

**Impact of Hospital Care on Exclusive Breastfeeding: Education to Bridge the Gap**

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I have no known conflict of interest to disclose.

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### Abstract

**Introduction:** The objective of this study is to emphasize the significance of exclusive breastfeeding (EB) and investigate methods to encourage and sustain it within a hospital environment. Using the self-efficacy theory, the study seeks to improve the current support system for breastfeeding mothers and their families. **Methods:** The project was approved by the university IRB and facility IRB; guidelines were maintained. The project takes place in a non-profit organization in the southwestern United States. Education was conducted at a required staff meeting for Women and Infant Services (WIS) floor about supporting breastfeeding mothers. A pre- and post-education Breastfeeding Knowledge Scale (BKS) survey was performed, effectiveness was measured using a two-tailed *t*-test. The reliability of the BKS scale is 0.83 and the validity of the scale is reported to be strong. The hospital measures the EB rates of patients that are greater than 37 weeks gestation without need for neonatal intensive unit care and the mom requests to breastfeed. **Results:** The goal was 42% rate of EB in the first 48 hours after birth. After education the average rate of EB was 39.6%, lower than the goal but higher than the 33.7% rate before education. A two-tailed paired sample *t*-test ( $n=27$ ) was used for BKS and the results were significant based on an alpha value; thus, showing significant knowledge gain. **Conclusion:** Consistent staff education improves breastfeeding support for moms in the hospital, leading to successful exclusive breastfeeding. This project benefits various settings, such as pediatric, postpartum, labor and delivery, and pediatric offices.

**Keywords:** *exclusive breastfeeding, lactation support, breastfeeding education, hospital setting*

### **Association of Hospital Care and Exclusive Breastfeeding: Bridging the Gap**

The definition of exclusive breastfeeding (EB), as defined by the Centers for Disease Control and Prevention (CDC), is “feeding your baby only breast milk, not any other foods or liquids (including infant formula or water), except for medications or vitamin and mineral supplements” (2021). There is substantial evidence that supports positive outcomes for mothers who choose EB. Krol and Grossmann (2018), outline the significant psychosocial impact EB has on our pediatric and maternal population. EB improves cognitive performance because of the fatty acids found in breast milk and their ability to affect the growth of white matter tracts in the infant’s developing brain. Krol and Grossmann (2018) also point out that the release of oxytocin while breastfeeding promotes positive approach behaviors, decreases psychological stress, and improves the bond between mother and baby (Krol and Grossmann, 2018).

The benefits of EB are clear and consistently report a positive reduction of risk for a variety of common illnesses for both baby and mother (Eidelman et al., 2012). The unique composition of breast milk provides the essential nutrients for growth and development (Lyons et al., 2020). Breast milk contains bioactive, commensal bacteria, and each mother’s milk is specialized for the growing baby (Lyons et al., 2020). In an article by Lyons et al. (2020), the benefits were evident: breast milk protects against pathogens, boosts the baby’s immune development, promotes healthy gut colonization, and lessens the incidence of gastrointestinal disease. Mothers benefit from breastfeeding with a reduction of breast and ovarian cancer and a more substantial reduction benefit with increased breastfeeding (Mosca and Gianni, 2017). Jarlenski et al. (2014) found a 2.7 percentage-point greater weight loss in mothers who EB for at least three months. These are some of the many reasons breast is beneficial for mother and baby.

### **Clinical Issue**

The World Health Organization (WHO) (2018) reports that globally, only 40% of all infants under six months of age are EB and states that breastfeeding is one of the most efficient ways to ensure child health and survival. The CDC (2020) reports the medical costs of low breastfeeding rates add up to three billion dollars a year in the US alone. The Healthy People 2030 aims to have 42.4% of all US babies EB for six months. As of 2018, EB at six months of all US babies was only 25.6%, showing a significant growth opportunity nationwide (US Department of Health and Human Services, 2021). The US is falling short of meeting its breastfeeding goals.

In 2018, Arizona's EB rate for mothers at three months was 39.5%, and at six months EB rate was 24.6 % (CDC, n.d.). Within the first two days, 29.3% of Arizona babies received supplemental food (CDC, n.d.). In 2019, approximately 3.6 million births out of 3,745,540 births were in United States hospitals (Michas, 2021; Hamilton et al., 2020). The hospital is where the fundamental knowledge of breastfeeding begins and increasing support in the hospital is one way to increase the percentage of EB. Sixty percent of women stop breastfeeding earlier than planned because of a lack of education, encouragement, community support, and hospital practices (CDC, 2021). In the US, one of our most significant healthcare challenges is our ability to give the proper support within the hospital setting. These issues contribute to problems seen in the primary care office with decreases in weight gain, increase jaundice, and mother's nipples becoming raw, sore, and cracked. Breastfeeding difficulty can contribute to an increased risk of the mother weaning her breastfeeding baby earlier than the national goal of 6 months. It is essential to increase hospital EB rates to the goal of 42.4%, educate mother and father on breastfeeding techniques, and provide enhanced support to families who choose to breastfeed within the hospital setting.

It is crucial to provide mothers with the best education, resources, and experience so their breastfeeding journey can be a joyful experience. Many mothers experience anxiety, depression, and stress after giving birth. The pressure of being the sole provider for another human can overwhelm many new mothers. The first breastfeeding experience in the hospital setting can set the stage for the rest of the breastfeeding experience (see Appendix A, Table A1). The purpose of this paper is to address how to provide support to each breastfeeding mother while also providing them with a positive experience. The goal is to bridge the breastfeeding knowledge gap between the hospital and home by providing education throughout the hospital stay.

### **Internal Evidence**

Internal perspectives were gathered from the non-profit organization in the southwestern US, and critical issues arose, such as bathing the infant too early, increased medical problems of the mother and the baby in the unit, and staffing issues. The current practices in this Women's Infant Services department include little to no skin-to-skin time right after delivery and help with breastfeeding within the first hour of life. Competing factors hinder the time spent with the patient in the labor room to discuss the mother's positioning, latch, and comfort while breastfeeding. The care on the postpartum floor is inconsistent regarding education, infant bathing time frames, and discharge instructions. It is imperative to focus on potential improvements in this department because an estimated 4,200 babies are being born at this facility annually, and approximately 37% or less are given a chance to breastfeed exclusively.

### **Evidence Synthesis**

The ten articles chosen were critically appraised using the JBI critical appraisal checklist for randomized control trial (RCT) and systematic review and meta-analysis (SRMA) (Critical appraisal tools, n.d). The data was entered into evaluation and synthesis tables for reference (see

Appendix A, Table A1, and A2). The studies focused on healthy, first-time mothers with a single healthy baby, which is the project's target population. Self-efficacy theory was incorporated into the project since it was used in most of the articles to increase exclusive breastfeeding rates (see Appendix A, Table A1). A protocol was created and given to nurses to help incorporate the project into the unit (see Appendix A, Table A1). All ten studies included a hospital setting and increased exclusive breastfeeding rates and self-efficacy (see Appendix A, Table A1).

Antepartum breastfeeding education and immediate post-birth support were included in the project (see Appendix A, Table A1). Patient surveys were used in four studies to gain more information about self-efficacy, breastfeeding knowledge, infant breastfeeding ability, and parental attitudes towards breastfeeding (see Appendix A, Table A1). A breastfeeding assessment tool and exclusive breastfeeding rate of the hospital pre and post-education were implemented to evaluate outcomes (see Appendix A, Table A1). A baby-friendly environment and a professional to implement the interventions were critical to the project's success based on the improved outcomes in the selected articles (see Appendix A, Table A1).

### **Purpose of the Project**

Breastfeeding education is crucial for both mothers and babies, as it has been shown to have numerous benefits. Concise and consistent education is necessary to ensure exclusive breastfeeding success while also considering the mother's current situation and potential future conditions. Implementing protocols, providing breastfeeding support, educating mothers upon admission, and having a professional convey the importance of proper positioning, latch, feeding on demand, and skin-to-skin contact can all increase exclusive breastfeeding rates. The first feeding is particularly important, as it sets the stage for subsequent feedings, and support from the start is crucial. Hospitals are a common place for breastfeeding to begin and providing

effective education can prevent early cessation. This project aims to support and educate breastfeeding mothers throughout their hospital stay to ensure a positive experience and bridge the knowledge gap between the hospital and home.

### **PICOT Question**

The discussions mentioned earlier lead to the clinically relevant PICOT question: In mothers who choose to breastfeed, how does providing formal breastfeeding education before the initial feed, compared to routine education, affect EB in the hospital.

### **Theory/Theoretical Framework Application**

Self-efficacy theory, utilized in eight of the ten selected articles, guides our evidence-based practice project. The theory employs four main concepts: performance outcome, self-modeling, verbal encouragement, and emotional state (refer to Appendix B, Figure B1). Performance outcome involves utilizing past experiences to raise or lower expectations, while vicarious experience entails watching others breastfeed to enhance competency. Social persuasion involves coaching during the activity to aid growth in ability, and emotional state influences positive or negative thinking (Bandura, 1977). By providing continuous support throughout the hospital stay, we aim to foster positive thinking and enhance self-efficacy for successful breastfeeding. These strategies are integral to improving performance and thought processes surrounding EB.

### **Implementation Framework**

The Iowa Model (see Appendix B, Figure B2), an evidence-based practice framework extensively used in healthcare, involves several steps to address patient care issues (Iowa Model Collaborative et al., 2017). The process starts with collecting data to confirm the issue, followed by accrediting agencies implementing regulations (Iowa Model Collaborative et al., 2017). A

team is then formed to conduct a systematic search for quality interventions, and if sufficient evidence is found, a design is made, and a pilot change is executed (Iowa Model Collaborative et al., 2017). Dissemination of results takes place, and if necessary, the cycle begins again. This framework incorporates patient engagement and team-based approaches, making it suitable for hospital settings. Our project to increase breastfeeding rates will utilize this model, incorporating evaluation before, during, and after the intervention. The self-efficacy theory, which includes patients in the process, further supports the integration of change within a hospital setting.

### **Project Site and Stakeholders**

In a non-profit organization, located in the southwestern region of the United States, boasts an annual delivery count of approximately 4,200 newborns. This dynamic and expanding unit comprises eleven labor and delivery rooms, thirty postpartum rooms, and eight neonatal intensive care unit (NICU) beds. Guided by a mission statement centered on "making healthcare easier, so life can be better," this organization strives to achieve national recognition for its clinical excellence and innovative approaches, as well as its commitment to a seamless and coordinated patient experience, while upholding its core values of customer obsession, relentless improvement, courageous innovation, disciplined focus, fostering accountability, and continuously earning trust.

