

San Jose State University

**SJSU ScholarWorks**

---

Doctoral Projects

Master's Theses and Graduate Research

---

Spring 2023

## Improving Breastfeeding Rates Through Education

Julianna Youssef

*California State University, Northern California Consortium Doctor of Nursing Practice*

Follow this and additional works at: [https://scholarworks.sjsu.edu/etd\\_doctoral](https://scholarworks.sjsu.edu/etd_doctoral)



Part of the [Maternal, Child Health and Neonatal Nursing Commons](#)

---

### Recommended Citation

Youssef, Julianna, "Improving Breastfeeding Rates Through Education" (2023). *Doctoral Projects*. 170.

DOI: <https://doi.org/10.31979/etd.y5bw-75s8>

[https://scholarworks.sjsu.edu/etd\\_doctoral/170](https://scholarworks.sjsu.edu/etd_doctoral/170)

This Doctoral Project is brought to you for free and open access by the Master's Theses and Graduate Research at SJSU ScholarWorks. It has been accepted for inclusion in Doctoral Projects by an authorized administrator of SJSU ScholarWorks. For more information, please contact [scholarworks@sjsu.edu](mailto:scholarworks@sjsu.edu).

# **Improving Breastfeeding Rates Through Education**

Julianna Youssef, DNPc, RNC-MNN, PHN, RN

A doctoral project completed in partial fulfillment of the requirements for the degree of Doctor of Nursing Practice in the Valley Foundation School of Nursing, San José State University

May 2023

## Doctoral Project Team Members

Robin L. Whitney, PhD, RN

Associate Professor  
San José State University

---

Doctoral Project Chair

Title and Affiliation

Lisa Walker-Vischer, DNP, RN, CNS

Lecturer  
San José State University

---

Doctoral Program Advisor

Title and Affiliation

Liliana Bruzzese-Pisegna, MBA, BSN, RNC-NIC, NE-BC, RN

Manager of MBU  
El Camino Hospital

---

Practice Mentor

Title and Affiliation

Ruth K. Rosenblum, DNP, RN, PNP-BC, CNS

Associate Professor  
San José State University

---

Additional Doctoral Project Team Member

Title and Affiliation

## **Dedication**

This doctoral project is dedicated to my amazing, most supportive husband Samer, my three sons Dimitry, Damian and Dominic, my mother Malvi and late father, Fr. Nicholas (aka. Roger), who have sacrificed themselves to help me rise and who have supported me every step of the way.

## **Acknowledgements**

First, I would like to thank my most supportive husband Samer, amazing three sons Dimitry, Damian and Dominic, Mom, and my late Dad for their love and support throughout my doctoral program. You gave me strength, love, and patience when I needed it the most. I could never have done this without all of you.

I would like to thank my clinical mentor Liliane ‘Lily’ Pisegna MBA, RN, for her support, guidance, and the amazing opportunities that she has provided me. I would like to thank my second clinical mentor Nancy Held MSN, IBCLC, for all her support, guidance, and help. I would like to thank my doctoral advisors, Dr. Ruth Rosenblum, Dr. Lisa Walker-Vischer for all their help and support throughout the doctoral program. I would like to thank my project chair Dr. Robin Whitney for believing in me. I would like to thank my friend and mentor Dr. Rauch for inspiring me. Dr. Wei Chen-Tung, Dr. Alice ‘Allie’ Butzlaff thank you for taking me under your wings. I would also like to thank Dcn. John Dibs, Mary Dehaven, Mazen Manasseh, Caroline Stuart, and Alexandra ‘Alex’ Zvargulis for their ongoing support and help in getting this project completed. Finally, I would like to thank the Mother and Baby Unit at this local Bay area hospital as without them, there would be no project.

Improving Breastfeeding Rates Through Education

Julianna Youssef, DNPc, RNC-MNN, PHN, RN

Doctor of Nursing Practice Program

The Valley Foundation School of Nursing

San José State University

May 27, 2023

### Abstract

**Background:** Breastfeeding is beneficial for newborn babies, but there are many challenges that new mothers face that prevent them from exclusively breastfeeding.

**Objective:** To evaluate if re-educational training in RN's and LVN's is an effective way to increase the exclusive breastfeeding rates in the hospital setting.

**Methods:** We utilized a pretest/post-test quasi-experimental design and had the goal sample size was about 50 nurses. The nurses were given an educational PowerPoint at a monthly staff meeting. Pretests were given to the staff immediately before and posttests two weeks later. Additionally, exclusive breastfeeding rates were monitored for the three months before the intervention and three months after.

**Results:** The true sample size was 57 nurse's pre-test and 32 posttests, with 20 of them paired. The percent correct for individual questions on the breastfeeding knowledge quiz ranged from 56.62% to 100%. The mean score on the pretest is 4.9 and on the posttest 6.3. The overall percent correct was 96.7%. The mean difference was an average increase of 1.4 by the end. Overall, there was an increase in scores on the knowledge test that did reach statistical significance. The exclusive breastfeeding rates were looked at three months prior and three months post education and had a 5% overall increase but were not statistically significant.

**Conclusion:** This study's results provided important information for that this knowledge reinforces the point that re-educating staff nurses is beneficial especially when the greatest number of nurses have at least 14-20+ years of being a nurse and 7-13 years of experience on a MBU unit on exclusive breastfeeding.

Keywords: *exclusive breastfeeding*

**Contents**

Introduction .....	5
Benefits of Breastfeeding .....	5
Barriers to Successful Breastfeeding.....	7
Baby-Friendly Hospital Initiative (BFHI) .....	8
Intervention and Education in Healthcare Settings .....	11
Description of the Problem.....	12
Rationale and Gap in Practice .....	14
Theoretical Framework of Change Theory .....	14
Relevance of Lewin Change Theory .....	14
Methods .....	16
Design.....	16
Setting and Sample .....	16
Procedures .....	17
Planning and Training/ Measures .....	17
Planning.....	17
Measures.....	17
Sample Characteristics .....	17
Breastfeeding Knowledge .....	17
Unit Breastfeeding Rates .....	18
Training .....	18
Evaluation.....	19
Analysis .....	19
Ethical Considerations.....	19

Results .....20

    Sample Characteristics .....20

    Pre and Post Test Results .....21

    Paired sample results .....22

    Two-Sample t-test .....23

    Open-Ended Survey Responses.....24

    Changes in Breastfeeding Rates .....24

Discussion.....26

    Limitations.....28

    Project Sustainability .....28

    Implications for Practice.....29

Conclusion .....30

References .....31

Appendix A .....35

Appendix B.....38

Appendix C.....41

Appendix D .....42



## **Introduction**

Breastfeeding is considered one of the most effective public health strategies to improve the survival of infants and children according to both the U.S. Centers for Disease Control and Prevention (CDC) and the World Health Organization (WHO) (Centers for Disease Control and Prevention, 2021; World Health Organization, n.d.). The U.S. Surgeon General's "Call to Action in Support of Breastfeeding" states that not only does breastfeeding have the potential to foster a bond between mother and infant, but breast milk has immunological and anti-inflammatory properties that have no parallel when protecting both mother and child from illness and disease (Office of the Surgeon General, 2011). However, despite the well-documented benefits, only one in four infants in the U.S. are breastfed up until the age six months as recommended (CDC, 2021).

## **Benefits of Breastfeeding**

Worldwide, breastfeeding is recommended and is considered the most ideal form of infant nutrition (World Health Organization, n.d.). The United States Department of Health and Human Services (USHHS), World Health Organization (WHO), and the Centers for Disease Control (CDC) have issued a "call to action" statement in support of breastfeeding for an infant's first six months of life. Additionally, the American Academy of Pediatrics reaffirms this, recommending exclusive breastfeeding for approximately six months followed by the introduction of complementary foods with the goal of continued breastfeeding for at least one year (Eidelman et al., 2012).

Breast milk has been determined to be beneficial for the infant by providing much needed protection from allergies and a reduced risk of developing asthma, severe lower respiratory disease, acute ear infections, childhood obesity along with a decreased incidence of sudden

infant death syndrome (SIDS) and necrotizing enterocolitis for preterm infants (CDC, 2021).

There are benefits for the mother as well including the reduction of severity and frequency of postpartum depression while lowering the incidence of breast cancer, ovarian cancer, and Type 2 diabetes (CDC, 2021).

Aside from reduced risk of illnesses mentioned above, breastfeeding can affect the physiology of the infant as well. Either by nutritional value or effects of mother-infant relationship, the brains of breastfed infants showed increased beneficial development in comparison to their formula-fed counterparts (Liu et al., 2019). Breast milk benefits hormones and growth factors that help with cognition and brain development. Another benefit is the immunity factors, such as immunoglobulin A (IgA), which help protect infants from infections. Synthetic infant formulas do not provide any of these benefits (Czosnykowska-Łukacka et al., 2020).

From an economic standpoint, not only do families save money by not purchasing infant formula, but the CDC estimated that \$3 billion is spent on healthcare costs in the United States, for both mother and child, related to the lower rates of breastfeeding (CDC, 2021). All these positive effects serve to improve patient outcomes, control healthcare expenditures, and help to preserve resources.

Healthy people 2030 continues to support their 2020 guidelines that state that by educating the female population about the benefits of exclusive breastfeeding a link has been established that there are known health benefits for the mother and the baby (Office of Disease Prevention and Health Promotion, n.d.). A few strategies to encourage exclusive breastfeeding include patient education, peer support, breastfeeding support while in the hospital as well as after discharge.

