432

Odom, E., Ruowie, L., Scanlon, K., Perrine, C, & Grumer-Strawn, L. (2013). Reasons for earlier than desired cessation of breastfeeding. *Pediatrics*, *131*(3), e726-e732. https://doi.org/10.1542/peds.2012-1295

Onat, G. & Karakoc, H. (2020). Three spirals: breastfeeding problems, growth spurts, and post-partum depression. *Perspectives in Psychiatric Care, 57,* 760-776. https://doi.org/10.1111/ppc.12612

Patel, S. & Patel, S. (2015). The effectiveness of lactation consultants and lactation counselors on breastfeeding outcomes. *Journal Human Lactation*, *32* (3), 530-541. https://doi.org/10.1177/0890334415618668

Schwarz, E., Ray, R., Stuebe, A., Allison, M., Ness, R., & Freiberg, M. (2009). Duration of lactation and risk factors for maternal cardiovascular disease. *Obstetrics & Gynecology, 113*(5), 974-982. https://doi.org/10.1097/01.AOG.0000346884.67796.ca

Spatz, D. (2010). The critical role of nurses in lactation support. *Journal of Obstetrics, Gynecology, and Neonatal Nursing*. *39*(5), 499-500. https://doi.org/10.1111/j.1552-6909.2010.01166.x

Sriraman, N. & Kellams, A. (2016). Breastfeeding: what are the barriers? Why women struggle to achieve their goals. *Journal of Women's Health 25(*7), 714-722. https://doi.org/10.1089/jwh.2014.5059

Stopsky, L., & Benneche, K., (2021). The creation of telelactation during the covid-19 crisis. *Journal of Obstetrics and Gynecology, 50,* s42-47. https://doi.org/10.1016/j.jogn.2021.08.080

Thomas, E. (2018). "Why even bother; they are not going to do it?" The structural roots of racism and discrimination in lactation care. *Qualitative Health Research, 28*(7), 1050-1064. https://doi.org/10.1177/1049732318759491

Titler, M., Kleiber, C., Steelman, V., Rakel, B., Budreau, G., Everett, L., Buckwalter, K., Tripp-Reimer, T., & Goode, C. (2001). The Iowa model of evidence-based practice to promote quality care. *Critical Care Nursing Clinics of North America*, *13*(1), 497-509.

Toledo, C., Cianelli, R., Villegas Rodriguez, N., De Oliveira, G., Gattamorta, K., Wojnar, D., & Ojukwu, E. (2022). The significance of breastfeeding practices on post-partum depression risk. *Public Health Nursing, 39*(1), 15-23. https://doi.org/10.1111/phn.12969

United States Census Bureau. (2019). *Quickfacts Moreno Valley,* https://www.census.gov/quickfacts/fact/table/morenovalleycitycalifornia/POP010210

Uscher-Pines, L., Mehrotra, A., Bogen, D. (2017). The emergence and promise of telelactation. *American Journal of Obstetrics and Gynecology,* 176-179. https://doi.org/10.1016/j.ajog.2017.04.043

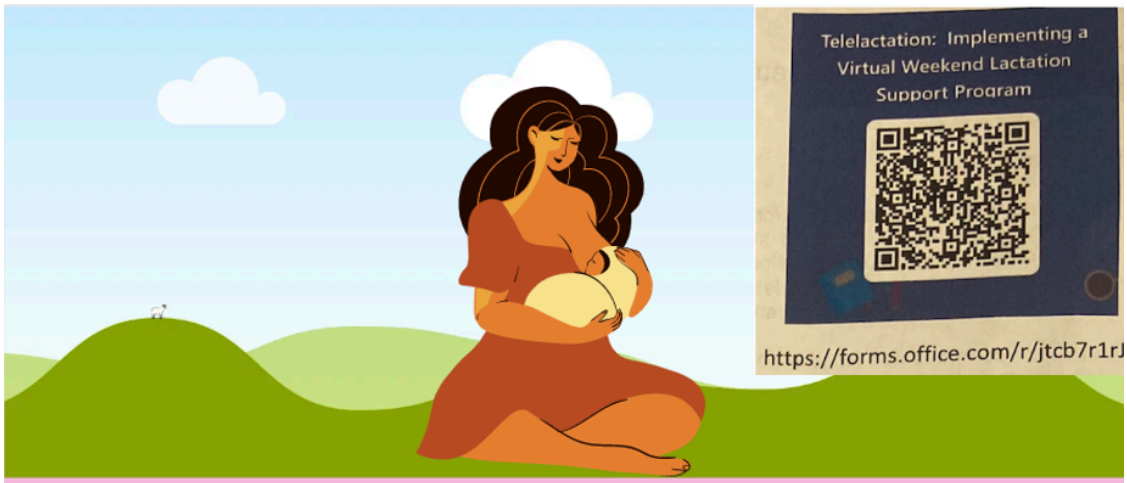
Uscher-Pines, L., Dastidar-Ghosh, B., Bogen, D., Ray, K., Demirci, J., Mehrotra, A., & Kapinos, K. (2019). Feasibility of effectiveness of telelactation among rural breastfeeding women. *Academic Pediatrics, 20*(5), 652-670. https://doi.org/10.1016/j.acap.2019.10.008