Key stakeholders in this organization include the unit director, two senior managers, the director of professional practice/magnet program director, the registered nurse evidence-based practice specialist, the organization itself, and, of course, the patients. With patient care as their top priority, the stakeholders are particularly invested in advancing evidence-based practice in this unit, as reflected in their core measure of success being the rate of successful breastfeeding among patients. Notably, the unit has experienced low breastfeeding rates in recent years,



prompting the stakeholders to focus on achieving their goal of increasing the rate to 42% of patients exclusively breastfeeding.

### **Implications for Practice Change**

Before the project was implemented, the labor and delivery unit was disconnected in their teaching and support of EB. Some of the nurses in this department felt uncomfortable educating and supporting EB. The inconsistencies between labor and delivery and postpartum had deterred some mothers from EB throughout the hospital stay because of sore nipples and difficulty latching their neonate. The education and support before transfer to postpartum would give the patients a breastfeeding foundation for the rest of their hospital stay and beyond.

### **First Step Educating Staff**

The project incorporated a baseline pre-survey on breastfeeding knowledge of the unit nurses which was given before education (see Appendix C). A PowerPoint was presented at a staff meeting in September to introduce the importance of EB, education on breastfeeding, and the project related to EB. Within the PowerPoint was an introduction to the step-by-step approach that staff would take in support of the project. After the PowerPoint was presented, there was a post-survey to evaluate the effectiveness of the PowerPoint and their breastfeeding knowledge after education (see Appendix C).

Education sessions were given on breastfeeding support and breastfeeding education, where each department was taught their resources as it pertained to EB. These sessions started in September and ran through the project start of October. The staff was allowed to ask questions about the project and give their input on ways to improve the project and received additional educations if needed.

### **Second Step Implementation in Labor**

Using key points from the research articles, the education about exclusive breastfeeding started in labor, where the expectant mother who requested to breastfeed received education on EB. The education provided described the benefits of EB for mother and baby, practices that support EB, and information on the importance of the first feed. This fact sheet was supporting material for the nurses on the unit and was hung on the wall of every unit (see Appendix D). If any questions arose as the participants read the educational material, they were prompted to put their call light on, and a labor nurse/or lactation consultant could answer what questions they might have about the education they had received.

### **Third Step after Birth Breastfeeding Support with Mother and Neonate**

After birth, the labor nurse promoted skin-to-skin technique and helped the mother with correct positioning, expressed breast milk for the mother, and showed the dyad how to acquire a good latch (see Appendix D). These steps happened immediately after birth and could take up to an hour. Support of the first feed was imperative to give the dyad a more substantial chance at EB throughout their stay in the hospital setting.

### **The Fourth Step is Continued Care in Postpartum**

The patients will be transferred to postpartum where concise and consistent education and support of EB will be provided throughout their hospital stay.

### **Impact to department**

In accordance with the unit goal of achieving a high rate of exclusive breastfeeding (EB), the labor nurses are highly motivated to provide support for this important initiative. The unit director has specifically requested assistance in this area, and the unit's Milk Team, a specialized team focused on promoting successful breastfeeding, has been working diligently to increase the rate of EB in the unit. Given that no additional resources are required, the only cost associated

with this effort is the time that labor nurses devote to educating and supporting mothers in their breastfeeding journey, which should add no more than thirty minutes to their routine per patient.

The sustainability of this project is highly promising due to the aforementioned reasons.

### **Project Timeline**

In July 2022, an application was initiated to the Institutional Review Board (IRB). On August 30, 2022, the acceptance letter was received, and on September 15, 2022, education was provided to the nurses during a staff meeting. The project was implemented on October 1, 2022, and recruitment, implementation, and project conclusion occurred from that date until the end of February 2023. From March 2023 to May 2023, data collection, interpretation, and evidence distribution took place, as outlined in Appendix B, Figure B4, depicting the project timeline.

### **Participants and Recruitment**

The project was guided by three ethical principles: autonomy, nonmaleficence, and beneficence. Consent was obtained from the mothers upon admission to the labor unit, while keeping in mind the importance of HIPAA protocol. The nurses' pre and post surveys were linked by an anonymous passcode based on the mother's birthdate (month/day) to protect their identity and adhere to ethical principles. A written consent form was sent to the staff prior to the staff meeting, and they provided their implied consent by completing the pre and post surveys.

The project's methodology was reviewed by faculty mentors and the IRB.

### **Data Collection and Outcomes Measurement**

The PowerPoint presentation was given to the staff in September of 2022, and as a measure of knowledge gained, a pre- and post-survey was conducted (see Appendix C). The data collected was analyzed using a paired t-test to determine if there was a significant change in knowledge. The Comprehensive Breastfeeding Knowledge scale was used to assess the

outcomes, which focused on managing the mother's milk supply, overcoming challenges faced by the dyad, and correcting misconceptions about exclusive breastfeeding (Abbass-Dick et al., 2020). The coefficient alpha for the total scale was 0.83, indicating a high level of reliability for this breastfeeding tool (Abbass-Dick et al., 2020). Positive correlations with the Iowa Infant Feeding Attitude Scale, which focuses on maternal attitudes towards infant feeding, demonstrated the validity of the tool. A higher total score was associated with exclusive breastfeeding at 4 and 12 weeks, indicating high predictive validity (Abbass-Dick et al., 2020).

Equipping nurses with the knowledge to care for families who choose exclusive breastfeeding can increase the chances of higher EB rates on the unit. The project aimed to educate all 130 nurses on the unit, with a target of completing at least 60 pre- and post-surveys. The project aimed to gather data on EB rates, which was collected by an external company responsible for conducting monthly audits on the unit. The EMR was used to review designated criteria, which included the baby being 37 weeks or older, no NICU admission, and a feeding section stating breast milk, formula, or nursing. If a baby was given formula within the first 72 hours of their stay, they were removed from the EB list, leading to a decrease in the EB rate. The Associate Director on the unit used Tableau to analyze the EB rates within the department. The program allowed her to adjust the data and view it year-to-date or monthly. The hospital tracked the EB rates before formal education (May to the end of September) and after formal education (October through the end of February) to determine if the education and support had an impact on the unit's EB rate. The target goal for the rate of EB was 42% or higher.

## **Results**

The exclusive breastfeeding rates were monitored for five months before implementation of the project and five months after the implementation of the project with the help of an assistant director.

Table 1.

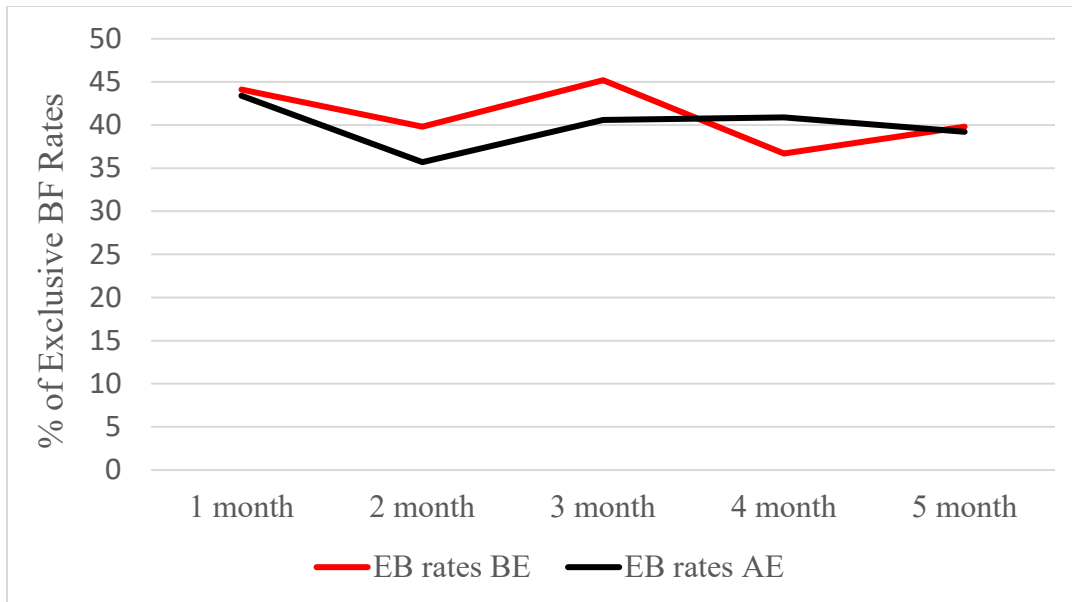
*Months evaluated for EB rates and the rates for each month.*

Exclusive Breastfeeding Rates									
May	June	July	August	September	October	November	December	January	February
44.1	39.8	45.2	36.7	39.8	43.4	35.7	40.6	40.9	39.2

The project's goal was for exclusive breastfeeding to be at 42%.

Figure 1.

*Exclusive Breastfeeding Rates.*



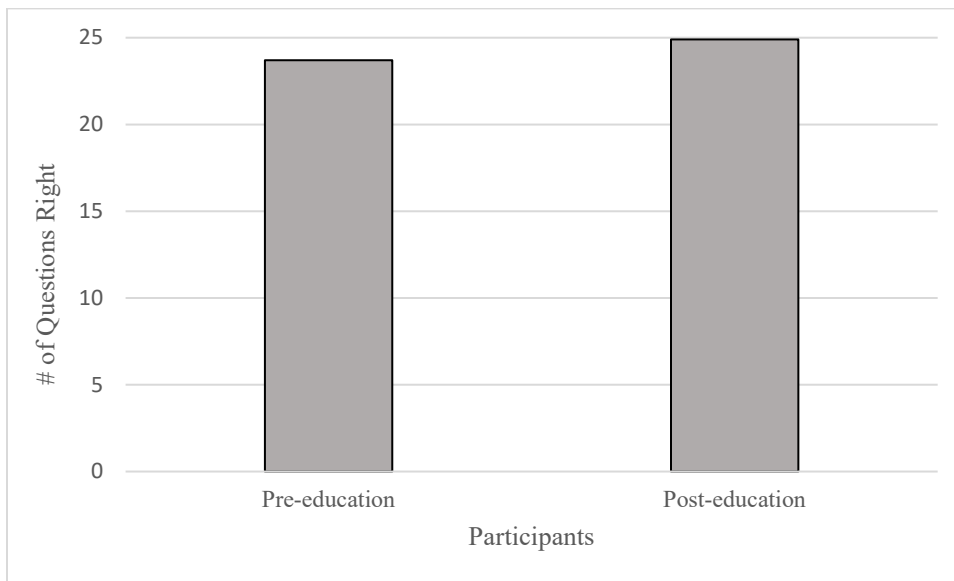
Notes: Abbreviations in the above table. Before education (BE) and after education (AE)

The overall results showed that the rate of exclusive breastfeeding at discharge over five months was 39.6%, which is higher than pre-implementation rate of 33.7%. However, the outcome falls below the primary outcome goal of 42%. The secondary outcome of the project involves the pre

and post surveys to evaluate knowledge gain from the educational series given to the staff. A two-tailed paired samples t-test was done with 27 participants total (n=27).