The Healthy People 2030 identified four objectives to prevent disease, alleviate health inequity, and increase quality of life through healthy behaviors (Office of Disease Prevention and Health Promotion, n.d.). One of these objectives is to increase the rates of breastfeeding for infants by addressing barriers that prevent exclusive breastfeeding. Some of these tactics can include supporting the mother, increasing the distribution of breastfeeding information, improving workplace privacy for breast pumping, and community breastfeeding support groups (Office of Disease Prevention and Health Promotion, 2012, p. 9).

### **Barriers to Successful Breastfeeding**

Breastfeeding education is necessary in part because of the high prevalence of barriers that prevent a mother from continuing to breastfeed for the recommended length of time. Gianni et al. (2019) found that a mother's concern about her level of milk production, infant's failure to thrive, mastitis, and returning to work led to a higher risk of non-exclusive breastfeeding at three months. Additionally, 70.3% of the mothers experienced difficulties during breastfeeding: perception of insufficient milk production, fatigue, pain, and cracked nipples (Gianni et al., 2019).

A report titled "Barriers to Breastfeeding: Supporting Initiation and Continuation of Breastfeeding: ACOG Committee Opinion, Number 821," (2021) states that a mother's ability and choice to exclusively breastfeed include "individual parent considerations; practitioner influences; hospital barriers; societal factors, such as workplace and parental leave policies; access to lactation support; and social support of their breastfeeding goals" (Barriers to Breastfeeding, 2021, p. 1). Fortunately, health and education initiatives have been working on spreading breastfeeding education, training, and support for healthcare professionals and mothers.

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

The World Health Organization and the United Nations Children’s Fund (UNICEF) collaborated to create the Baby-Friendly Hospital Initiative (BFHI) that promotes training and support for healthcare facilities to enhance a mother’s infant bonding and breastfeeding experiences. Baby-Friendly USA is the accrediting body of the BFHI in the United States (Baby-Friendly USA, 2018). According to a re-evaluation of recent studies by WHO and UNICEF, Baby-Friendly USA updated their “Ten Steps to Successful Breastfeeding” in 2018, and hospitals must adhere to each of the requirements to keep their Baby-Friendly status, see Table 1 (Baby-Friendly USA, 2018).

Table 1.

*Ten Steps to Successful Breastfeeding from Baby-Friendly USA*

---

CRITICAL MANAGEMENT PROCEDURES

- 
- |     |  |
|-----|--|
| 1a. | Comply fully with the International Code of Marketing of Breast-milk Substitutes and relevant World Health Assembly resolutions. |
| 1b. | Have a written infant feeding policy that is routinely communicated to staff and parents.  |
| 1c. | Establish ongoing monitoring and data-management systems.  |
| 2.  | Ensure that staff have sufficient knowledge, competence, and skills to support breastfeeding.                                    |

---

KEY CLINICAL PRACTICES:

---

- 
3. Discuss the importance and management of breastfeeding with pregnant women and their families.
  4. Facilitate immediate and uninterrupted skin-to-skin contact and support mothers to initiate breastfeeding as soon as possible after birth.
  5. Support mothers to initiate and maintain breastfeeding and manage common difficulties.
  6. Do not provide breastfed newborns any food or fluids other than breast milk, unless medically indicated.
  7. Enable mothers and their infants to remain together and to practice rooming-in 24 hours a day
  8. Support mothers to recognize and respond to their infants' cues for feeding.
  9. Counsel mothers on the use and risks of feeding bottles, artificial nipples (teats) and pacifiers.
  10. Coordinate discharge so that parents and their infants have timely access to ongoing support and care
- 

Since its conception in the 1990s, researchers have studied the effects of these Baby-Friendly practices. Boston Medical Center was the first hospital in the United States to receive Baby-Friendly status and saw a breastfeeding initiation rate increase from 58% in 1995 to 86.5% in 1999 and an increase in infants being exclusively breastfed from 5.5% in 1995 to 33.5% in

1999 (Philipp et al., 2001). A follow-up study in 2001 showed that these increased rates held after the Baby-Friendly practices were implemented (Philipp et al., 2001).

San Francisco General Hospital (SFGH) also studied their increased breastfeeding rates after their quality improvement project from 2002 to 2010 (Vasquez et al., 2012). Even though SFGH already had a high breastfeeding initiation and exclusivity rates, after their quality improvement efforts they saw an increase from 78% breastfeeding initiation to 98% (Vasquez et al., 2012). At the time of publication in 2012, SFGH still intended to work towards increasing exclusive breastfeeding rates, but with a 98% breastfeeding initiation rate, their process still deserves attention. After extensive training and education for both nurses and other medical professionals, they devised ways to reduce infant-mother separation due to medical assessment and treatment, known as rooming-in efforts; ensure consistent and prolonged skin-to-skin behaviors; and halt the use of artificial nipples (Vasquez et al., 2012). In addition to nurse training, SFGH provided support and training for new mothers so that their concerns regarding not having enough milk and their infant's milk consumption were addressed (Vasquez et al., 2012). Another factor that Vasquez et al. (2012) stated as helpful was keeping core task force members continuous throughout the process, a recommendation that will help future efforts to sustain Baby-Friendly practices.

Regarding Baby-Friendly practices aiding more vulnerable populations, Munn et al. (2018) introduced breastfeeding education and support services to rural-dwelling African American mothers in the southeastern U.S. who are a vulnerable population with lower rates of successful breastfeeding in comparison to their White counterparts. They found participation in Baby-Friendly practices and an increase in breastfeeding success if the education, support, and

equipment provided were consistent through the first months after birth and adapted based on cultural differences to suit the needs of the new mothers (Munn et al., 2018).

The common theme among the studies that follow the implementation of Baby-Friendly practices is that education is critical to successful breastfeeding. Not only educating nurses on how to follow Baby-Friendly USA's Ten Steps but also new mothers to foster willing participation and reduce stress due to uncertainty.

### **Intervention and Education in Healthcare Settings**

Many women report that they are receiving conflicting information from nurses and other healthcare providers which in turn leads to barriers to successful breastfeeding (Cross-Barnet et al., 2012; Eidelman et al., 2012; Folker-Maglay et al., 2018). In 2012, Cross-Barnet et al. conducted in-depth interviews to discover the level of education and support from medical professionals from pregnancy through the interview date. They found that most mothers received either insufficient or no education or support during at least one stage between pregnancy and after giving birth (Cross-Barnet et al., 2012). This disparity must be addressed since it is imperative to be able to provide breastfeeding support and education to the new mothers for breastfeeding to be successful (Deloian et al., 2015).

Providing breastfeeding education will help by improving not only breastfeeding rates, but also the patient's confidence to successfully breastfeed for the entire first year of the baby's life (Folker-Maglaya et al., 2018). The nurses play a significant role in the well-being of a mother from the second they get admitted delivering their baby to the last moments before their discharge. The role that nurses play regarding breastfeeding support and health promotion for these new mothers and their new baby will carry over to when they are home (Deloian et al., 2014). Improved breastfeeding outcomes have been linked to the implementation of mandatory,

breastfeeding continued-education to the mother-baby staff (DeIoian et al., 2014). Each nurse needs to recognize the significance of the role that they play in the lives of each patient. The nurse is a trusted teacher and must recognize this responsibility to each patient that they interact with.

The lack of support and education from healthcare providers contributes to women not successfully breastfeeding (Folker-Maglaya et al., 2018). Watkins and Dodgerson (2010) indicated that interventions and professional training regarding breastfeeding has made an improvement in the nurses' knowledge in being able to offer support in breastfeeding, thus improving outcomes for mothers and infants. Many women report that they are receiving conflicting information from nurses and other healthcare providers, which in turn leads to barriers to successful breastfeeding (Folker-Maglay et al., 2018).

### **Description of the Problem**

The problem is that a Bay Area hospital has a low exclusive breastfeeding rate despite having trained nursing staff and consultants; however, Mother Baby Unit (MBU) management needs to identify why this is occurring. Despite evidence that supports exclusive breastfeeding as the best thing for both the mother and baby, a lack of exclusive breastfeeding has been noted within this hospital setting. The importance of exclusive breastfeeding has not been disseminated consistently to the nursing staff of this MBU unit in a local Bay Area hospital. This project is aimed at offering the nursing staff in this Bay Area hospital supplemental breastfeeding education. This education will stress the importance of helping a new mother resist the urge to give their newborn bottled formula.

Additionally, there are also lactation nurses that work with patients and their newborns to provide breastfeeding support. Mothers are predominantly having issues with breastfeeding on



the second day after giving birth. This can create an issue since the mothers are fatigued and want to sleep more often while the newborn baby begins to desire to feed more so than the first day after birth. Without adequate education and support from the nursing staff, patients choose to give their baby a bottle of formula rather than nurse. Data shows that the use of even one bottle of formula is detrimental to the newborn's breastfeeding success (Nagle, 2023). To make breastfeeding more successful, this Bay Area hospital would need additional education, support, and understanding provided by the nursing staff to make breastfeeding successful.

More than half of Santa Clara County (SCC) residents are over the age of thirty-five (City-Data.com, 2012, p.3). Annually, there are more than twenty-eight thousand births that occur to women fifteen to fifty years old (City-Data.com, 2012, p.3). Single mothers make up 6% of SCC households, and many of these reported that they earn less than needed finances to be self-sufficient (City-Data.com, 2012, p.3). Although healthcare there is progressive, many of the tools for teaching and support in the institutions are outdated and no longer meet the mothers' needs.

In SCC, many hospitals have embraced the Baby-Friendly Hospital Initiative (BFHI) and thus have higher breastfeeding rates (City-Data.com, 2012). However, many mothers do not meet their breastfeeding goals. Approximately two thirds of new mothers intend to breastfeed exclusively, but less than 40% still breastfeed at one month postpartum (City-Data.com, 2012). Healthcare providers, hospitals, and support groups should work together to ensure that mothers have the resources they need to breastfeed successfully at both the hospital and at home (California WIC Association and the UC Davis Human Lactation Center, 2014).