van Dellen, S., Wisse, B., Mobach, M., & Dijkstra, A. (2019). The effect of a breastfeeding support programme on breastfeeding duration and exclusivity: a quasi-experiment. *BMC Public Health,* 19(1), 1-13. https://doi.org/10.1186/s12889-019-7331-y

Walters, D., Phan, L., & Mathisen, R. (2019). The cost of not breastfeeding. *Health Policy & Planning*, 34, 407-417. https://doi.org/10.1093/heapol/czz050

Appendix A

English Recruitment Flyer



Interested in improving breastfeeding rates?

Whether you're a first-time mom or a seasoned breastfeeder, we want to learn more about you! Our unit is conducting a test project (Telelactation: Implementing a Virtual Weekend Support Program) where we will be handing out a completely anonymous survey to our new mothers in hopes that we can understand what's going well and what's been challenging about your breastfeeding journey so we can help you!

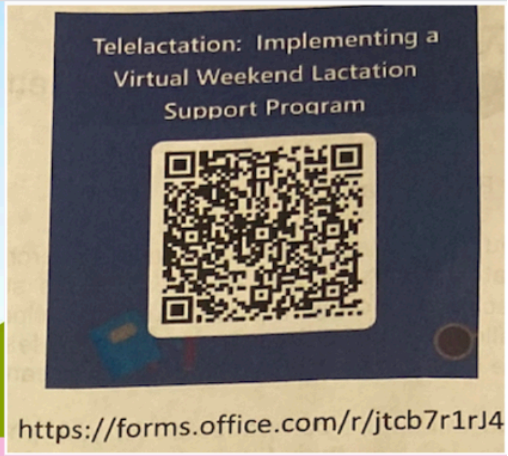
Participants will be given a completely anonymous survey that will tak no more than 5 minutes to complete. The biggest risk to you is being asked personal questions about your breastfeeding experience. We are SO excited about this and would love to hear from you!

Participation is voluntary with no penalty or effect on services for not participating. Ask your nurse for more information today! For more information please email: crecino4@calstatela.edu

THIS PROJECT HAS BEEN DETERMINED TO BE EXEMPT FROM REVIEW AND APPROVAL BY THE CALIFORNIA STATE UNIVERSITY, LOS ANGELES INSTITUTIONAL REVIEW BOARD FOR THE PROTECTION OF HUMAN SUBJECTS IN RESEARCH.

Appendix B

Spanish Recruitment Flyer



Le Interest mejorar las tasas de lactancia materna?

Sea usted una madre primeriza o una madre con mucha experiencia en amamantar, queremos saber más de usted. Nuestra unidad está llevando a cabo un proyecto de prueba (Telelactancia: implementación de un programa de apoyo virtual de fin de semana) donde le entregaremos a las madres una encuesta completamente anónima con la esperanza de que podamos entender qué cosas funcionan bien y cuáles son un desafío en su jornada de lactancia materna para que podamos ayudarla.

Los participantes recibirán una encuesta totalmente anónima que les tomará no más de 5 minutos para completarla. El riesgo más grande es que le hagan preguntas personales sobre su experiencia de lactancia materna. Estamos MUY entusiasmados con esta iniciativa y nos encantaría conocer su opinión.

La participación es voluntaria, sin sanciones ni repercusiones en los servicios por no participar. Pida más información a su enfermera hoy. Para obtener más información escríbanos un correo electrónico a crecino4@calstatela.edu

SE HA DETERMINDADO QUE ESTE PROYECTOR ESTÁ EXENTO DE REVISIÓN Y APROBACIÓN POR PARTE DE LA JUNTA DE REVISIÓN INSTITUCIONAL PARA LA PROTECCIÓN DE LOS SERES HUMANOS SUJETOS A ESTUDIOS DE

Appendix C

Survey Telelactation: Implementing a Virtual Weekend Support Program

Telelactation: Implementing a Virtual Weekend Support Program

1. Did you deliver at Kaiser, Moreno Valley?
    a. Yes
    b. No

2. What was your method of delivery?
    a. Vaginal delivery
    b. C-section

3. Is this your first baby?
    a. Yes
    b. No

4. How old is your baby?
    a. 0-7 days old
    b. 7-14 days old
    c. 14-21 days old
    d. 21-28 days old
    e. Greater than 28 days old