Figure 2

*Evaluation of Education Using CBKS*



Note: The pre- and post-survey showed significant education gained from the education given with an alpha value of 0.05,  $t(26) = -4.27$ ,  $p < 0.001$ .

The exclusive breastfeeding rate has been showing a steady state for approximately three months, with the rate at about 40%.

This unit recently developed a patient handbook, and this project showed how practical the education book was when teaching about breastfeeding to their patients. The education session showed the nurses where to look in the book to find resources for themselves when teaching patients. However, it also showed them where videos and significant resources were for their patients. The unit developed a plan to use this book throughout the patient's hospitalization, which has improved consistency of the education provided. The sustainability of this project

should be high with the use of the new handbook. The consistent and concise teaching should be maintained in the future due to the plan and implementation of this resource.

### **Conclusion**

The project yielded an overall positive outcome, despite falling below the primary outcome goal for exclusive breastfeeding. The steady exclusive breastfeeding rate of approximately 40% represents a noteworthy clinical improvement. The educational sessions were instrumental in providing valuable information to both novice and experienced nurses. Notably, the sessions dispelled several misconceptions previously held by the nursing staff, including the erroneous belief that breastfeeding should be painful, and that increased breastfeeding does not necessarily translate to increased milk production. Additionally, the sessions underscored the importance of using evidence-based practices to address patient concerns and provided valuable resources to support breastfeeding education.

It is critical that all nurses working in this unit possess the skills and knowledge necessary to support breastfeeding and educate others about breastfeeding-related topics effectively. Ongoing efforts to facilitate staff proficiency in this area are crucial to sustained progress. Nurses should continue to empower breastfeeding families to develop self-efficacy and foster peer support as a means of overcoming breastfeeding challenges. Ultimately, the aim is to equip families with the knowledge and tools they need to navigate the joys and obstacles of breastfeeding independently.

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breastfeeding: A randomized controlled trial. *The Journal of Maternal-Fetal & Neonatal Medicine*, 34(6), 925–932. <https://doi.org/10.1080/14767058.2019.1622672>

## Appendix A

## Evaluation and Synthesis Tables

**Table A1**  
Evaluation Table for Quantitative Studies

Citation	Theoretical/ Conceptual Framework	Design/ Method/ Purpose	Sample/Setting	Variables	Measurement/ Instrumentation	Data Analysis	Results/ Findings	Level of Evidence; Application to practice; Generalization
Huang et al., (2019). Individualized intervention to improve rates of exclusive breastfeeding: A randomized controlled trial. <b>Country:</b> China <b>Funding:</b> Biru Luo, West China Second University Hospital, Chengdu, Sichuan 610041, People's Republic of China	SET	<b>Design:</b> RCT/ Mixed method study <b>Purpose:</b> To Investigates the effectiveness of an AN BE and PN LS compared with RC in improving EBR.	N= 319 <b>CG:</b> n=162 <b>IG:</b> n=157 <b>Demographics:</b> > 18, >34 GW, and had NC that CB. <b>Setting:</b> HOSP, AN, HOSP PN, and over the phone after DC <b>Exclusion:</b> Women with HR and multiple pregnancies were excluded	<b>IV1:</b> AN BFE <b>IV2:</b> PN LS  <b>DV1:</b> EBR at DC <b>DV2:</b> EBR at 4 months <b>DV3:</b> Lower incidence of CN at 42 days and at 4 months. <b>DV3:</b> Maternal satisfaction <b>Definitions:</b> EB was defined that infant was given only BM, medicines, and	<b>Tools:</b> BAPT & BKS  <b>Validity/Reliability:</b> <b>BAPT</b> The mean CVR is 0.89 CAC is 0.757 <b>BKS</b> The CVR is 0.82 CAC 0.77	<b>Statistical Tests Used:</b>  To test quantitative data analysis of variance was used.	<b>CG Usual Care:</b> <b>Post DC:</b> 30% EB 68.1% BF on demand <b>At 42 days:</b> No significant difference <b>At 4 months:</b> 46.2% EB 75.9% BF on demand <b>IG EBE and BFS:</b>	<b>Level of Evidence:</b> Level II <b>Strengths:</b> Increased EB and MS with interventions Increase BF on demand and can improve EBR up to 4 months. High level evidence; decent N; fairly low attrition rate. <b>Weakness:</b> No comparison between SG each family had. HOSP

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<b>Bias:</b> no conflicts of interest			<b>Attrition:</b> 59 PART 18.5% dropped out	vitamins may be given but no formula or water			<b>Post DC:</b> Improvements in the BF knowledge at DC 43% EB CI 1.78 (1.12–2.82) (P=.01) 95.1% BF on demand CI 1.78 (1.12–2.82) (P=.01) <b>At 42 days:</b> EB CI 1.14 (0.68–1.89) (P=.62) BF on demand CI 1.02 (0.44–2.35) (P=.95) Lower incidence of CN	and at home support is important for improving BFR. <b>Feasibility:</b> The combined AN education and PN support showed great results but limited time and resource make it difficult to provide this in the HOSP setting. <b>Application:</b> The personalized behavior intervention can enhance MS, improve BFR and could be a great way to increase BFR in the HOSP.

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							CI 0.49 (0.29–0.81) (P=.01)  <b>At 4 months:</b> 70.9% EB CI 2.84 (1.76–4.60) (P=.00) 94.6% BF on demand CI 5.57 (2.48–12.49) (P=.00) Lower incidence of CN CI .50 (0.29–0.85) (P=.01) The MS and BF was higher	
Kim, et al., (2018) Interventions promoting exclusive breastfeeding up to six months	SET	<b>Design:</b> SRMA  <b>Purpose:</b> To review how effectively	<b>N= 54</b> <b>QL:</b> n= 27 Low quality <b>QT:</b> n= 27	<b>IV1:</b> BFHI <b>IV2:</b> ES/counseling <b>IV3:</b> BE	<b>Tools:</b> The Cochrane Collaboration's Risk of Bias tool  Comprehensive Meta-analysis	<b>Statistical Tests Used:</b> The random effect model was utilized for I 2 values	<b>Time and setting interventions:</b> The most effective interventions	<b>Level of Evidence:</b> Level I  <b>Strengths:</b> Comparison of interventions at

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<p>after birth: A systematic review and meta-analysis of randomized controlled trials</p> <p><b>Country:</b> South Korea</p> <p><b>Funding:</b> National Research Foundation of Korea</p> <p><b>Bias:</b> No conflicts of interest</p>		EBF promotion interventions result in EBF for 6 months.	<p>Moderate quality</p> <p><b>Total Participants of all studies:</b> 36,051</p> <p><b>Demographics:</b> Healthy dyads</p> <p><b>Setting:</b> HOSP, CC, and those two combined</p> <p><b>Exclusion:</b> Rates of EBF earlier than 6 months, Non-RCTs (quasi-experimental design), abstracts, conference proceedings, unpublished gray literature, and RS</p> <p>No health issues</p>	<p><b>IV4:</b> Combination of above Interventions</p> <p><b>IV3:</b> During PN</p> <p><b>IV3:</b> PN &amp; after birth</p> <p><b>IV4:</b> POST only</p> <p><b>IV5:</b> Health professionals</p> <p><b>IV6:</b> Predetermined Protocol</p> <p><b>DV1:</b> BF at 6 months</p> <p><b>Definitions:</b> EB is defined as infant is given only BM, medicines, and vitamins may be given but no formula or water</p>	<p>CMA, version 3.0 using the OR</p> <p><b>Validity/Reliability:</b> Not reported in the study</p>	<p>greater than 50% otherwise the fixed effect model was used</p>	<p>started PN and continued PP period (OR = 3.32; 95% CI: 1.83–6.03),</p> <p>PN period only (OR = 1.19; 95% CI: 0.83–1.71)</p> <p>PP only (OR = 2.77; 95% CI: 1.66–4.63).</p> <p><b>Intervention Type:</b> BFHI was the most effective (OR = 5.21; 95% CI: 2.15–12.61),</p> <p>Next combined (OR = 3.56; 95% CI: 1.74–7.26)</p>	<p>different periods throughout the maternal and newborn period to find the interventions that fit increase EBF at 6 months.</p> <p><b>Weakness:</b> R/o studies stop collecting data before 6 months and were not included. Health issues were not included. Demographic were not looked at</p> <p><b>Feasibility:</b> Some interventions are time consuming, and staff need the recourses and time to carry out these interventions, which might not be</p>

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							<p>Then emotional support and counseling (OR = 2.24; 95% CI: 1.19–4.22)</p> <p><b>Provided by:</b></p> <p>health professionals had greater effective (OR = 2.76; 95% CI: 1.76–4.33)</p> <p>outcome led by a layperson (OR = 2.81; 95% CI: 1.45–5.43).</p> <p><b>Protocol:</b></p> <p>yes (OR = 2.87; 95% CI: 1.89–4.37)</p> <p>No</p>	<p>possible in HOSP setting.</p> <p><b>Application:</b></p> <p>AN and after birth interventions worked best.</p> <p>Protocol is important.</p> <p>If resources are low, group sessions in PP period can work.</p>

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							(OR = 2.03; 95% CI: 1.12–3.69)	
Yılmaz et al., (2021). The effect of breastfeeding training on exclusive breastfeeding: A randomized controlled trial. <b>Country:</b> Turkey <b>Funding:</b> Erciyes University Coordination of Scientific Research Projects <b>Bias:</b> No conflicts of interest	SET	<b>Design:</b> RCT/QT <b>Purpose:</b> To indicate the effect BM and BF training on mothers' knowledge, behaviors, and EBF for 6 months.	N= 140 Mother-infant pairs <b>CG:</b> n=35 <b>IG:</b> n=35 <b>Demographics:</b> 20≥ of age, married, 1 <sup>st</sup> baby, single baby, on social security, No smoking, no chronic disease, and live in the city for six months after the birth <b>Setting:</b> HOSP, HV, and CC <b>Exclusion:</b>	<b>IV1:</b> PN BE in 2 sessions <b>IV2:</b> POST BE <b>DV1:</b> BF knowledge <b>DV2:</b> EBR at 6 months <b>Definitions:</b> EB is defined as infant is given only BM, medicines, and vitamins may be given but no formula or water	<b>Tools:</b> <b>Pre BE</b> Breastfeeding counseling training manual – developed by the researchers Infant and young child feeding - publications of the WHO and UNICEF <b>Post BF survey</b> Knowledge, Behavior, and Success State of Mothers on BF at one week PP BF Status at six months	<b>Statistical Tests Used:</b> The Shapiro-Wilks test was used for the quantitative data Mann–Whitney U test for comparison post training between the two groups Wilcoxon t-test was used for the comparison of pre and post training inside each group	<b>CG:</b> PN education on NFPM and BF training HOSP staff <b>Pre training:</b> 5 out of 11 questions right BF facts <b>Post training HV:</b> median of the variation in the number of questions answered correctly 2.0 (0.0–3.0) <b>PP EBR at 6-month HV:</b> (3.3%)	<b>Level of Evidence:</b> Level II <b>Strengths:</b> BE showed improvements at 6 months of EBR and BF knowledge was better at 1 week with the BE. Average of EBR was 5 months with education and 4 without BE. Found that mothers stopped breastfeeding due to introduction to food products and not feeling adequate in supply for their growing baby <b>Weakness:</b>