## **Rationale and Gap in Practice**

The purpose of this project is to increase exclusive breastfeeding rates and move towards Baby Friendly practices through the implementation of a breastfeeding curriculum given to the unit nursing staff. This will be done by providing an educational intervention that will remind nursing staff of the importance of exclusive breastfeeding. This Bay Area hospital intends to obtain Baby Friendly status, and this project will support that goal by identifying the gaps in practice within the MBU and observing any changes in exclusive breastfeeding rates after the intervention.

## **Theoretical Framework of Change Theory**

The change theory that will be used in this project is Kurt Lewin's Change Theory. Lewin is often considered the "Father of Social Psychology" (Hussain et al., 2018). This model consists of unfreezing, moving, and refreezing. The unfreezing stage is when one destabilizes old behaviors which should then be unlearned or discarded. The moving phase is the action of getting the groups to switch to better, more effective behaviors. Refreezing is the return to a state of equilibrium but with the new behaviors in effect (Hussain et al., 2018). Lewin believed that both one's experiences and environment will affect behavior (Hussain et al., 2018).

## **Relevance of Lewin Change Theory**

Figure 1, seen below, depicts the cycle or process of organizational change by applying Kurt Lewin's Three Steps Model (Hussein et al., 2018). The 3-Stage Model of Change describes the status-quo as the present situation. The change process, proposed change, would then evolve into the future desired state.

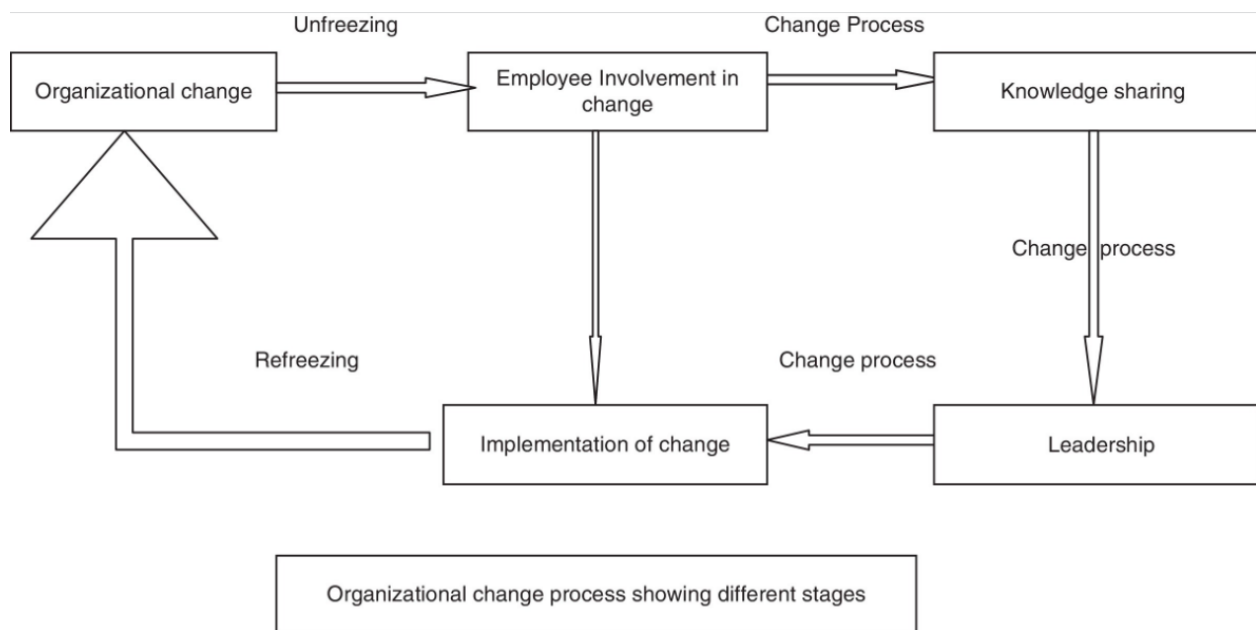
Theories of change can help with an organization's strategies, processes, and structures. The three steps of Kurt Lewin's change theory are considered a classic approach to being able to

manage change within an organization. It is imperative that one remembers that nursing theory is important to the advancement of nursing practice and promotes positive patient outcomes.

Lewin’s model is described as a dynamic force within an organization that moves in opposing directions. This is relevant to this DNP project’s population and work setting to promote sustained implementation of Baby-Friendly practices. Lewin’s Change Theory will help by incorporating the learning outcomes by assisting both the staff and all those involved to achieve all the desired outcomes for this DNP project.

Figure 1.

*Kurt Lewin’s Three Steps Model*



Note: This model is adapted from Hussein et al.’s (2018) critical review on Kurt Lewin’s Three Steps Model.

During the Unfreezing Phase, we gained the support from the nursing staff via the nursing unit council and management. The staff needed to have more knowledge of exclusive breastfeeding; therefore, this education was developed. Prior to the meeting, the staff were given emails and flyers to make them aware of the education that was going to take place. During the

Change Process, the implementation of the change or intervention occurred at the unit staff meeting. In November, the education took place at the unit staff meeting. The Refreezing Phase is what the unit is currently experiencing. The unit staff are beginning to apply the knowledge that was gained during the educational PowerPoints and maintain the support of the staff with this change. Another part of the Refreezing Phase is ensuring the education provided helps with the increase of the exclusive breastfeeding rates.

## **Methods**

### **Design**

This quality improvement project used a single group, pretest/posttest design to evaluate the impact of a breastfeeding education program on breastfeeding knowledge among Mother and Baby Unit (MBU) staff and unit breastfeeding rates.

### **Setting and Sample**

The setting of this project was a MBU unit in a large suburban hospital in the Bay Area. The MBU unit has thirty-six beds and is in the process of expanding to a fifty-two-bed unit. Additionally, there are eight overflow beds on another unit in the hospital. The unit has approximately one thousand admissions each month.

This Bay Area hospital's large MBU unit is where the patient is brought after they have delivered their baby. The baby is kept in the room with the mother to facilitate bonding. The only time a baby leaves the room is to receive medical treatment or for necessary procedures. There are 136 nurses in the MBU unit. Staff members consist of a combination of Registered Nurses (RN), Licensed Vocational Nurses (LVN) and Lactation Consultants (IBCLC). There are 120 RNs and 6 LVNs and about 10 (IBCLCs). All registered nurses and licensed vocational nurses

will be asked to participate in the study for a total sample of one hundred and twenty-six participants.

Those who participated in this study were any registered nurse (RN) or licensed vocational nurse (LVN) on the MBU unit. There are no exclusion criteria for the participants of this DNP project.

## **Procedures**

### **Planning and Training/ Measures**

#### **Planning**

The researcher collaborated with the Bay Area hospital to formulate the training material as well as the pre- and post-tests. After approval by the hospital, a department wide email was sent to make the staff aware of the project. The student presented the project at the unit council meeting to gain nursing support. The providers also were made aware of the project via email, but no education was given.

#### **Measures**

##### **Sample Characteristics**

Basic demographic information was collected during the pretest to describe the sample, including age (20-30 yrs , 31-40 yrs , 41-50 yrs , 51+ yrs), years of nursing experience (0-6 yrs, 7-13 yrs, 14-19 yrs 20+ yrs), and years of MBU experience (0-6 yrs, 7-13 yrs, 14-19 yrs, 20+ years). (See Appendix A.)

##### **Breastfeeding Knowledge**

Breastfeeding knowledge was measured using a seven-item questionnaire, which included four questions derived from *The Academy of Breastfeeding Medicine: What Every Physician Needs to Know About Breastfeeding Court* (2001) by Joan Meek, MD, along with The

American Academy of Pediatrics (AAP). Three additional questions were developed by the lactation manager and the MBU manager at the Bay Area hospital to gather the data on support during cluster feeding, and knowledge of the risks of even one bottle. Participants received one point for each correct answer, so the scoring range was 0-7, with higher scores indicating higher breastfeeding knowledge (see Appendix A for a full list of questions).

### **Unit Breastfeeding Rates**

Aggregated data was collected on the exclusive breastfeeding rates among non-NICU singletons three months before and three months post the educational intervention. The exclusive breastfeeding rates were provided as a percentage monthly by the hospital. On an ongoing basis, the hospital audits the newborn charts to see if they are given formula during their hospital stay based on the number of exclusive breastfeeding newborn divided by all newborns. This number is then given to the California Maternal Quality Care Collaborative (CMQCC). The hospital typically refers to the CMQCC number as the final value of the hospital EBF rate.

### **Training**

Training was done via a PowerPoint presentation (Appendix B) that covered: hospital policies that interfere with breastfeeding, determining the root cause of issues such as sore nipples persisting past the first feeding, recommending the frequency for infants to be breastfed during the first week of life, supporting a mom with cluster feedings, what to do when a mother asks for formula (addressing the myth that one bottle of formula won't affect a newborn). The information in the educational intervention was framed as a breastfeeding refresher for the nurses. They were informed on the rationale of any changes and education given.

**Evaluation**

Breastfeeding knowledge was measured on a pretest given immediately before the educational intervention, and again on a posttest given two weeks after the educational intervention. The post survey also included an open-ended question asking about what participants learned from the educational program. This open-ended response section provides insight to what the staff have learned. Both pre- and post-tests were administered and scored using Qualtrics ®. Aggregate unit exclusive breastfeeding rates were assessed 3 months before and after the educational intervention.