5. Prior to delivery, what was your feeding plan for your baby?
    a. Exclusive breastfeeding
    b. Breastfeeding and formula
    c. Exclusive formula

6. Did you participate in any breastfeeding educational resources before delivery? (Breastfeeding class online or in person, online education or resources, etc.)
    a. Yes
    b. No

7. Did you receive breastfeeding support in the hospital or any prenatal breastfeeding support?
    a. Yes
    b. No

8. If so, what support did you receive? Select all that apply.
    a. OB office staff provided breastfeeding education
    b. My OB/GYN/Pediatrician/Midwife supported and educated me on breastfeeding

c. The nurses in the unit where I delivered provided breastfeeding support
d. The lactation nurse provided breastfeeding support after delivery
e. Other education or support _____

9. Did you receive breastfeeding support after discharge?
    a. Yes
    b. No

10. If you answered yes to number 8, from where did you receive support?
    a. Within Kaiser Permanente
    b. An outside resource

11. Are you currently breastfeeding exclusively? (Giving your baby only breastmilk and no formula)
    a. Yes
    b. No

12. If you're currently breastfeeding, what is your goal?
    a. Breastfeeding for 1 months or longer
    b. Breastfeeding for 2 months or longer
    c. Breastfeeding for 3 months or longer
    d. Breastfeeding for 4 months or longer
    e. Breastfeeding for 5 months or longer
    f. Breastfeeding for 6 months or longer
    g. Breastfeeding for 12 months or longer

13. If you are NOT breastfeeding exclusively, how old was your baby when you introduced formula?

---

14. Why did you start supplementing?
    a. I wasn't making enough milk
    b. My provider told me I needed to
    c. I had to go back to work
    d. I had latch pain or difficulty breastfeeding
    e. I had to start a medication that didn't allow me to breastfeed
    f. Personal choice
    g. None of the above. Please write your reasons below

_____
_____

THIS PROJECT HAS BEEN DETERMINED TO BE EXEMPT FROM REVIEW AND APPROVAL BY THE CALIFORNIA STATE UNIVERSITY, LOS ANGELES INSTITUTIONAL REVIEW BOARD FOR THE PROTECTION OF HUMAN SUBJECTS IN RESEARCH.

Appendix D

Table 1: Breastfeeding Exclusivity & Breastfeeding Support After Discharge

Table 1

Chi-Square Results for Breastfeeding Exclusivity and Breastfeeding Support After Discharge

	Are you currently exclusively breastfeeding?				
Did you receive breastfeeding support after discharge?	No	Yes	χ^2	*df*	*p*
Yes	16[14.47]	15[16.53]	0.63	1	.427
No	12[13.53]	17[15.47]			

Note. Values formatted as Observed [Expected].

Chi-square Test of Independence

Appendix E

Table 2: Breastfeeding Exclusivity and Is this your first baby?

Table 2

Chi-Square Results for Breastfeeding Exclusivity and Is This Your First Baby

	Are you exclusively breastfeeding?				
Is this your first baby?	No	Yes	χ^2	*df*	*p*
No	15[16.80]	21[19.20]	0.90	1	.342
Yes	13[11.20]	11[12.80]			

Note. Values formatted as Observed [Expected].

Chi-square Test of Independence

Appendix F

Table 3: Reasons for Formula Supplementation

Table 3

Frequency table for Reasons for Formula Supplementation

Reasons for Formula Supplementation	*n*	*%*
I wasn't making enough milk	15	25.02
My provider told me I needed to	9	15.01
Personal choice	6	10.00
Problems with latch	4	6.68
I had to go back to work	2	3.34
Not answered	24	40.08

Note. Due to rounding errors, percentages may not equal 100%.

Appendix G

Table 4: Place of Delivery, Age of Baby, Breastfeeding Support, & Breastfeeding Goal

Table 4

Frequency table for Place of Delivery, Age of Baby, Breastfeeding Support, and Breastfeeding Goal

Place of Delivery, Age of Baby, Breastfeeding Support, and Goal	*n*	*%*
Did you deliver at the project facility?		
Yes	44	73.33
No	16	26.67
Age of baby at time survey was completed		
0-7 days old	4	6.67
8-14 days old	4	6.67
15-21 days old	26	43.33
22-28 days old	22	36.67
Greater than 28 days old	4	6.67
Did you receive breastfeeding support in the hospital?		
Yes	54	90.00
No	6	10.00
Did you receive breastfeeding support after discharge?		
Yes	31	51.67
No	29	48.33
If you're currently breastfeeding, what is your goal?		
Breastfeeding for 1 month or longer	4	6.66
Breastfeeding for 2 months or longer	3	5.00
Breastfeeding for 3 months or longer	4	6.67
Breastfeeding for 4 months or longer	2	3.33
Breastfeeding for 5 months or longer	3	5.00
Breastfeeding for 6 months or longer	15	25.00
Breastfeeding for 12 months or longer	26	43.33
Missing	3	5.00