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			LBW, < 37 GW, need IC  <b>Attrition:</b> 12 PART 8.6% dropped out		<b>Validity/Reliability:</b>  This data was not reported for this study		<b>Average EBR:</b> 4 months <b>IG:</b> BE PN and POST by researcher <b>Pre training:</b> 5 out of 11 questions right BF facts <b>Post training HV:</b> median of the variation in the number of questions answered correctly 4.0 (2.75–5.0) (p < .001) <b>PP EBR at 6-month HV:</b> (26.5%) (p=0.015)	<b>Level of Evidence:</b> They used tools made by the researcher, no data of reliability and validity. <b>Feasibility:</b> The sessions were 90 minutes and 2 sessions PN and POST BE/help with breastfeeding. This PN BE is not feasible within a hospital environment. <b>Application:</b> Shortened BE PN and POST BE is important so a shorter version could be done to increase EBR in the hospital

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							Average EBR: 5 months	
Tseng et al., (2020) Effectiveness of an integrated breastfeeding education program to improve self-efficacy and exclusive breastfeeding rate: A single-blind, randomized controlled study. <b>Country:</b> Taiwan <b>Funding:</b> Supported by the Ministry of Science and Technology, Taiwan <b>Bias:</b> No	SET	<b>Design:</b> A single-blind, randomized controlled trial <b>Purpose:</b> To develop an integrated BFE program based on SET, and evaluate the effect of the intervention on first-time mothers' BF SE and attitudes.	N= 104 <b>IG:</b> 50 <b>CG:</b> 43 <b>Demographics:</b> ≥ 20 yrs old, first-time mothers, single births, Partner participation, Willing to BF <b>Setting:</b> PN clinic of a teaching HOSP <b>Exclusion:</b> Time factors, Preterm, fetal factors <b>Attrition:</b> 11 PART  10.5% dropped out	<b>IV1:</b> a 3-week educational program <b>DV1:</b> BF SE <b>DV2:</b> IF attitude <b>DV3:</b> BFR <b>Definitions:</b> BF SE is influenced by a mother's belief in her ability to BF her infant, as well as her belief in success, which have been shown to be important and modifiable factors for improving BF outcomes.	<b>Tools:</b> BSES - Short Form and IIFAS <b>Validity/ Reliability:</b>  <b>BSES-short form</b> Cronbach's alpha coefficient for the BSES-SF was 0.910  goodness-of-fit indices indicated that the model did not fit the data well ( $\chi^2/df = 5.82$ ; CFI = 0.95; NFI = 0.94; IFI = 0.95; RMSEA = 0.113 and SRMR = 0.064).  <b>IIFAS</b>	<b>Statistical Tests Used:</b> independent t-tests, chi-square or Fisher's exact	<b>IG vs CG:</b> At baseline both groups were equal. <b>DV1:</b> BF SE 36 GW: MD was 7.3, p<.001 <b>PP at:</b> 1week: MD was 6.7, p<.001 1month: MD was 7.9, p<.001 3 months: MD was 8.1, p<.01 <b>DV2:</b> IF attitude 36 GW: MD was 5.9, p<.001 <b>PP at:</b> 1week: MD was 7.4, p<.001 1month: MD was 5.3, p<.001 3 months: MD was 4.3, p<.01	<b>Level of Evidence:</b> Level II <b>Strengths:</b> Increase BFR, increased BF SE and increased IF attitude scores <b>Weakness:</b> self reported surveys and very limited population <b>Feasibility:</b> This is a 3 week course that was completed at a teaching hospital. This is a long time frame for education for hospitals that was to incorporate this teaching method into their care. <b>Application:</b> : A shortened version of this could work when educating the

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conflicts of interest					Cronbach's alpha was equal to 0.71  The CFA indicated an adequate fit of the one-factor model (RMSEA=0.076, CFI=0.958 and GFI=0.949)		<b>DV3: BFR</b> <b>PP at:</b> 1 week: 98% vs.86% 1 month: 100% vs. 90.7% 3 months: 94% vs.76.7%	patients about BF and the importance of EB.
Franco-Antonio et al., (2021) Effect of a brief motivational intervention in the immediate postpartum period on breastfeeding self-efficacy: Randomized controlled trial. <b>Country:</b> Spain <b>Funding:</b> Jonhson and Jonhson <b>Bias:</b> No	SET	<b>Design:</b> RCT <b>Purpose:</b> To analyze the effectiveness of a bMI in increasing BSE in women who started BF in the immediate PP period	N= 88 <b>IG:</b> 44 <b>CG:</b> 44 <b>Demographics:</b> Healthy, started to feed within an 1 after birth, vaginal delivery <b>Setting:</b> two public HOSP in southwestern Spain <b>Exclusion:</b> Admitted to NICU, no maternal psychiatric	<b>IV1:</b> bMI 20-30 mins <b>DV1:</b> BFSE <b>Definitions:</b> Nothing defined in this paper	<b>Tools:</b> BSES - Short Form <b>Validity/ Reliability:</b> <b>BSES-short form</b> Cronbach's alpha coefficient for the BSES-SF was 0.910  goodness-of-fit indices indicated that the model did not fit the data well ( $\chi^2/df = 5.82$ ; CFI = 0.95; NFI = 0.94; IFI = 0.95;	<b>Statistical Tests Used:</b> quantitative variables: t test.  categorical variables: Pearson's $\chi^2$ test and Fisher's exact test	<b>IG vs. CG:</b> <b>DV1:</b> Baseline No difference  1 month BFSE increased baseline score of 59.14 ( $\pm 9.35$ ) to 64.62 ( $\pm 7.91$ ) (p <0.001)  3 months No difference  6 months	<b>Level of Evidence:</b> Level II <b>Strengths:</b> A bMI applied in the immediate PP period in women who had started BF within the newborn's first hour of life and reinforced with telephone calls at the first, third and sixth months PP increased BF SE <b>Weakness:</b> applied under ideal

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conflicts of interest			condition, F/U complications, language barriers <b>Attrition:</b> 7 PART 8% dropped out		RMSEA = 0.113 and SRMR = 0.064).		No difference	conditions for high PP AE, including early onset of BF, support at the beginning of BF, and a firm mindset for wanting to BF, which are all positive predictors of better BF SE <b>Feasibility:</b> bMI do not take long and can be done fast within a hospital setting <b>Application:</b> This intervention is feasible but might be done within a different time period than this study.
Souza et al., (2020) Effect of a breastfeeding	pragmatic theory	<b>Design:</b> RCT <b>Purpose:</b> Use of technology-mediated	N= 104 <b>IG:</b> 52	<b>IV1:</b> BFE Kit <b>DV1:</b> BFR <b>DV2:</b> BF	<b>Tools:</b> Kit Educativo para	<b>Statistical Tests Used:</b>	<b>IG vs CG:</b> <b>DV1:</b> BFR	<b>Level of Evidence: Strengths:</b> the PP women in the IG

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educational intervention: A randomized controlled trial. <b>Country:</b> Brazil <b>Funding:</b> Universidade Estadual de Campinas, Faculdade de Enfermagem, Campinas, SP, Brazil. <b>Bias:</b> Nothing reported in the paper		health educational strategies of nursing care provided to PP women at hospital discharge with the purpose of encouraging EBF	<b>CG:</b> 52 <b>Demographics:</b> BF in HOSP , healthy <b>Setting:</b> private HOSP <b>Exclusion:</b> Communication difficulties, Preterm, fetal factors not EBF <b>Attrition:</b> No losses	difficulties <b>Definitions:</b> HT is any form of intervention used to promote, prevent, diagnose, or treat diseases, as well as to promote rehabilitation, including devices, procedures, medications, materials, programs, and care protocols.	Aleitamento Materno  <b>Validity/ Reliability:</b> Not reported	Chi-Squared Test, Fischer's Exact Test	day 10: 48(92.3%)vs37 (71.2%) day 30: 25(48.1%) vs 42(80.8%) day 60: 23(44.2%) vs 45(86.5%) <b>DV2:</b> No BF difficulties day 10: 26(100%) vs 40(100%) day 30: 19(100%) vs 39(100%) day 60: 21(100%) vs 43(100%)	had fewer BF difficulties and a higher percentage of at all time points compared with CG <b>Weakness:</b> low sample size <b>Feasibility:</b> This could be done using similar props and educational tools. It is only 20-30 mins and not much time. <b>Application:</b> If implemented, a good time to implement this intervention would be before and during the first feeding.
Karimi et al., (2019) The effect of mother-infant skin to	kolcaba's comfort theory	<b>Design:</b> SRMA <b>Purpose:</b> To determine the effect of mother-infant SSC	N= 1150 <b>IG:</b> 597 <b>CG:</b> 553 <b>Demographics:</b>	<b>IV1:</b> SSC <b>DV1:</b> first BF success <b>DV2:</b> First BF	<b>Tools:</b> PRISMA checklist, Oxford Evidence-Based Medicine Check List and the	<b>Statistical Tests Used:</b>  Chi-square based on Q-	<b>IG vs CG:</b> <b>DV1:</b> first BF success	<b>Level of Evidence:</b> Level I <b>Strengths:</b> Low attrition rate,