**Analysis**

SPSS ® version 24.0 software was used in all analyses. A paired t-test was used to compare mean breastfeeding knowledge scores before and after the intervention. Descriptive statistics such as number, percent, mean, SD, were utilized to describe demographic data and knowledge scores. A two-sample proportion test was used to evaluate the three-month average exclusive breastfeeding rates pre- and post- intervention. The p value <0.05 was used to determine statistical significance.

**Ethical Considerations**

The researcher used the last four digits of nursing participants' cell phone numbers as identifiers to match pre- and post- test scores. There were minimal associated risks with this intervention. All those who participated in this project had protected confidentiality throughout the process. The file where participant data were stored was password protected only the project leader had access. Only aggregated results were reported. This study was reviewed by the hospital IRB and determined not to meet the definition of human subject's research. Therefore, it was approved as a quality improvement initiative and further IRB oversight was not required.

## Results

### Sample Characteristics

Out of 92 possible participants who attended the education session, a total of 53 staff nurses completed the pretest and 37 completed posttests, for a response rate of 58% and 40%, respectively. In total, twenty pre- and posttests could be paired for analysis.

Among the paired sample respondents (n=20) the largest percentage of participants reported being 51+years old (40%), having 20+ years of experience (40%), and working on a mother-baby unit for between 7-13 years (45%).

Overall, characteristics were similar between those in the final paired sample and those who completed the pretest. A slightly higher percentage of the paired sample reported being age 51+ (40% paired vs. 32% pretest) and having 20+ years of experience in MBU (20% paired vs. 17% pretest), but years of total nursing experience were similar, with about 40% in both samples reporting 20+ years of experience. Full sample characteristics among those in the pretest, posttest, and final paired samples are presented in Table 2.

Table 2.

#### *Participants' Age and Experience*

Demographic	Participants completing pre-test, n= 53		Participants completing both pre- and post-tests, n= 37		Paired Participants, n=20	
	n	%	n	%	n	%
<b>Age in Years</b>						
20-30	1	1.89%	1	2.70%	1	5%
31-40	13	24.53%	12	32.43%	4	20%



---

41-50	18	33.96%	9	24.32%	7	35%
51+	17	32.08%	13	35.14%	8	40%
Chose not to answer	4	7.55%	2	5.41%		
Years' Experience as a						
Nurse						
0-6	1	1.89%	1	2.86%		
7-13	14	26.42%	12	34.29%	4	20%
14-19	17	32.08%	9	25.71%	8	40%
20+	21	39.62%	13	37.14%	8	40%
Years of Experience in						
MBU						
0-6	12	22.64%	6	16.67%	2	10%
7-13	17	32.08%	15	41.67%	9	45%
14-19	15	28.30%	8	22.22%	5	25%
20+	9	16.98%	7	19.44%	4	20%

---

### Pre and Post Test Results

The percent correct for individual questions on the breastfeeding knowledge quiz ranged from 56.62% to 100%. The lowest scores were for questions one and two, which asked about strategies that promote successful breastfeeding and hospital policies that can interfere with breastfeeding, respectively. The questions that improved the most between the pre- and post-test were two and six, which asked about hospital policies that interfere with breastfeeding, and what

to do if a mom asks for formula. As shown in Table 3 below, the overall percent correct improved by 6.05% from pretest to posttest.

Table 3.

*Pretest and Posttest results for Full Sample*

Question*	Pretest Percent Correct	Posttest Percent Correct
Q1	75%	77.78%
Q2	56.62%	77.78%
Q3	98.08%	97.30%
Q4	96.08%	97.30%
Q5	80.39%	83.78%
Q6	86.54%	97.30%
Total Percent Correct:	84.13%	90.18%

\*See appendix A for full questions

**Paired sample results**

Among the 20 nurses in the paired sample, mean breastfeeding knowledge scores were 4.9 (SD = 1.1, range = 0-7) on the pretest and, 6.2 (SD = 0.8, range = 0-7) on the posttest. There was a significant average improvement in the paired scores of 1.3 with a *p*-value of less than 0.001 (Table 4). The nurses' increased knowledge of exclusive breastfeeding was made apparent per the open comments the nurses had after the post-educational intervention that was given.

### Two-Sample t-test

To examine the validity of the results from the paired sample, we conducted a two-sample t-test on the full, unpaired sample of 53 pretest scores and 37 post test scores (refer to Table 5). This also showed a significant improvement in the overall score of there was a statistically significant improvement in scores with an average increase of 1.4 with a  $p$ -value of less than 0.001.

Table 4.

*Pretest and Posttest for Paired Samples Analysis, n = 20*

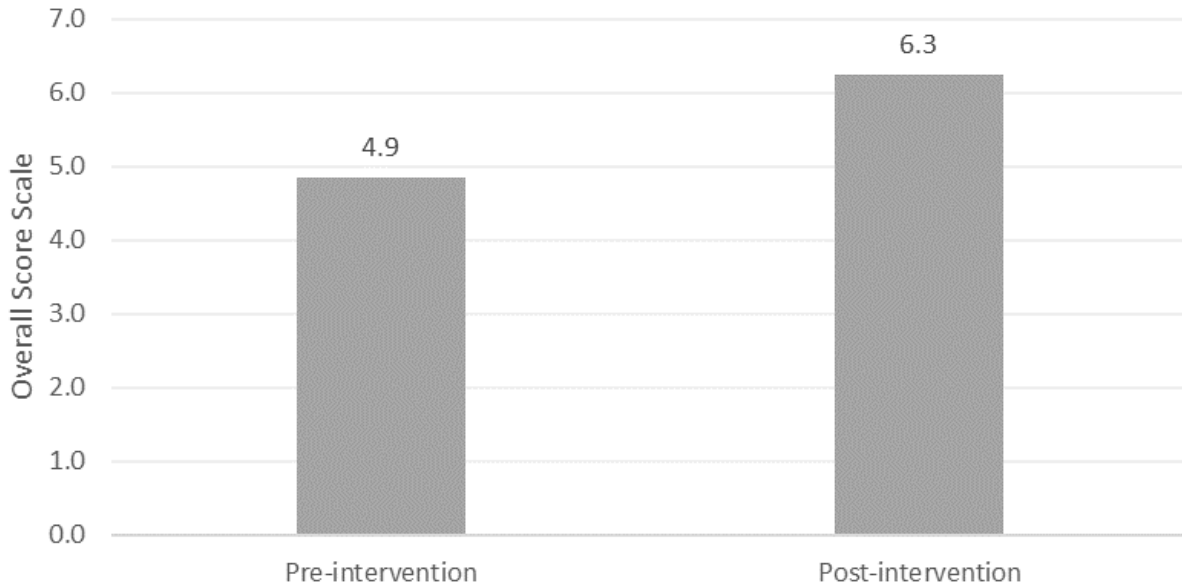
Pretest		Posttest		Paired t-test, n = 20		
<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>p value</i>
4.9	1.1 SD	6.3	0.8 SD	1.3	1.1	0.001

Table 5.

*Two-Sample t-Test full Unpaired Samples*

Pretest		Posttest		Two-sample t-test		
<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>p value</i>
4.9	1.1 SD	6.3	0.9	1.4	1.1	0.001

Figure 2.

*Paired Sample Pre- and Post- Test Breastfeeding Knowledge Scores***Open-Ended Survey Responses**

In analyzing the open-ended responses from the nursing staff, the wording that kept being repeated was “breast is best”, “encourage” and “support the mothers”. Additionally, staff commented on learning some updates to better their care of both the mother and the baby. See Appendix C. These responses show that the education that was provided reinforced the nurse’s education on exclusive breastfeeding. The staff showed enthusiasm for the education.

**Changes in Breastfeeding Rates**

Exclusive breastfeeding rates for all non-NICU singleton newborns, has shown an increase since the training that was conducted in November 2022. Figures 2 and 3 show the percentage of exclusive breastfeeding rates with all non-NICU newborns, which has shown an increase from August 2022 to the present, March 2023. Figure 2 shows the average exclusive breastfeeding rate for all non-NICU newborns has increased from 57.2% between August 2022

to October 2022 to 68.3% between December 2022 to February 2023. In looking at the average breastfeeding rates for non-NICU singleton newborns, there was a 5% improvement from the two time periods of exclusive breastfeeding rates. However, this was not statistically significant with a p value= 0.66 using a two-sample proportion test.

Table 6.

*Two-sample Proportion test for unit 3-month average exclusive breastfeeding rate: Pretest n=53 and Posttest n =37 for Non-NICU Singleton Newborns*

Pretest: Pre-intervention 3-month average rate		Posttest: Post-intervention 3-month average rate		SD	p value
%	SD	M	SD		
57%	0.004	62%	0.006		0.66

Figure 3.