Appendix H

Table 5: C-section Delivery and Breastfeeding Exclusivity

Table 5

Frequency Table for Breastfeeding Exclusivity and C-Section Delivery

Breastfeeding Exclusivity and C-Section Delivery	*n*	*%*
Breastfeeding Exclusively		
No	6	46.15
Yes	7	53.85
Method		
C-section	13	100.00

Appendix I

Table 6: Vaginal Delivery and Breastfeeding Exclusivity

Table 6

Frequency Table for Breastfeeding Exclusivity and Vaginal Delivery

Breastfeeding Exclusivity and Vaginal Delivery	*n*	*%*
Method of Delivery		
Vaginal	47	100.00
Breastfeeding Exclusivity		
No	22	46.81
Yes	25	53.19

Appendix J

Table 7: Age of Baby When Formula Started

Table 7

Frequency Table for Age of Baby When Formula Started

Breastfeeding Exclusivity and Age When Formula Started	*n*	*%*
Breastfeeding Exclusivity		
No	28	46.81
Yes	32	53.19
How old was your baby when formula began?		
1 day old	8	28.57
2 days old	3	10.71
3 days old	3	10.71
4 days	2	7.14
1 week old	2	7.14
16 days	1	3.57
Not answered	9	32.14

Note. Due to rounding errors, percentages may not equal 100%.

Appendix K

Table 8: Breastfeeding Support Received

Table 8

Frequency Table for Breastfeeding Support Received

Breastfeeding Support Received	*n*	*%*
What breastfeeding support did you receive?		
The lactation nurse provided breastfeeding support after delivery	7	11.67
My OB/GYN/Pediatrician/Midwife supported and educated me on breastfeeding	3	5.00
OB office staff provided breastfeeding education, My OB/GYN/Pediatrician/Midwife supported and educated me on breastfeeding, The nurses in the unit where I delivered provided breastfeeding support after delivery, The lactation nurse provided breastfeeding support after delivery	11	18.33
The nurses in the unit where I delivered provided breastfeeding support after delivery	12	20.00
OB office staff provided breastfeeding education, The nurses in the unit where I delivered provided breastfeeding support after delivery, The lactation nurse provided breastfeeding support after delivery, My OB/GYN/Pediatrician/Midwife supported and educated me on breastfeeding	1	1.67
OB office staff provided breastfeeding education, The nurses in the unit where I delivered provided breastfeeding support after delivery, The lactation nurse provided breastfeeding support after delivery	1	1.67
The lactation nurse provided breastfeeding support after delivery, The nurses in the unit where I delivered provided breastfeeding support after delivery	3	5.00
The nurses in the unit where I delivered provided breastfeeding support after delivery, The lactation nurse provided breastfeeding support after delivery, OB office staff provided breastfeeding education	2	3.33

The nurses in the unit where I delivered provided breastfeeding support after delivery, The lactation nurse provided breastfeeding support after delivery	7	11.67
OB office staff provided breastfeeding education, The lactation nurse provided breastfeeding support after delivery	2	3.33
My OB/GYN/Pediatrician/Midwife supported and educated me on breastfeeding, The nurses in the unit where I delivered provided breastfeeding support after delivery	1	1.67
The nurses in the unit where I delivered provided breastfeeding support after delivery, OB office staff provided breastfeeding education, The lactation nurse provided breastfeeding support after delivery;	1	1.67
My OB/GYN/Pediatrician/Midwife supported and educated me on breastfeeding, OB office staff provided breastfeeding education, The nurses in the unit where I delivered provided breastfeeding support after delivery, The lactation nurse provided breastfeeding support after delivery	1	1.67
My OB/GYN/Pediatrician/Midwife supported and educated me on breastfeeding, The nurses in the unit where I delivered provided breastfeeding support after delivery, The lactation nurse provided breastfeeding support after delivery	2	3.33
Missing	5	8.35

Appendix L

Table 9: Breastfeeding Plan Prior to Delivery

Table 9

Frequency Table for Breastfeeding Plan Prior to Delivery

Breastfeeding Plan Before Delivery			*n*	*%*
Before delivery, how did you plan to feed your baby?				
Exclusive breastfeeding	37	61.67		
Breastfeeding and formula			22	36.67
Exclusive formula			1	1.67

Appendix M

Table 10: Is This Your First Baby?

Table 10

Frequency Table for Is this your first baby?

Number of Baby	*n*	*%*
Is this your first baby?		
No	36	60.00
Yes	24	40.00

Appendix N

Figure 1: Iowa Model of Evidence-Based Practice to Promote Excellence in Health Care

Figure 1: Iowa Model of Evidence-Based Practice to Promote Excellence in Health Care