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skin contact on success and duration of first breastfeeding: A systematic review and meta-analysis <b>Country:</b> Iran <b>Funding:</b> Mashhad University of Medical Sciences <b>Bias:</b> No conflicts of interest.		immediately after birth on the success rate and duration of the first BF.	37- 42 weeks GA, healthy, wanting to BF, SSC <b>Setting:</b> HOSP <b>Exclusion:</b> between 2001 and 2015, Failure to report the necessary data, duplicate citation <b>Attrition:</b> 2 - 17% dropouts was reported	duration  <b>Definitions:</b> SSC is defined as placing the naked newborn infant prone on mother's bare chest at birth or soon afterwards.	Cochrane Collaboration's tool IBFAT  <b>Validity/ Reliability:</b> IBFAT correlation coefficients between 0.81 to 0.88 for the total MBA score, between 0.90 to 0.95 for the total IBFAT score	test and I2 statistics with a significance level of <0.05.	(MD:1.90, 95%; CI 0.958-2.856; p=0.00, OR: 2.771 95%; CI 1.587-4.838; p=0.00) <b>DV2:</b> First BF duration (MD:26.627 95%; CI 1.070-52.184; p=0.041)	Increase BF success with first feed, and Increase in first BF duration <b>Weakness:</b> The quality of the studies in terms of methodology and the different methods of scoring. <b>Feasibility:</b> Easy to apply to practice. Patients with a cesarean might get push back from staff <b>Application:</b> Easily applied to in labor after birth
McFadden et al., (2017) Support for healthy breastfeeding mothers with healthy term babies.	SET	<b>Design:</b> SRMA <b>Purpose:</b> By knowing what kind of support can be provided to help mothers with BF, we can help them solve any problems and continue to BF for as long as	N= 83,246 <b>Demographics:</b> 62% of the women were from high-income countries, 34% from middle income countries	<b>IV1:</b> Additional training in BF support for staff <b>IV2:</b> BF support  <b>DV1:</b> BFR by six months	<b>Tools:</b> Cochrane Collaboration's tool  GRADE approach	<b>Statistical Tests Used:</b> Statistical heterogeneity in each meta-analysis using the T au2, I2	<b>IG vs CG DV1:</b> BF support 52.59% of those receiving support interventions	<b>Level of Evidence:</b> Level I <b>Strengths:</b> Increase in BFR for every categories <b>Weakness:</b> High attrition rate, the

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<p><b>Country:</b> UK  <b>Funding:</b> University of York, UK, National Institute for Health Research Health Technology Assessment program  <b>Bias:</b> No conflicts of interest.</p>		they want to, wherever they live.	and 4% from low-income countries <b>Setting:</b> outpatient, hospital settings <b>Exclusion:</b> mothers of premature and sick babies and mothers with some medical conditions <b>Attrition:</b> >25% anything over was omitted	<b>DV2:</b> BFR before six months <b>DV3:</b> BFR by by 4-6 weeks <b>DV4:</b> BFR by before 4-6 weeks <b>Definitions:</b> Support can be in the form of giving reassurance, praise, information, and the opportunity for women to discuss problems and ask questions as needed.	<b>Validity/ Reliability:</b> Not stated	and Chi2 statistics.	<p>had stopped any BF by six months compared with 56.64% of controls</p> <p>IG 74.9% vs CG 83.4% of women had stopped exclusive BF before 6 months</p> <p>IG 31.3% vs CG 34.8% of women had stopped exclusive BF by 4-6 weeks</p> <p>IG 57.2% vs CG 65.0% of women had</p>	<p>review is over such a diverse population it is hard to come to narrow conclusion</p> <p><b>Feasibility:</b> Although they state BF support, they do not describe it other than to describe BFHI being important</p> <p><b>Application:</b> BF support by knowledgeable staff is important so I can incorporate that into my project.</p>

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							stopped exclusive BF before 4-6 weeks	
Chipojola et al., (2020) Effectiveness of theory-based educational interventions on breastfeeding self-efficacy and exclusive breastfeeding: A systematic review and meta-analysis <b>Country:</b> Taiwan <b>Funding:</b> Ministry of Science of Technology <b>Bias:</b> No	SET and planned behavior theory	<b>Design: SRMA</b> <b>Purpose:</b> Is the use of theory-based educational interventions associated with improved BF outcomes and to identify key factors of effective BF educational programs.	N= 5678 <b>Demographics:</b> 29 years old, had participated in an intervention in a hospital setting, were from Organization for Economic Co-operation and Development countries, majority resided in the USA <b>Setting:</b> hospital, community <b>Exclusion:</b> Non interventional, non English, Quasi experimental <b>Attrition:</b>	<b>IV1:</b> Theory based intervention <b>IV2:</b> Educational timing <b>IV3:</b> Class formation <b>DV1: BF SE</b> <b>DV2: BFR</b>  <b>Definitions:</b> Nothing was defined	<b>Tools:</b> Comprehensive Meta-Analysis Software(CMA) version2 <b>Validity/ Reliability:</b> Not reported	<b>Statistical Tests Used:</b> I2 and Q statistics.	<b>IG vs CG:</b> <b>DV1: BF SE</b> SET at 1-2 months SMD[95% CI] 0.69[0.34~1.04 ] p<0.001  PN education at 1-2 months SMD[95% CI] 0.87[0.28~1.45 ] p<0.01  <b>DV2: BFR</b> planned behavior theory at 3-6 months	<b>Level of Evidence:</b> Level I <b>Strengths:</b> BF SE and BFR increase and theory based education, both hospital and community education <b>Weakness:</b> Exclusive BFR was self reported. <b>Feasibility:</b> PN and POST education with Theory based education is able to be applied in the hospital environment <b>Application:</b> PN

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Citation	Theoretical/ Conceptual Framework	Design/ Method/ Purpose	Sample/Setting	Variables	Measurement/ Instrumentation	Data Analysis	Results/ Findings	Level of Evidence; Application to practice; Generalization
conflicts of interest			Not stated				<p>OR[95% CI] 6.78[4.41~10.4 3] p&lt;0.001</p> <p>PN education PP at 3-6 months OR[95% CI] 2.00[1.25~3.19 ] p&lt;0.01</p> <p>Individual and group classes PP at 1-2 months OR[95% CI] 3.57[1.99~6.40 ]p&lt;0.001</p> <p>Individual and group classes PP at 3-6 months OR[95% CI] 6.36[4.19~9.67 ]p&lt;0.001</p>	and POST education with Theory based education is achievable in a hospital environment

Key: **AN** antenatal, **BAPT** Breastfeeding Attrition Prediction Tool, **BF** Breastfeeding, **BE** Breastfeeding Education, **BM** Breast Milk, **bMI** brief Motivational interview, **BFR** Breastfeeding Rates, **BFHI** Baby Friendly Hospital Initiative, **BFS** Breastfeeding Support, **BKS** The Breastfeeding knowledge scale, **BSES** Breastfeeding Self-Efficacy Scale, **CAC** Cronbach's alpha coefficient, **CB** Contraindicate Breastfeeding, **CC** Community Center, **CG** Control Group, **CI** confidence interval, **CN** Cracked Nipples, **CVR** Content Validity Ratio, **DV** Dependent Variable, **DC** Discharge, **EB** Exclusive Breastfeeding, **EBR** Exclusive Breastfeeding Rates, **ES** Emotional Support, **F/U** follow up, **GS** Group Session, **GW** Gestation Weeks, **HOSP** Hospital, **HR** High Risk, **HT** Health Technologies, **HV** Home visits, **IBFAT** Infant Breast-feeding Assessment Tool, **IC** Intensive Care, **IG** Intervention Group, **IF** Infant Feeding, **IIFAS** Iowa Infant Feeding Attitude Scale, **IV** Intervention Variable, **LBW** Low Birth Weight, **LS** Lactation support, **MD** Median Difference, **MS** Maternal Satisfaction, **N** Sample Size, **NC** No Complications, **NCI** No Conflict of Interest, **MFPM** Modern Family Planning Methods **OR** Odds Ratios, **PART** Participants, **PN** Prenatal, **POST** Postnatal, **PP** Postpartum **QL** Qualitative, **QT** Quantitative, **RC** Routine Care, **R/O** Ruled Out, **RS** Review Studies, **RTC** Randomized Control Study, **SE** Self-efficacy, **SET** Self-efficacy Theory **SG** Support Group, **SMD** standardized mean difference, **SRMA** Systematic Review and Meta-Analysis, **SSC** skin-to-skin contact

Citation	Theoretical/ Conceptual Framework	Design/ Method/ Purpose	Sample/Setting	Variables	Measurement/ Instrumentation	Data Analysis	Results/ Findings	Level of Evidence; Application to practice; Generalization
<p>Nilsson et al., (2017) Focused breastfeeding counseling improves short- and long-term success in an early-discharge setting: A cluster-randomized study</p> <p><b>Country:</b> Denmark</p> <p><b>Funding:</b> Trygffonden and The Danish Nurses' Organization</p> <p><b>Bias:</b> No conflicts of interest</p>	SET	<p><b>Design:</b> Cluster RTC</p> <p><b>Purpose:</b> Evaluate if guidelines for BF counseling in an early d/c hospital setting had an effect on maternal BF SE, infant readmission and BF duration.</p>	<p>N= 3541</p> <p><b>Demographics:</b> vaginal births, nonsmokers</p> <p><b>Setting:</b> Hospital</p> <p><b>Exclusion:</b> Not BF, Multiple infants, Not able to read Danish</p> <p><b>Attrition:</b> ~28% drop out in each group</p>	<p><b>IV1:</b> Increased SSC</p> <p><b>IV2:</b> frequent BF</p> <p><b>IV3:</b> good positioning of the mother infant dyad</p> <p><b>IV4:</b> Enhanced involvement of the father</p> <p><b>DV1:</b> BF more frequently</p> <p><b>DV2:</b> BFR</p> <p><b>Definitions:</b> Exclusive BF was defined as the infant getting nothing other than BM from the mother</p>	<p><b>Tools:</b> BFSE tool but what tool was not stated</p> <p>Questionnaire at 5 days, 1 month and 6 months</p> <p><b>Validity/ Reliability:</b> Not reported</p>	<p><b>Statistical Tests Used:</b> 2-sided T-test</p>	<p><b>IG vs CG</b></p> <p><b>DV1:</b> 5 days</p> <p>Less readmissions</p> <p>Increased frequency BF</p> <p>Decrease in nipple pain</p> <p>Fathers increase help given to mother</p> <p>Increase SSC</p> <p>Increase BFR</p> <p><b>DV2:</b> 1 month</p> <p>Increased frequency BF</p> <p>Decrease in nipple pain</p> <p>Fathers increase help given to mother</p> <p>Increase SSC</p> <p>Increase BFR</p> <p><b>DV3:</b> 6 months</p> <p>Increased frequency BF</p>	<p><b>Level of Evidence:</b> Level II</p> <p><b>Strengths:</b> Increase in SSC, BFR, Father's help. Decrease in readmissions</p> <p><b>Weakness:</b> Tools were not explained</p> <p><b>Feasibility:</b> The interventions discussed are important in tools for increasing EBFR</p> <p><b>Application:</b> Interventions are easy to apply in the hospital setting.</p>