*Non-NICU Singleton Newborns Exclusive Breastfeeding Rate*

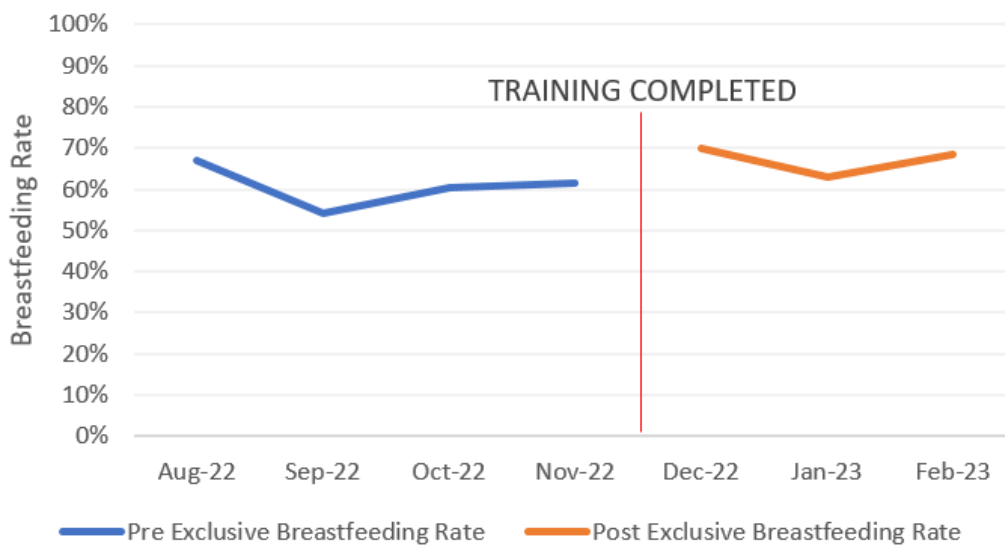
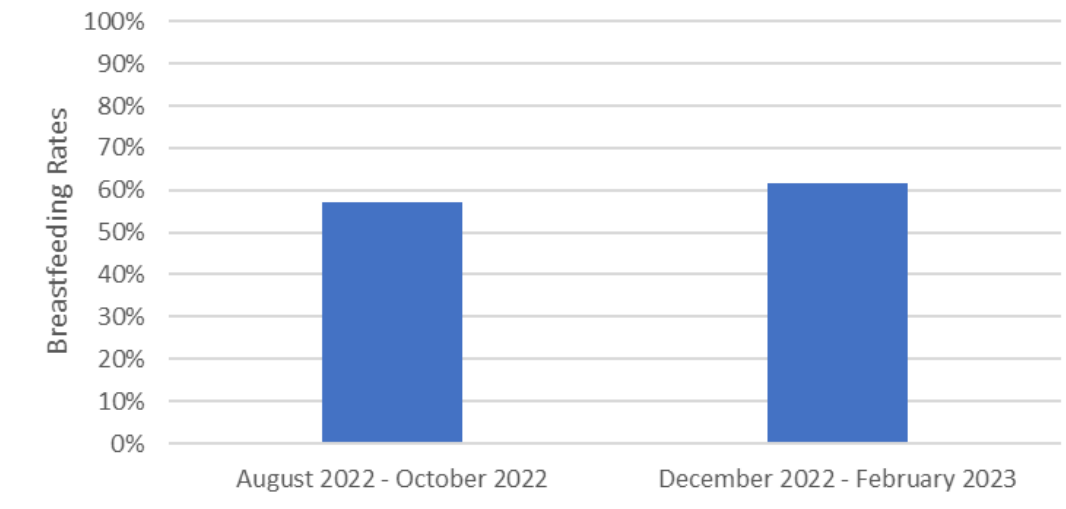


Figure 4.

*Average Breastfeeding Rates for Non-NICU Singleton Newborns***Discussion**

The purpose of this project was to increase exclusive breastfeeding rates, which will help the MBU unit to move towards Baby Friendly practices ([www.babyfriendlyusa.org](http://www.babyfriendlyusa.org)). The findings from this project showed an increase in exclusive breastfeeding rates after the implementation of educational training but did not reach statistical significance. Although, the amount of time the data was looked at is a short period to measure statistical significance for this type of data.

Regardless of the need for long-term data collection, the early findings of this project showed an increase in exclusive breastfeeding rates. The AHRQ (2017) recommends possible intervention strategies to increase exclusive breastfeeding rates: breastfeeding education for mothers and family members, breastfeeding support for mothers, training primary care staff regarding support techniques, and peer support. This study's education training aligns with their recommendations while also showing the positive effects. The synthesis conducted by Watkins

et al. (2020) showed that interventions based on breastfeeding education increased supportive behaviors, knowledge, and the nurse staff's self-confidence. Additionally, Watkins et al. (2020) discovered that improving nurse staff's knowledge from training interventions positively affects the duration and exclusivity rates of mothers' breastfeeding practices.

The data shows that the staff have gained knowledge from the re-educational PowerPoints that were presented to apply to their everyday work with mothers and babies. Sore nipples are one of the largest barriers to mothers not exclusively breastfeeding, and the indication that knowledge of how to address this issue has increased is of value.

It is important to note that the average age and years worked in the hospital shows that more than half of the paired participants (13 out of 20) were older than 51, with the average of the paired participants working on the unit having 20+ years' experience. The biggest opportunity for growth is from Questions Two and Six. While the training targeted all nursing experience levels, a high percentage of the participants represented nurses who might not have had the benefit of more recent evidence-based practice learning. Despite the number of years of practice, re-education did have a role in improving the exclusive breastfeeding rate in the hospital.

Ongoing education to the nursing staff is planned to help in maintaining and having a continued increase in these exclusive breastfeeding rates. This will be done at scheduled skills development day and quick refreshers being given at the monthly staff meetings. Despite the small, paired sample size there was a significant improvement in knowledge. In further testing, other projects may wish to devise ways to increase the number of posttests that will be able to be paired with pretests.

**Limitations**

One of the limitations was the discrepancies between the number of pretests ( $n = 53$ ) and posttests ( $n = 37$ ), so there is a gap in the researcher's ability to measure knowledge retention. The organization where this study was conducted prevented the researcher from requiring that the nurses provide their last four digits of their cell phone numbers, thus reducing the ability to match pre- and posttest scores. Thus, only allowing us to be able to pair only 20 participants.

With only three months of data post intervention these rates need to continue to be evaluated for a longer period to see if there will be greater improvements of breastfeeding rates post education.

**Project Sustainability**

Areas for further research include exploring unit culture to assess needs for further learning and applying the new information in an effective manner. It is important that the nurses are open to relearning, then the education that is delivered will be successful in increasing knowledge.

The hospital is working towards gaining their Baby-Friendly certification ([www.babyfriendlyusa.org](http://www.babyfriendlyusa.org)), but this is a continual process. This will take some time to complete as there are many things that need to be accomplished for Baby Friendly Designation to occur. Baby Friendly Designation is not something that will be able to be accomplished with one only educational series. It will take an ongoing effort and many more educational steps. One main purpose of this project was to re-educate the current staff on basic breastfeeding education and support that all the nurses should be teaching their patients. It is important to track the support that mothers are being offered with their cluster feeding in the hospital and the positive effects it has on the exclusive breastfeeding rates.



These results indicate that new staff nurse hires should be educated on the importance and value of exclusive breastfeeding. Additionally, continued reeducation will be given. The nursing staff working on an MBU for ten or more years should be offered re-training as new evidence-based practice information arises. The more senior nursing staff might not be up to date on more current evidence-based practice changes; thus, they might be working with old information instead of the latest findings with their patients.

### **Implications for Practice**

In delivering the educational training it has brought to our attention that the reinforcement that a mother needs while breastfeeding is to be supported during feedings. Reinforcing the best way to support a mother in her exclusive breastfeeding journey will help the hospital with the exclusive breastfeeding rates. However, to gain this recognition more will need to be done than just re-education. Incorporating the recommendations of the WHO and United Nation International Children's Emergency Fund (UNICEF) in improving the care that pregnant mothers and newborns receive in protecting, promoting, and supporting breastfeeding at health facilities essential to increasing exclusive breastfeeding rates.

To support the findings there should be annual skills days that re-educate existing staff and educate new staff on exclusive breastfeeding practices. Short quick education models are also very beneficial to educate and re-educate staff. This will help raise the exclusive breastfeeding rates by showing staff how to apply evidence-based strategies and collaborative care. The unit could look at having their own unit educator specific to MBU. The way the IBCLC communicates with the nursing staff regarding changes that are made to mother and baby care planning also needs to be evaluated. There should also be ongoing evaluation of the unit's educational needs.

### **Conclusion**

This project shows that educational training is important and successful with the pre- and post-test scores illustrating the increase in staff nurses' knowledge. This kind of training does not have to be extensive to have beneficial results. Primary interventions such as breastfeeding re-education show the effectiveness of educational training, which will improve a mother and child's health over time. This shows that quick and to the point training is beneficial to exclusive breastfeeding rates.

Looking at the long-term outcome of the exclusive breastfeeding rates will enhance this project although due to time constraints this is only being reported out three months post the intervention that took place. It will be useful for future projects to identify specific barriers to exclusive breastfeeding rates. Along with the ways that the patients are being supported and how the lack of support can be overcome.