Key: **AN** antenatal, **BAPT** Breastfeeding Attrition Prediction Tool, **BF** Breastfeeding, **BE** Breastfeeding Education, **BM** Breast Milk, **bMI** brief Motivational interview, **BFR** Breastfeeding Rates, **BFHI** Baby Friendly Hospital Initiative, **BFS** Breastfeeding Support, **BKS** The Breastfeeding knowledge scale, **BSES** Breastfeeding Self-Efficacy Scale, **CAC** Cronbach's alpha coefficient, **CB** Contraindicate Breastfeeding, **CC** Community Center, **CG** Control Group, **CI** confidence interval, **CN** Cracked Nipples, **CVR** Content Validity Ratio, **DV** Dependent Variable, **DC** Discharge, **EB** Exclusive Breastfeeding, **EBR** Exclusive Breastfeeding Rates, **ES** Emotional Support, **F/U** follow up, **GS** Group Session, **GW** Gestation Weeks, **HOSP** Hospital, **HR** High Risk, **HT** Health Technologies, **HV** Home visits, **IBFAT** Infant Breast-feeding Assessment Tool, **IC** Intensive Care, **IG** Intervention Group, **IF** Infant Feeding, **IIFAS** Iowa Infant Feeding Attitude Scale, **IV** Intervention Variable, **LBW** Low Birth Weight, **LS** Lactation support, **MD** Median Difference, **MS** Maternal Satisfaction, **N** Sample Size, **NC** No Complications, **NCI** No Conflict of Interest, **MFPM** Modern Family Planning Methods **OR** Odds Ratios, **PART** Participants, **PN** Prenatal, **POST** Postnatal, **PP** Postpartum **QL** Qualitative, **QT** Quantitative, **RC** Routine Care, **R/O** Ruled Out, **RS** Review Studies, **RTC** Randomized Control Study, **SE** Self-efficacy, **SET** Self-efficacy Theory **SG** Support Group, **SMD** standardized mean difference, **SRMA** Systematic Review and Meta-Analysis, **SSC** skin-to-skin contact

Citation	Theoretical/ Conceptual Framework	Design/ Method/ Purpose	Sample/Setting	Variables	Measurement/ Instrumentation	Data Analysis	Results/ Findings	Level of Evidence; Application to practice; Generalization
							Decrease in nipple pain Fathers increase help given to mother Increase SSC Increase BFR	

Key: **AN** antenatal, **BAPT** Breastfeeding Attrition Prediction Tool, **BF** Breastfeeding, **BE** Breastfeeding Education, **BM** Breast Milk, **bMI** brief Motivational interview, **BFR** Breastfeeding Rates, **BFHI** Baby Friendly Hospital Initiative, **BFS** Breastfeeding Support, **BKS** The Breastfeeding knowledge scale, **BSES** Breastfeeding Self-Efficacy Scale, **CAC** Cronbach's alpha coefficient, **CB** Contraindicate Breastfeeding, **CC** Community Center, **CG** Control Group, **CI** confidence interval, **CN** Cracked Nipples, **CVR** Content Validity Ratio, **DV** Dependent Variable, **DC** Discharge, **EB** Exclusive Breastfeeding, **EBR** Exclusive Breastfeeding Rates, **ES** Emotional Support, **F/U** follow up, **GS** Group Session, **GW** Gestation Weeks, **HOSP** Hospital, **HR** High Risk, **HT** Health Technologies, **HV** Home visits, **IBFAT** Infant Breast-feeding Assessment Tool, **IC** Intensive Care, **IG** Intervention Group, **IF** Infant Feeding, **IIFAS** Iowa Infant Feeding Attitude Scale, **IV** Intervention Variable, **LBW** Low Birth Weight, **LS** Lactation support, **MD** Median Difference, **MS** Maternal Satisfaction, **N** Sample Size, **NC** No Complications, **NCI** No Conflict of Interest, **MFPM** Modern Family Planning Methods **OR** Odds Ratios, **PART** Participants, **PN** Prenatal, **POST** Postnatal, **PP** Postpartum **QL** Qualitative, **QT** Quantitative, **RC** Routine Care, **R/O** Ruled Out, **RS** Review Studies, **RTC** Randomized Control Study, **SE** Self-efficacy, **SET** Self-efficacy Theory **SG** Support Group, **SMD** standardized mean difference, **SRMA** Systematic Review and Meta-Analysis, **SSC** skin-to-skin contact

**Table A2**  
*Synthesis Table*

Study (Author, year)	Chipojola et al., 2020	Franco-Antonio et al., 2021	Huang et al., 2019	Karimi et al., 2019	Kim et al., 2018	McFadden et al., 2017	Nilsson et al., 2017	Souza et al., 2020	Tseng et al., 2020	Yilmaz et al., 2021
<b>Design</b>	SMRA	RTC	RTC	SMRA	SMRA	SMRA	RTC	RTC	RTC	RTC
<b>Theory</b>	SET and PBT	SET	SET	KCT	SET	SET	SET	PT	SET	SET
<b>LOE</b>	Level I	Level II	Level II	Level I	Level I	Level I	Level II	Level II	Level II	Level II
<b>Sample</b>										
<i>n subjects/studies</i>	5678	88	319	1150	36,051	83,246	3,541	104	104	140
<i>Healthy Dyads</i>	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
<i>First time mother</i>	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
<b>Setting</b>										
<i>Hospital</i>	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
<i>Community/home</i>	✓	By phone	By phone		✓			✓		✓
<b>Interventions</b>										
<i>Predetermined protocol</i>	✓	bMI		✓	✓		✓	✓	✓	
<i>BF support</i>			✓	✓	✓	✓	✓	✓	✓	✓
<i>SSC</i>				✓			✓	✓		
<i>BFHI</i>	±			±	±	✓		✓	✓	✓
<i>BFE AN</i>	✓		✓	✓	✓			✓	✓	✓
<i>BFE POST</i>	✓		✓	✓	✓	✓	✓	✓	✓	✓
<i>BFE PP</i>	✓	✓				✓	✓	✓		✓
<b>BFE provided by</b>										
<i>Professionals</i>	✓		✓	✓	✓	✓	✓			
<i>Researcher</i>	✓	✓	✓	✓	✓			✓	✓	✓
<i>Lay person</i>	✓			✓			✓			
<b>Outcomes/ Themes</b>										
<i>EBFR</i>	↑		↑	For 1st feed	↑	↑	↑	↑	↑	↑
<i>BF on demand</i>			↑				↑			
<i>BF SE</i>	↑	↑	↑		↑				↑	↑
<i>Cracked nipples</i>			↓							

**Key:** AN antenatal, **BAPT** Breastfeeding Attrition Prediction Tool, **BFE** breastfeeding education, **BF** breastfeeding, **BFHI** Baby Friendly Hospital Initiative, **BKS** The Breastfeeding knowledge scale, **bMI** brief motivational intervention, **BSES** Breastfeeding Self-Efficacy Scale, **CG** Control Group, **EBFR** exclusive breastfeeding rates, **IBFAT** Infant Breast-feeding Assessment Tool, **IG** Intervention Group, **IIFAS** Iowa Infant Feeding Attitude Scale, **KCT** Kolcaba's comfort theory, **PBT** planned behavior theory, **POST** postnatal, **PP** Postpartum, **PT** pragmatic theory, **SE** self efficacy, **SET** self-efficacy theory, **SSC** skin-to-skin contact

<i>BF difficulties</i>			↓	↓1st feed			↓	↓	↓	↓
<b>Tools</b>										
<i>Tools used</i>	Not stated	BSES	BAPT BKS	IBFAT	Not stated	Not stated	Not stated	Kit Educativo para Alcitemento Materno	BSES IIFAS	Breastfeeding counseling training manual & Infant and young child feeding

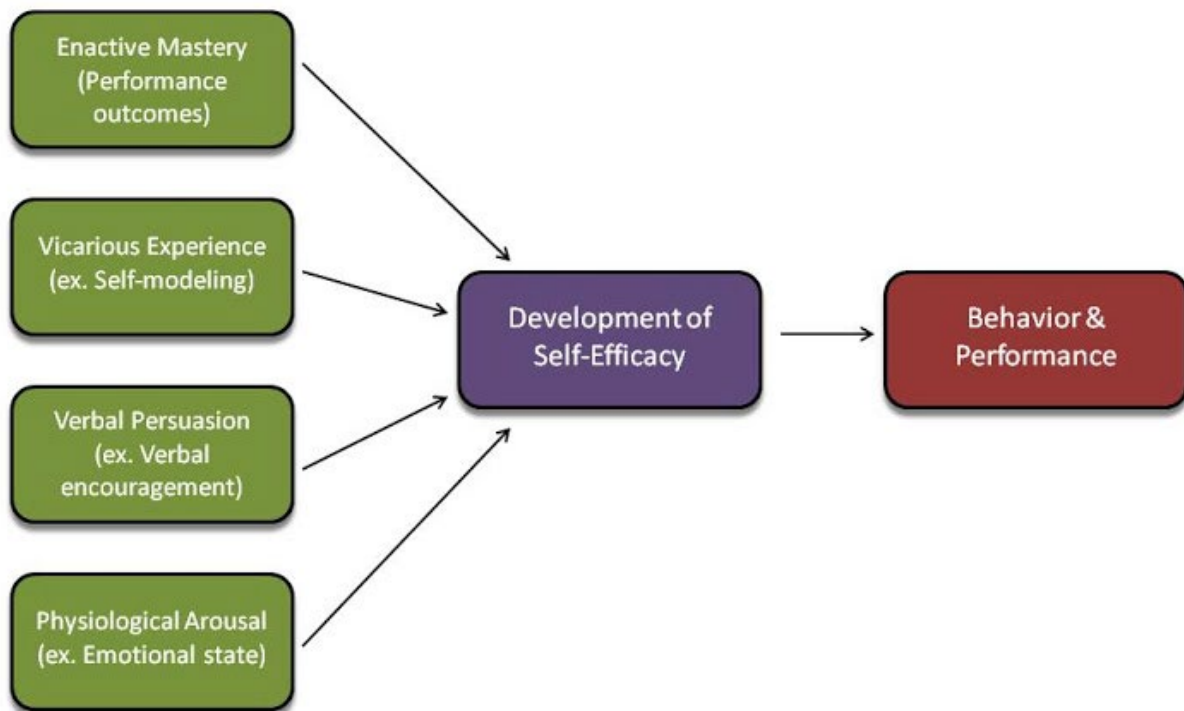
**Key:** AN antenatal, **BAPT** Breastfeeding Attrition Prediction Tool, **BFE** breastfeeding education, **BF** breastfeeding, **BFHI** Baby Friendly Hospital Initiative, **BKS** The Breastfeeding knowledge scale, **bMI** brief motivational intervention, **BSES** Breastfeeding Self-Efficacy Scale, **CG** Control Group, **EBFR** exclusive breastfeeding rates, **IBFAT** Infant Breast-feeding Assessment Tool, **IG** Intervention Group, **IIFAS** Iowa Infant Feeding Attitude Scale, **KCT** kolcaba's comfort theory, **PBT** planned behavior theory, **POST** postnatal, **PP** Postpartum, **PT** pragmatic theory, **SE** self efficacy, **SET** self-efficacy theory, **SSC** skin-to-skin contact



**Appendix B****Models and Frameworks**

**Figure B1**  
*Self-Efficacy Theory*

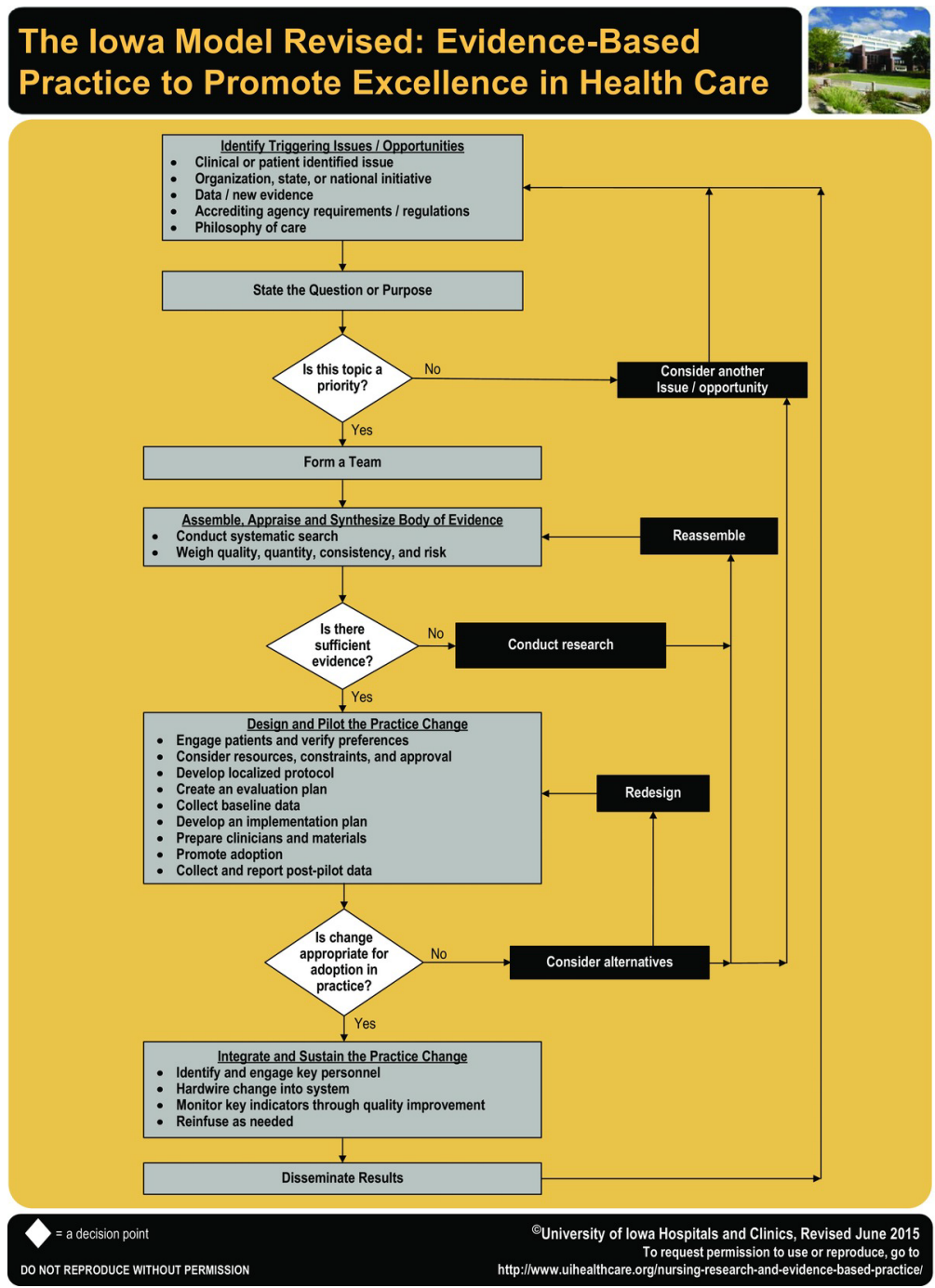
## Sources of Self-Efficacy



*The above picture depicts the importance of Enactive Mastery, Vicarious Experience, Verbal Persuasion and Physiological Arousal in the development of self-efficacy and how these forces can improve behavior and performance of an action.*

*(Self-efficacy theory by Albert Bandura. iEduNote, 2019)*

**Figure B2**  
*The Iowa Model*

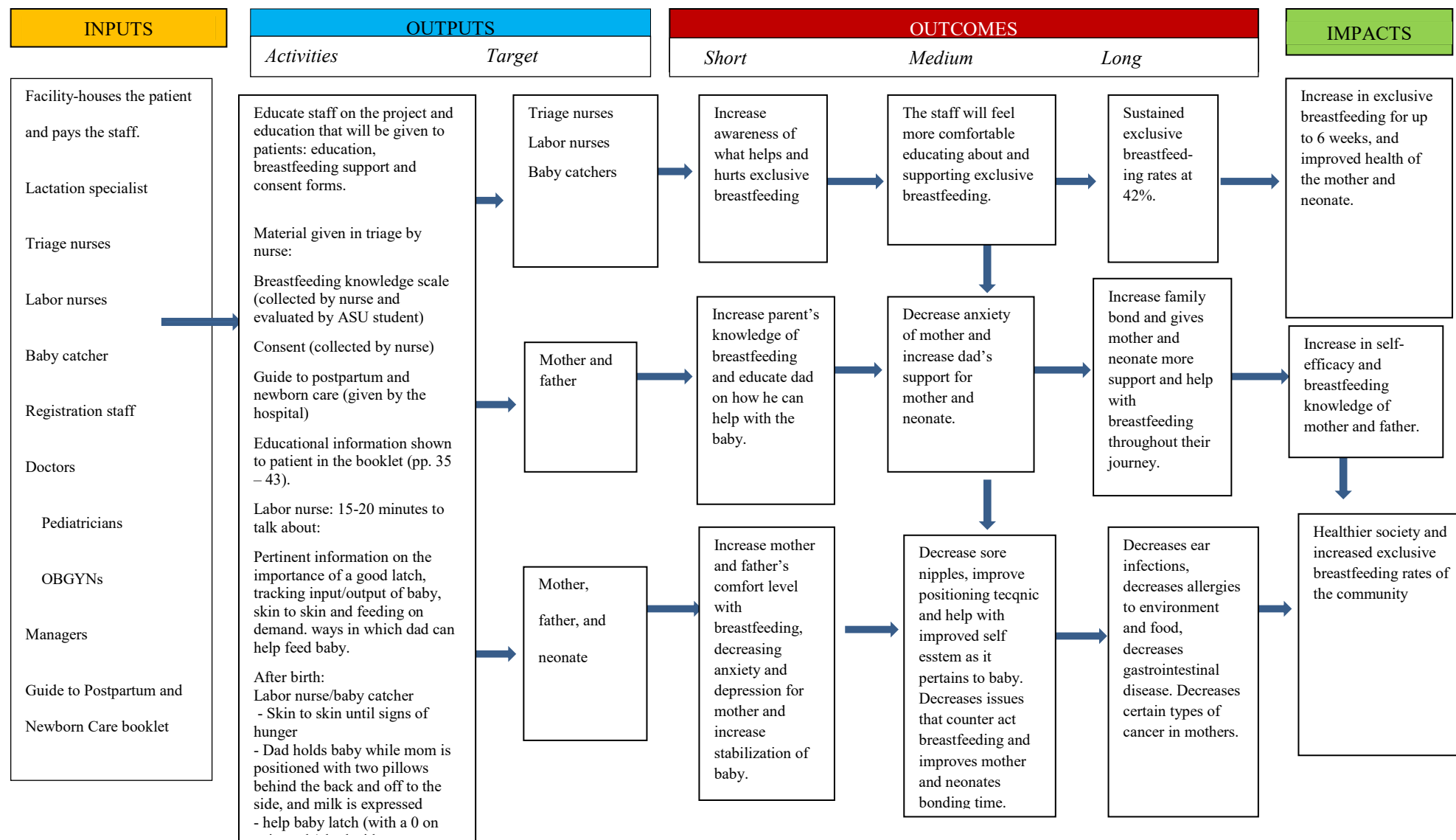


*A depiction of the Iowa Model and the steps used to incorporate an idea into practice.*

(Iowa Model Collaborative et al., 2017)

**Figure B3**  
*The logic Model*

**Goals:**



**Assumptions:** Labor and Triage nurses are comfortable with breastfeeding education and support. Mother wants to exclusively breastfeed. Neonate is healthy and capable of breastfeeding. Father is willing to help

**Figure B4***The budget model*

<b>Direct Costs</b>		
Nurses about 16 in 24 hours	~ hourly rate 38 dollars	The intervention portion takes ~ 2 hrs per patient; each nurse has 1 patient give birth in a 12 hour shift. 16 nurses X 2 hours X 38 dollars an hour X 30 days= ~ 36,480 for a month.
Booklets (Banner gives out and will be in use for this project)	~ 20 dollars per book	300 patient per month at this facility, 300 patient per month x 20 dollars per book = ~ 6,000 dollars for on months cost of the booklets.
Senior manager	~ 115,000 salary per year	~ 2 months in total spent in hours on the project. ~19, 200 dollars in service for this project in total.
Bed per patient	Average cost per bed per day is 2,200 dollars.	In total 22 beds per day. 48,400 dollars a day, 1, 452, 000 dollars a month in cost to run the unit in labor.
<b>Indirect Cost</b>		
Mastitis	~300 patients per month in the unit	~10% will acquire mastitis which is about 30 patient, which is 444 dollar per mastitis = ~ 13,320 dollars per month
Jaundice	~300 babies per month in the unit	~3% will acquire jaundice which is about 9 patients per month in this unit, at a cost of ~3, 000 dollars per patient = ~27,000 dollars per month
<b>Potential funding sources</b>		
No potential funding sources		
<b>Cost versus revenue/savings</b>		
Support and education of Breastfeeding	Decreases the hours spent in postpartum with a nurse or lactation.	Instead of ~ 10 hours spend helping fix latch, and technique of mother and father. ~ Only 6 hours spent total perfecting latch and technique 4 hours saved =

		<p>~38 dollars per hour x 4 hours saved =152 dollars per patient x 300 patients per month =~45,600 dollars of savings per patient supported in labor.</p>
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**Figure B4**  
*The Methods Timeline*

<b>Methods Timeline</b>	
<b>July 2022</b>	Apply to IRB
<b>September 2022</b>	Education with Labor Nurses
<b>October 2022 – February 2023</b>	Recruitment, Implementation, and Project Conclusion
<b>March – May 2023</b>	Data Collection, Data interpretation, and Evidence Distribution

## Appendix C

### Surveys

#### The Pre - Survey Breastfeeding Knowledge Scale

Completion of the survey and participation in this project is voluntary. If you complete the survey, you are confirming that you voluntarily consent to participate in this project and you understand that participation in this project is not a condition of employment at Banner Health. You may complete this survey at work. If you elect to complete the survey on your own time, you will not be paid for your time spent on completing the survey.