### References

- AHRQ. (2017). “Systematic Review of Breastfeeding Programs and Policies, Breastfeeding Uptake, and Maternal Health Outcomes in Developed Countries,” Research Protocol Mar 20, 2017. Retrieved from <https://effectivehealthcare.ahrq.gov/products/breastfeeding/research-protocol>
- Baby-Friendly USA. (2018). 10 Steps & International Code. Retrieved from <https://www.babyfriendlyusa.org/for-facilities/practice-guidelines/10-steps-and-international-code/>
- Barriers to Breastfeeding: Supporting Initiation and Continuation of Breastfeeding: ACOG Committee Opinion, Number 821. (2021). *Obstetrics and Gynecology*, 137(2), e54–e62. Retrieved from <https://doi.org/10.1097/AOG.0000000000004249>
- California WIC Association and the UC Davis Human Lactation Center. (2014). Bringing Breastfeeding Home. Retrieved from [www.calwic.org/storage/documents/FactSheets2014/SantaClara.pdf](http://www.calwic.org/storage/documents/FactSheets2014/SantaClara.pdf)
- Centers for Disease Control and Prevention. (2021). Breastfeeding. Retrieved from <https://www.cdc.gov/breastfeeding/index.htm>
- City-Data.com. (2012). Santa Clara County. Retrieved from [http://www.city-data.com/county/Santa\\_Clara\\_County-CA.html](http://www.city-data.com/county/Santa_Clara_County-CA.html)
- Cross-Barnet, C., Augustyn, M., Gross, S., Resnik, A., & Paige, D. (2012). Long-Term Breastfeeding Support: Failing Mothers in Need. *Maternal and Child Health Journal*, 16(9), 1926–1932. <https://doi.org/10.1007/s10995-011-0939-x>
- Czosnykowska-Łukacka, M., Lis-Kuberka, J., Królak-Olejniak, B. & Magdalena

- Orczyk-Pawilowicz, M. (2020). Changes in Human Milk Immunoglobulin Profile During Prolonged Lactation. *Frontiers in Pediatrics*, 8, 428–428.  
<https://doi.org/10.3389/fped.2020.00428>
- Deloian, B. J., Lewin, L. O., & O'Conner, M. E. (2015). Use of web-based education program improves nurses' knowledge of breastfeeding. *Journal of Obstetric, Gynecologic, & Neonatal Nursing*, 44, 77-86. <http://dx.doi.org/10.1111/1552-6909.12534>
- Eidelman, A. I. & Schanler, R. J. (2012). Breastfeeding and the use of human milk. *Pediatrics (Evanston)*, 129(3), e827–e841. <https://doi.org/10.1542/peds.2011-3552>
- Folker-Maglaya, C., Pylman, M. E., Couch, K. A., Spatz, D. L., & Marzalik, P. R. (2018). Implementing a breastfeeding toolkit for nursing education. *The Journal of Perinatal and Neonatal Nursing*, 32(2), 153-163. <https://doi.org/10.1097/JPN.0000000000000330>
- Gianni ML, Bettinelli ME, Manfra P, Sorrentino G, Bezze E, Plevani L, Cavallaro G, Raffaelli G, Crippa BL, Colombo L, Morniroli D, Liotto N, Roggero P, Villamor E, Marchisio P, Mosca F. Breastfeeding Difficulties and Risk for Early Breastfeeding Cessation. *Nutrients*, 2019. [11\(10\):2266. https://doi.org/10.3390/nu11102266](https://doi.org/10.3390/nu11102266)
- Hussain, S.T., Lei, S., Akram, T., Haider, M.J., Hussain, S.H., & Ali, M. (2018). Kurt Lewin's change model: A critical review of the role of leadership and employee involvement in organizational change. *Journal of Innovation & Knowledge*, 3(3), 123-127.  
<https://doi.org/10.1016/j.jik.2016.07.002>
- Liu, Z., Neuringer, M., Erdman, J. W., Kuchan, M. J., Renner, L., Johnson, E. E., Wang, X., & Kroenke, C. D. (2019). The effects of breastfeeding versus formula-feeding on cerebral cortex maturation in infant rhesus macaques. *NeuroImage (Orlando, Fla.)*, 184, 372–385.  
<https://doi.org/10.1016/j.neuroimage.2018.09.015>

- Munn, A. C., Newman, S. D., Phillips, S. M., Mueller, M., & Taylor, S. N. (2018). Factors influencing southeastern U.S. mothers' participation in baby-friendly practices: A mixed-methods study. *Journal of Human Lactation*, 34(4), 821- 834. DOI: 10.1177/089033441775 0143.
- Nagle, Meg (2023), The Milk Meg web site. <http://themilkmeg.com>
- Office of Disease Prevention and Health Promotion. (n.d.). Infants. *Healthy People 2030*. U.S. Department of Health and Human Services. <https://health.gov/healthypeople/objectives-and-data/browse-objectives/infants>
- Office of Disease Prevention and Health Promotion. (2012). Maternal, Infant, and Child Health. *Healthy People 2020*. Retrieved from <http://www.healthypeople.gov/2020/topicsobjectives2020/overview.aspx?topicid=26>
- Office of the Surgeon General (2011). The Surgeon General's call to action to support breastfeeding. <https://www.ncbi.nlm.nih.gov/books/NBK52684/table/breastfeeding>
- Philipp, B. L., Merewood, A., Miller, L. W., Chawla, N., Murphy-Smith, M. M., Gomes, J. S., Cimo, S., & Cook, J. T. (2001). Baby-Friendly Hospital Initiative Improves Breastfeeding Initiation Rates in a US Hospital Setting. *Pediatrics.*, 108(3), 677–681. <https://doi.org/10.1542/peds.108.3.677>
- Vasquez, M. J. & Berg, O. R. (2012). The Baby-Friendly Journey in a US public hospital. *The Journal of Perinatal & Neonatal Nursing*, 26 (1), 37-46. doi: 10.1097/JPN.0b013e3182107179.
- Watkins, A.L., & Dodgson, J.E. (2010). Breastfeeding educational interventions for 50 health professionals: A synthesis of intervention studies. *Journal for Specialists in Pediatric Nursing*, 15(3), 223-232. <https://dx.doi.org/10.1111/j.1744-6155.2010.00240.x>

World Health Organization. (n.d.) Breastfeeding. Retrieved from

[https://www.who.int/health-topics/breastfeeding#tab=tab\\_1](https://www.who.int/health-topics/breastfeeding#tab=tab_1)

## Appendix A

### Pre-Test Questions

- 1) All the following are recommended to encourage successful breastfeeding EXCEPT:
  - a) Initiation of breastfeeding within 1 hour of birth
  - b) Avoiding the use of pacifiers and artificial nipples in term breastfeeding infants
  - c) Continuous rooming in with breastfeeding on demand
  - d) Restricting length of breastfeeding time to prevent nipple soreness and engorgement
  - e) Avoiding use of supplemental formula during the early stages of milk production
  
- 2) Hospital policies that interfere with breastfeeding include all the following EXCEPT:
  - a) Moving the infant to the nursery for the night to allow mother to rest and build up her milk supply
  - b) Feedings scheduled every 4 hours to allow mother's breasts to make more milk
  - c) Use of pacifiers to prevent the infant using mother as a pacifier and giving her sore nipples
  - d) Showing all mothers how to express or pump breast milk in case they are separated from their infants
  - e) Routine water supplementation by dropper to prevent dehydration

- 3) A mother with a 3-day-old baby presents with sore nipples. The problem began with the first feeding and has persisted with every feeding. The most likely source of the problem is:
- a) Baby's suck is too strong
  - b) Feeding time is too long
  - c) Poor attachment to the breast
  - d) Lack of nipple preparation during pregnancy
  - e) Inverted nipples
- 4) How frequently do you usually recommend that infants be breastfed during the first week of life?
- a) Every hour
  - b) Every 3 hours
  - c) Whenever the baby seems hungry or fussy (i.e., on demand), approximately 8–12 times per day
  - d) Every 2 hours
- 5) How do you support mom with cluster feedings?
- a) Have the partner help hold the baby
  - b) Offer the mother formula
  - c) Educate mom that this is a normal infant behavior
  - d) Both A and C
- 6) Mom asks for formula. What do you do next?
- a) Get verbal consent to give the formula
  - b) Offer the alternative to use a spoon for expressed breast milk



- c) Encourage manual expression
  - d) Encourage pumping
- 7) One bottle of formula won't affect a newborn?
- \_\_\_\_\_ True
- \_\_\_\_\_ False
- 8) What is your current age?
- a) 20-30
  - b) 31-40
  - c) 41-50
  - d) 51+
  - e) Choose not to answer
- 9) Years of experience as a nurse?
- a) 0-6 years
  - b) 7-13 years
  - c) 14-19 years
  - d) 20 + years
- 10) Years of experience in the Mother and Baby unit?
- a) 0-6 years
  - b) 7-13 years
  - c) 14-19 years
  - d) 20+ years
- 11) What did you learn from this training to help your practice?
- 12) What are the last 4 digits of your cell number?

**Appendix B**

## Post-Test

- 1) All the following are recommended to encourage successful breastfeeding EXCEPT:
  - a) Initiation of breastfeeding within 1 hour of birth
  - b) Avoiding the use of pacifiers and artificial nipples in term breastfeeding infants
  - c) Continuous rooming in with breastfeeding on demand
  - d) Restricting length of breastfeeding time to prevent nipple soreness and engorgement
  - e) Avoiding use of supplemental formula during the early stages of milk production
  
- 2) Hospital policies that interfere with breastfeeding include all the following EXCEPT:
  - a) Moving the infant to the nursery for the night to allow mother to rest and build up her milk supply
  - b) Feedings scheduled every 4 hours to allow mother's breasts to make more milk
  - c) Use of pacifiers to prevent the infant using mother as a pacifier and giving her sore nipples
  - d) Showing all mothers how to express or pump breast milk in case they are separated from their infants
  - e) Routine water supplementation by dropper to prevent dehydration

- 3) A mother with a 3-day-old baby presents with sore nipples. The problem began with the first feeding and has persisted with every feeding. The most likely source of the problem is:
- a) Baby's suck is too strong
  - b) Feeding time is too long
  - c) Poor attachment to the breast
  - d) Lack of nipple preparation during pregnancy
  - e) Inverted nipples
- 4) How frequently do you usually recommend that infants be breastfed during the first week of life?
- a) Every hour
  - b) Every 3 hours
  - c) Whenever the baby seems hungry or fussy (i.e., on demand), approximately 8–12 times per day
  - d) Every 2 hours
- 5) How do you support mom with cluster feedings?
- a) Have the partner help hold the baby
  - b) Offer the mother formula
  - c) Educate mom that this is a normal infant behavior
  - d) Both A and C
- 6) Mom asks for formula. What do you do next?
- a) Get verbal consent to give the formula
  - b) Offer the alternative to use a spoon for expressed breast milk

- c) Encourage manual expression
  - d) Encourage pumping
- 7) One bottle of formula won't affect a newborn?
- \_\_\_\_\_ True
- \_\_\_\_\_ False
- 8) What is your current age?
- a) 20-30
  - b) 31-40
  - c) 41-50
  - d) 51+
  - e) Choose not to answer
- 9) Years of experience as a nurse?
- a) 0-6 years
  - b) 7-13 years
  - c) 14-19 years
  - d) 20 + years
- 10) Years of experience in the Mother and Baby unit?
- a) 0-6 years
  - b) 7-13 years
  - c) 14-19 years
  - d) 20+ years
- 11) What did you learn from this training to help your practice?
- 12) What are the last 4 digits of your cell number?