Instructions – After scanning the QR code a Pin will appear, please enter your mother’s birthday (month and date only).

#### Comprehensive Breastfeeding Knowledge Scale

Please answer how much you agree or disagree with the following statements about breastfeeding. If you are unsure, you may answer unsure.

Item	disagree	unsure	agree
1. When a mother is sick with a flu or cold, she should continue to breastfeed her baby as this may prevent her baby from getting sick	1	2	3
2. Breastfeeding early after birth, spending time skin-to-skin and having the mother and baby room-in together, day and night, are supportive hospital practices that help with establishing breastfeeding	1	2	3
3. It is normal for breastfeeding to hurt	1	2	3
4. The more often a mother breastfeeds, the more milk she will have for her baby	1	2	3
5. Feeding your baby a bottle or giving a soother may change the latch and the way the baby sucks at the breast	1	2	3
6. Babies should be breastfed at least 8 times in a 24-hour period to support an adequate milk supply	1	2	3
7. Jaundice is best prevented with frequent breastfeeding and the baby having a good output (pees and poos)	1	2	3

8.	Formula feeding is a good way of letting fathers/partners care for their breastfed babies	1	2	3
9.	The composition of breast milk changes over time to meet the needs of the growing baby	1	2	3
10.	Learning the skill of hand expression will enable mothers to remove breast milk if needed	1	2	3
11.	Breast engorgement needs to be treated with breastfeeding the baby frequently, removing enough milk to feel comfortable, gentle massage and cool compresses	1	2	3
12.	Babies should be fed when they cue (show signs they are hungry) and not at scheduled times	1	2	3
13.	Watching the output (pees and poos) and energy level of the baby are good ways of monitoring if the baby is getting enough breast milk	1	2	3
14.	Breast milk changes over the first week with small amounts of “colostrum” being replaced with increased volumes of breast milk around day 2-4	1	2	3
15.	When breastfeeding, the baby has a wide mouth and suckles on a good amount of breast tissue, the nipple will be placed deep in the mouth where it is protected during the feed	1	2	3
16.	Exclusive breastfeeding (no water, other food or solids) is recommended for the first 6 months as it contains all the nutrients the baby needs (except vitamin D)	1	2	3
17.	Small breasts will not make as much milk as larger breasts	1	2	3
18.	Hormones released in mom’s brain respond to baby’s suck and tell the breast to deliver milk	1	2	3



19.	Uninterrupted skin-to-skin contact between mother and baby immediately after birth is important for babies learning to breastfeed	1	2	3
20.	Baby's crying is the first sign of hunger	1	2	3
21.	Schools and workplaces have no legal obligation to support breastfeeding mothers who want to pump or breastfeed	1	2	3
22.	A sore or cracked nipple is an indication of incorrect latch	1	2	3
23.	The baby sucks in the same way from their mother's breast or a bottle	1	2	3
24.	If a mother has mastitis (breast infection) she should continue to breastfeed her baby	1	2	3
25.	Breast milk contains germ fighting properties which protect a baby from infections and strengthen his/her immune system	1	2	3
26.	Breastfeeding can decrease a mother's risk of developing breast, uterine and ovarian cancers	1	2	3
27.	Breast milk is no longer important to a baby's diet after foods have been introduced at 6 months	1	2	3
28.	Breastfeeding promotes mother-infant bonding and emotional attachment	1	2	3

(Abbass-Dick et. al, 2020)

### The Post - Survey Breastfeeding Knowledge Scale

Completion of the survey and participation in this project is voluntary. If you complete the survey, you are confirming that you voluntarily consent to participate in this project and you understand that participation in this project is not a condition of employment at Banner Health. You may complete this survey at work. If you elect to complete the survey on your own time, you will not be paid for your time spent on completing the survey.

Instructions – After scanning the QR code a Pin will appear, please enter your mother’s birthday (month and date only).

#### Comprehensive Breastfeeding Knowledge Scale

Please answer how much you agree or disagree with the following statements about breastfeeding. If you are unsure, you may answer unsure.

Item	disagree	unsure	agree
1. When a mother is sick with a flu or cold, she should continue to breastfeed her baby as this may prevent her baby from getting sick	1	2	3
2. Breastfeeding early after birth, spending time skin-to-skin and having the mother and baby room-in together, day and night, are supportive hospital practices that help with establishing breastfeeding	1	2	3
3. It is normal for breastfeeding to hurt	1	2	3
4. The more often a mother breastfeeds, the more milk she will have for her baby	1	2	3
5. Feeding your baby a bottle or giving a soother may change the latch and the way the baby sucks at the breast	1	2	3
6. Babies should be breastfed at least 8 times in a 24- hour period to support an adequate milk supply	1	2	3
7. Jaundice is best prevented with frequent breastfeeding and the baby having a good output (pees and poos)	1	2	3
8. Formula feeding is a good way of letting fathers/partners care for their breastfed babies	1	2	3
9. The composition of breast milk changes over time to meet the needs of the growing baby	1	2	3

10.	Learning the skill of hand expression will enable mothers to remove breast milk if needed	1	2	3
11.	Breast engorgement needs to be treated with breastfeeding the baby frequently, removing enough milk to feel comfortable, gentle massage and cool compresses	1	2	3
12.	Babies should be fed when they cue (show signs they are hungry) and not at scheduled times	1	2	3
13.	Watching the output (pees and poos) and energy level of the baby are good ways of monitoring if the baby is getting enough breast milk	1	2	3
14.	Breast milk changes over the first week with small amounts of “colostrum” being replaced with increased volumes of breast milk around day 2-4	1	2	3
15.	When breastfeeding, the baby has a wide mouth and suckles on a good amount of breast tissue, the nipple will be placed deep in the mouth where it is protected during the feed	1	2	3
16.	Exclusive breastfeeding (no water, other food or solids) is recommended for the first 6 months as it contains all the nutrients the baby needs (except vitamin D)	1	2	3
17.	Small breasts will not make as much milk as larger breasts	1	2	3
18.	Hormones released in mom’s brain respond to baby’s suck and tell the breast to deliver milk	1	2	3
19.	Uninterrupted skin-to-skin contact between mother and baby immediately after birth is important for babies learning to breastfeed	1	2	3
20.	Baby’s crying is the first sign of hunger	1	2	3

21.	Schools and workplaces have no legal obligation to support breastfeeding mothers who want to pump or breastfeed	1	2	3
22.	A sore or cracked nipple is an indication of incorrect latch	1	2	3
23.	The baby sucks in the same way from their mother's breast or a bottle	1	2	3
24.	If a mother has mastitis (breast infection) she should continue to breastfeed her baby	1	2	3
25.	Breast milk contains germ fighting properties which protect a baby from infections and strengthen his/her immune system	1	2	3
26.	Breastfeeding can decrease a mother's risk of developing breast, uterine and ovarian cancers	1	2	3
27.	Breast milk is no longer important to a baby's diet after foods have been introduced at 6 months	1	2	3
28.	Breastfeeding promotes mother-infant bonding and emotional attachment	1	2	3

(Abbass-Dick et. al, 2020)

## Appendix D

### Breastfeeding Fact Sheet

*Support for the staff on the Labor Unit (not given to the Patients)*

#### Breastfeeding Benefits:

For baby:

- ❖ Lowers risk of Sudden Infant Death Syndrome (SIDS)
- ❖ Protects against respiratory and diarrheal disease
- ❖ Protects against allergies
- ❖ Best nutritional source for baby
  - Has antibodies to fight viruses and bacteria

For mother:

- ❖ Reduces the risk of breast, uterine, endometrial, and ovarian cancer
- ❖ Releases a hormone that helps your uterus shrink and prevents bleeding
- ❖ For diabetic mothers breastfeeding decreases insulin use
- ❖ Lowers the risk of osteoporosis later in life

#### Tips to Help with Exclusive Breastfeeding:

- ❖ Room-in with your baby at the hospital and at home
- ❖ Keep baby skin to skin as much as possible (dad can help with breastfeeding by having the baby skin to skin for 30 minutes before a feed) ☺
- ❖ Respond early to feeding cues
  - Licking lips, stirring or rooting, sucking movement of mouth and tongue, hands to mouth, fidgeting (moving arms and legs)
- ❖ **The first two weeks is imperative for milk production**
  - Breastfeeding at night when prolactin (your lactation hormone) is at its highest is important
  - Avoid giving formula for this time period unless medically necessary
  - Avoid pacifiers and nipples in this time period
- ❖ Find support through friends, family, support groups and play groups
- ❖ Contact a Lactation consultant early if you need help with breast feeding

The first feed is important so a Nurse or Lactation will help with your first feed here at the hospital. In this session you should expect us to work on:

- ❖ Skin to skin
- ❖ Positioning (dad holds baby while this happens)
- ❖ Expressing breast milk before feeding
- ❖ Latching the baby

This should happen before patient is moved to postpartum, so we ask that all family members hold off visiting until an hour after baby is born. Thank you for your time.

### Breastfeeding Support Guide

First baby should be put skin-to-skin until they start showing signs of hunger

- Licking lips, rooting, sucking movements, hands to mouth, and moving arms and legs

Then baby is passed to dad to hold while mom is positioned:

- Two pillows behind mom (vertical) and two pillows to the side which mom wants to feed on
- Make breast visible

Help mom express breast milk by:

- Gently massage the breast from the top towards the nipple to help the milk flow more easily
- Place your hand in a wide C-shaped hold on the breast
- Press in towards the chest wall
- Compress the breast to express milk, then relax
- Rotate fingers to another position and then repeat until you see milk

If you need help with this, see page 42 in the booklet given to patient has information

Latching baby on the breast:

- Tummy towards mother
- Baby's body aligned with their head
- Nose to nipple
- Mother's hand in a C-shape away from nipple to give room for baby to have a nice wide open mouth
- Wait till baby opens wide, then press the baby's head into breast and top lip up over the nipple

No pinching should be felt by mother

Let baby nurse for at least 20-30 minutes or until they fall off themselves. Burp baby and help mother breastfeed on the other side if baby is showing signs of still being hungry.