### Appendix C

#### Open response from the question: What did you learn from this training?

Breastfeeding education

Reinforce the updates from breastfeeding

Continue encouraging to breastfeed ❤️

Reinforced the effect of 1 bottle of formula on a baby

Review of wording to help support mom with breastfeeding during cluster feedings and early days

To help mothers breastfeed

How to encourage mothers to support their goal to breastfeed, even when it has been a challenging few first days with baby

Support mothers' decision

Review of breastfeeding tips

Breastfeeding friendly tips

Reinforcement that I know what it supposed to be

To educate parents about the importance of breastfeeding; its benefits to them and to their newborn

Reminder to explore rationale for requesting formula

Breast is best

I was already aware of all the things mentioned in this training

## Appendix D

### Literature Review Table

Investigator	Year	Target Population	Interventions & Treatment	Study Design	Significant Outcomes	Additional Considerations
Baby Friendly USA	2015	Breastfeeding women, women child bearing ages	Increase breastfeeding	Validity Data	This is a discussion to show the importance of being baby friendly.	In 2018 25% of US births are occurring in baby friendly designated facilities.
California WIC Association	2014	Women of childbearing ages	Exclusive breastfeeding	Validity Data	Data from Santa Clara County on Exclusive Breastfeeding advantages.	Importance of ongoing support to quality perinatal care
Centers for Disease Control and Prevention	2020	Breastfeeding women	Exclusive Breastfeeding report card	Validity Data	Released every two years. Discussing the health benefits of exclusive breastfeeding.	
Centers for Disease control and prevention	2020	Recently Pregnant women, breastfeeding women	Exclusive Breastfeeding	Validity Data	Attain high-quality, longer lives free of preventable disease, disability, injury, and premature death.  Achieve health equity, eliminate disparities, and improve the health of all groups.  Create social and physical environments	Important public health areas to work on

					that promote good health for all; and  Promote quality of life, healthy development, and healthy behaviors across all life stages.	
City-data.com	2012	Women of childbearing ages	This article is data of how many people are breastfeeding	Validity data	Study that identifies the women who are breastfeeding in the Santa Clara County	
Deloian et al.	2015	Nurses that educate women	How web-based education improves nurses' knowledge		Shows how web-based education improves nursing knowledge of breastfeeding	
Folker et al.	2018	Nursing Education	Implementation of breastfeeding	Validity Data	The implementation of a breastfeeding tool	
Healthy People	2012	Breastfeeding women	Maternal infant child breastfeeding	Validity Data	The breastfeeding objectives for 2020	
Hussain, et al.	2018	nurses	Employee involvement in change		The importance of leadership, employee involvement when making change	
Lewin's 3 stage change model					This is the model being used for this project	
Sanford Health	2012	Breastfeeding women	Golden Hour		The importance of the Golden Hour for a newborn	
Watkins et al.	2010	Breastfeeding population	Interventional studies		A synthesis of intervention studies for breastfeeding	

Women's Health.gov	2014	Breastfeeding women	Breastfeeding		The effects of breastfeeding and its benefits.	
Abdulghani, N., Edvardsson, K, & Amir, L. (2018). Worldwide prevalence of mother-infant skin-to- skin contact after vaginal birth: A systematic review. <i>PLoS One</i> , 13(10), 1-19. <a href="https://doi.org/10.1371/journal.pone.0205696">https://doi.org/10.1371/journal.pone.0205696</a>	2018	Breastfeeding women	Is the prevalence of Skin-to- Skin (SSC) lower than the current recommendations?	Systematic Literature Review	To determine the prevalence of Skin- to- Skin Contact (SSC) after a vaginal delivery for infants greater than or equal to 37 weeks.	
Anggraeni, M. D., Aji, B., Setiyani, R., Kartikasari, A., & Rahmawati, E. (2018). How do modern parents deal with cultural beliefs about breastfeeding? A qualitative study. <i>British Journal of Midwifery</i> , 26(9), 603-613. <a href="http://dx.doi.org/10.1296bjom.2018.26.9.605">http://dx.doi.org/10.1296bjom.2018.26.9.605</a>	2018	Breastfeeding women in Indonesia	What cultural beliefs are associated with breastfeeding in Indonesian parents?	Qualitative Study	Health care provide can use results this study to develop a culturally sensitive education program that are congruent with modern parents' needs	To explore cultural beliefs, related to breastfeeding and modern Indonesian parents.
Batrick, M. C., Schwarz, E. B., Green, B. D., Jegier, B. J., Reinhold, A. G., Colaizy, T. J., ... Stuebe, A. M. (2016). Suboptimal breastfeeding in the United States: Maternal and pediatric health outcomes and costs. <i>Maternal Child Nutrition</i> , 13, 1-13.	2016	Breastfeeding women	What is the over impact on health and the cost of health care as it relates to the current breastfeeding rate in the United States?	Comprehensive Analysis	To quantify the excess cases of pediatric and maternal disease, death, and cost attribute table to suboptimal breastfeeding rates in the United States.	Breastfeeding is associated with considerable health impact



<p><a href="http://dx.doi.org/10.1111/mcn.12366">http://dx.doi.org/10.1111/mcn.12366</a></p>						
<p>Centers for Disease Control and Prevention (2019) About Breastfeeding <a href="https://www.cdc.gov/breastfeeding/about-breastfeeding/index.html">https://www.cdc.gov/breastfeeding/about-breastfeeding/index.html</a></p>	<p>2019</p>	<p>Breastfeeding women</p>	<p>How is the U.S. doing in regards to breastfeeding outcomes</p>	<p>Summative Report</p>	<p>To report the U.S. breastfeeding report card.</p>	<p>57.6% of infants born in the U.S. were exclusively breast fed for the first 6 months of life.</p>
<p>Centers for Disease Control and Prevention (2020). Breastfeeding report card U.S.,2020. <a href="https://www.cdc.gov/breastfeeding/pdf/2020-Breastfeeding-Report-Card-">https://www.cdc.gov/breastfeeding/pdf/2020-Breastfeeding-Report-Card-</a></p>	<p>2020</p>	<p>Breastfeeding women or women of childrearing ages.</p>	<p>What are the current breastfeeding rates in the U.S.?</p>	<p>Retrospective Review and Analysis</p>	<p>Breastfeeding outcomes in the U.S. remain below the national goal.</p>	<p>To provide Breastfeeding statistics regarding breastfeeding in the U.S.</p>
<p>Chu, T. L., Wang, J., Lin, H. L., Lee, H. G., Lin, C. T., Chieh, L. Y., ... Lin, Y. E. (2019). Multimedia-assisted instruction on pain assessment learning of new nurses: a quasi-experimental study. <i>BMC Medical Education</i>, 19(68). <a href="http://dx.doi.org/10.1186/s12909-019-1496-z">http://dx.doi.org/10.1186/s12909-019-1496-z</a></p>	<p>2019</p>	<p>Nurses</p>	<p>What can be done to improve pain knowledge for new nurses?</p>	<p>Quasi-Experimental</p>	<p>To evaluate a multimedia instruction a program to boost new nurses, ability to conduct pain assessment and treatment through simulated scenario instruction</p>	<p>Pain assessment education can improve a nurse's knowledge and competence.</p>
<p>Cianelli, R., Villegas, N., Azaiza, K., Henderson, S., Hooshmand, M., &amp; Peragallo, N. (2016). Developing and testing an</p>	<p>2016</p>	<p>Nurses that work with Breastfeeding women</p>	<p>Can an online platform be used to improve breastfeeding</p>	<p>Quantitative</p>	<p>To analyze the development of an online computer-based breast-feeding training (B.T.) and the</p>	<p>Increased student knowledge related to breastfeeding, and most students believed they were</p>

online breastfeeding training among undergraduate nursing students. <i>Clinical Nursing Student</i> , 3(1), 82-88. <a href="http://dx.doi.org/10.5430">http://dx.doi.org/10.5430</a>			education for nursing staff?		preliminary outcomes of this training.	fully able to support breastfeeding mothers.
Couto, G.R., Dias, V., Oliveira, I. (2020). Benefits of exclusive breastfeeding: An integrative review. <i>Nursing Practice Today</i> , 7(4), 245-254. <a href="https://doi.org/10.18502/nptv7i4.4034">https://doi.org/10.18502/nptv7i4.4034</a>	2020	Breastfeeding woman	To determine the most current best practice regarding breastfeeding.	Integrative Review	There are benefits for exclusive breastfeeding that should be explained to parents. Nurses need to incorporate the most recent evidence into practice to help parents realize the impact of exclusive breastfeeding.	Identify the benefits of exclusive breastfeeding for children.
Deloian, B. J., Lewin, L. O., & O'Conner, M. E. (2015). Use of web-based education programs improves nurses' knowledge of breastfeeding. <i>JOGNN</i> , 44, 77-86. <a href="http://dx.doi.org/10.1111/1/1552-6909.12534">http://dx.doi.org/10.1111/1/1552-6909.12534</a>	2015	Woman ages for breastfeeding	Does an evidence - based breastfeeding course improve breastfeeding knowledge for nurses?	Quantitative	Evaluate knowledge gained by nursing professional from an online breast-feeding course	breastfeeding knowledge improved in all content areas from the pretest to the post- test.
Folker-Maglaya, C., Pylman, M. E., Couch, K. A., Spatz, D. L., & Marzalik, P. R. (2018). Implementing a breastfeeding tool. <i>Nursing education. The Journal of Perinatal and Neonatal Nursing</i> , 32(2), 153-163.	2018	Nursing	Is the use of a breastfeeding education toolkit helpful to increase breastfeeding knowledge for students in an associate degree nursing program?	Pretest /Posttest Survey. Pilot Study.	An evidenced- based breast-feeding education program can be useful in improving nursing student's knowledge about breastfeeding and increase the students comfort level with	To determine the effectiveness of the toolkit education as determine by a pre- and post- test scores

Retrieved from <a href="http://www.jpnnjournal.com">http://www.jpnnjournal.com</a>					helping new mom's breastfeed.	
Grubestic, T., Durbin, K.M. (2019). A spatial analysis of breastfeeding and breastfeeding support in the United States: The leaders and laggards landscape. <i>Journal of Human Lactation</i> , 35(4). <a href="https://doi.org/10.1177/0890334419856615">doi.org/10.1177/0890334419856615</a>	2019	Nursing	To determine if geographical areas play a role in variation of breastfeeding rates and if availability of allied health resources impacts geography.	Quantitative	Significant geographic variation in breastfeeding practices and allied support are evident in the United States.	Identify important geographic trends in both breastfeeding practice and support structures in the United States
Keevash, J., Norman, A., Forrest, H., & Mortimer, S. (2018). What influences women to stop or continue breastfeeding: A thematic analysis. <i>British Journal of Midwifery</i> , 26(10), 651-658.	2018	Breastfeeding woman	What factors contribute to the breastfeeding goals as 6 months of life are not being met?	Qualitative	Lack of practical appropriate support key factor in early cessation of breastfeeding.	Analyze the conditions that might influence a woman's choice to breastfeed.
Mc Loughlin, G. (2018). Rooming-in for new mothers and infants versus separation Increasing the duration of breastfeeding. <i>International Journal of Nursing Practice</i> , 24. <a href="http://www.doi.org/10.1111/ijn.12633">http://www.doi.org/10.1111/ijn.12633</a>	2018	Nursing	Rooming-in can improve breastfeeding outcomes.	Literature Review	To assess the effect of mother- infant rooming-in versus separation on the duration of breastfeeding.	There was little evidence to support or disprove rooming-in

<p>Munn, A. C., Newman, S. D., Phillips, S. M., Mueller, M., &amp; Taylor, S. N. (2018). Factors influencing southeastern U.S. mothers' participation in baby-friendly practices: A mixed-methods study. <i>Journal of Human Lactation</i>, 34(4), 821- 834.  <a href="http://www.doi.org/10.1177/0890334417750143">www.doi.org/10.1177/0890334417750143</a></p>	2018	Breastfeeding woman	What are the determining factors that contribute to the low rate of breastfeeding among southeastern U.S. mothers to breastfeed and participate in Baby-Friendly initiatives?	Mixed method cross sectional design.	Rural U.S. African American mothers are less likely to be knowledgeable about breastfeeding and Baby-Friendly practice. Consistent and culturally sensitive education and support will help improve breastfeeding among this population.	Examine factors that influence southeastern U.S. mothers participation in Baby-Friendly practices and breastfeeding decisions.
<p>Nayak, S. (2015). An observational study on breastfeeding success among postnatal mothers. <i>Nitte University Journal of Health Science</i>, 5(3). Retrieved from: pdfs <a href="http://semanticsoloar.org">semanticsoloar.org</a></p>	2015	Breastfeeding mothers	Breastfeeding success among postnatal mothers in a hospital setting.	Qualitative	Breastfeeding listed 53 days longer for patients discharged from the identified hospital compared to those who didn't deliver in this setting which had an adopted breast-feeding program.	To determine the breast-feeding success among postnatal mothers. To find an association on breastfeeding success with a particular demographic variable.
<p>Neter, E., &amp; Begants, L. (2020). Compensatory health beliefs on breastfeeding varying by breastfeeding status: A scale development. <i>International Journal of Environmental Research and Public Health</i>, 17(5759), 1-10.  <a href="http://doi.org/10.3390/ijerph17165759">http://doi.org/10.3390/ijerph17165759</a></p>	2020	Breastfeeding woman	There are variations in women's compensatory health beliefs (CHB) among women who breastfeed.	Cross- Sectional Quantitative study.	The study attests that there is ambivalence and complexity of women's view to breastfeeding.	To examine whether CHB on breastfeeding varies as a function of breastfeeding among mothers and infants.

Office of the Surgeon General (2011). <i>The Surgeon General's call to action to support breastfeeding</i> . <a href="https://www.ncbi.nlm.nih.gov/books/NBK52684/table/breastfeeding">https://www.ncbi.nlm.nih.gov/books/NBK52684/table/breastfeeding</a>	2011	Breastfeeding woman	Breast Milk is the best nutrient for newborns.	Literature Review	Breastfeeding can improve the overall health of the nation and health care organizations must implement processes to improve breastfeeding outcomes.	To educate the public health care system that actions have to take place that supports breastfeeding outcomes.
Park, E.W., Lee, H., Yun, E. (2019). Development and evaluation of a quick response code- based nursing education program for operating and recovery room nurses. <i>Computers, Informatics, Nursing</i> , 37(11). <a href="http://www.doi.org/10.1097/CIN.0000000000000550">www.doi.org/10.1097/CIN.0000000000000550</a>	2019	Patients	Does a Quick Response Code-Based Nursing education program prove to be effective in improving patient outcomes?	Literature Review	Q.R. codes help improve nurse's knowledge and competence when providing care.	To develop and evaluate the effectiveness of a quick response (Q.R.) code-based nursing education program to improve competence of operating room and recovery room nurses .
Phillips, R. (2013). The sacred hour: Uninterrupted skin- to-skin contact immediately after birth. <i>Newborn and Infant Nursing Reviews</i> , 13, 67- 72. <a href="https://doi.org/10.1053/j.nai.nr.20.13.04.001">https://doi.org/10.1053/j.nai.nr.20.13.04.001</a>	2013	Babies	What are the benefits of skin- to-skin (STS)	Literature Review	Being STS with the mother is the best way for healthy babies to adjust outside of the womb. STS also provides short- and long- term health benefits for both the mom and baby.	To identify all the benefits of STS.
Radzynski, S., & Callister, L.C. (2016). Mother's beliefs, attitudes, and decision making related to infant feeding choices.	2016	Mothers of Breastfeeding age	The decision of mothers regarding infant feeding choice	Qualitative	Maternal decision making is multifactorial regarding infant feeding methods.	To review and analyze mother's beliefs, attitudes and decision making

<i>The Journal of Perinatal Education</i> , 25(1), 18-28. <a href="http://dx.doi.org/10.1891/1051243.25.1.18">http://dx.doi.org/10.1891/1051243.25.1.18</a>			varied with each mother.			regarding infant feeding choices.
Watkins, A. L., & Dodgson, J. E. (2010). Breastfeeding educational interventions for health professionals: A synthesis of intervention studies. <i>Journal for Specialists in Pediatric Nursing</i> , 15(3), 223-232. <a href="http://dx.doi.org/doi:10.1111/j.1744-6155.2010.00240">http://dx.doi.org/doi:10.1111/j.1744-6155.2010.00240</a> .	2010	Nursing	What critical issues are missing from current literature available to health care professions as it relates to breastfeeding?	Synthesis Review of Studies.	Breastfeeding education increased the knowledge and confidence of nursing staff. As a result of the education, exclusive breastfeeding and duration of breastfeeding improved as well.	To review intervention studies focused on increasing breastfeeding knowledge, self-confidence, and supportive behaviors of health care professionals.
Williams, A., Young, J., Kearney, L., & Keogh, S. (2013). Improving knowledge of breastfeeding management: a practice development intervention of pediatric nurses. <i>Neonatal, Pediatrics and Child Health Nursing</i> , 15(2), 8-14. Retrieved from <a href="https://search.ebscohost.com.ezp.waldenulibrary.org">https://search.ebscohost.com.ezp.waldenulibrary.org</a>	2013	Pediatric patients and nurses	Given breastfeeding knowledge deficits of pediatric nurses identified in earlier studies 1.1, and busy acute care clinical units in which they work, which method of breastfeeding education for clinicians would be most appropriate, feasible and acceptable?	Mixed- method design	To develop and pilot a specific education intervention with the aim of improving knowledge of pediatric nurses in providing evidence- based breast-feeding management in an acute care hospital Environment.	It is important for health care organizations to effectively support and care for breastfeeding families.
Wood, N. K., & Woods, N. F. (2018). Outcomes measures in interventions that enhance breastfeeding	2018	Breastfeeding mothers	What interventions enhance breastfeeding	Systemic Review	Methods of infant feeding breastfeeding or bottle-feeding methods of infant feeding were	To examine outcome measures used in interventions focusing on enhancement of

<p>initiation, duration, and exclusivity; A systematic review. <i>Maternal Child Nursing</i>, 43(6), 341-347.  <a href="http://dx.doi.org/10.1097/NMC.0000000000000472">http://dx.doi.org/10.1097/NMC.0000000000000472</a></p>			<p>initiation, duration, and exclusivity</p>		<p>rarely assessed, ignoring significant mediators or moderators of breastfeeding</p>	<p>breastfeeding initiation, duration, and exclusivity.</p>
--	--	--	--	--	---	---