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A Two-Step Approach to Increase Breastfeeding Adherence in Mothers With Preterm Infants

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VALPO

A TWO-STEP APPROACH TO INCREASE BREASTFEEDING ADHERENCE IN MOTHERS WITH PRETERM INFANTS

by

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DEDICATION

I would like to dedicate this project to my husband and two children who have served as my relentless supporters throughout the entire project.

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ABSTRACT

Breastfeeding provides multiple benefits for mothers and infants. An overwhelming amount of evidence indicates that breastmilk optimizes infant growth and develops the immune system (Yu et al., 2018). Apart from the health benefits for infants, the immediate effects of breastfeeding for mothers include a decreased risk for hemorrhage, stress, and postpartum depression (Flemming, 2021). A mother's psychological state impacts lactation success, mainly by affecting milk ejection (Dabas et al., 2019). Despite evidence suggesting that relaxation techniques are beneficial for all human beings, it is one of the least commonly used approaches for postpartum mothers (Joseph et al., 2019). The PICOT question for this project was "In breastfeeding mothers of preterm infants, does education on implementation of meditation and music therapy (MT) during breastfeeding, and telephone follow-up at one, two-, and six-weeks post-discharge, compared to the standard of care (three-month follow-up visit at the developmental clinic), increase breastfeeding adherence, and decrease post-partum stress as measured by a patient-reported assessment tool over three months?" Eleven participants from a Level III Neonatal Intensive Care Unit (NICU) developmental clinic in Northwest Indiana completed the twelve-week within-group project. Participants were instructed to complete a meditation-based audio recording or MT for one 15-minute pumping or breastfeeding session a day. Follow-up telephone calls at one, two, and six weeks served to reinforce education and adherence to the program. At the twelve-week visit, participants were asked to disclose post-intervention infant feeding type along with completing a Spielberger State-Trait Anxiety Inventory (STAI) to measure maternal stress. A chi-square test was conducted comparing the frequency of occurrence in infant feeding types pre-and post-intervention. Out of the 11 participants, 8 participants achieved EBF (n=8, 72.73%). A Wilcoxon signed-rank test was utilized to compare pre-and post- STAI scores, the p-value (p-value=0.001) is significant ($Z = -3.207$, $p > 0.05$). Statistically significant differences were observed in increased breastfeeding adherence and decreased maternal stress levels after the two-step intervention.

CHAPTER 1

INTRODUCTION

Background

Stress in mothers who have infants in the neonatal intensive care unit (NICU) can result in emotional, social, physical, and economic consequences. Inability to establish sufficient contact with NICU infants to breastfeed may result in insomnia, stress, and anxiety (Varisoglu & Gungor Satilmis, 2020). Stress and anxiety experienced by these mothers disrupt the oxytocin and prolactin reflex, which is necessary for the establishment of lactation (Dabas et al., 2019). Substandard parenting behavior, poor bonding, and postpartum depression are also consequences of maternal stress (Joseph et al., 2019). Postpartum depression refers to mood disorders and depressive symptoms which occur during the postpartum period (Warren, 2021). Premature delivery is a crucial risk factor for postpartum depression (Warren, 2021). Maternal stress in the NICU is often untended, and the care is focused on the sick neonate (Surmeli Onay et al., 2021). Consequently, many mothers conclude breastfeeding during the hospital stay or the first two months after discharge from the NICU (Varisoglu & Gungor Satilmis, 2020).

Breastfeeding provides a multitude of benefits for mother and infant health. Breastfeeding, also called nursing, is defined as the process of feeding human breast milk to a child, either directly from the breast or expressing the milk from the breast and bottle-feeding it to the infant (Slade, 2021). Breastmilk provides all the energy and nutrients that the infant needs for the first six months of life (WHO, 2021). Increasing evidence indicates that the effect of human breastmilk optimizes infant growth and development, as well as shielding against infection and developing the immune system (Yu et al., 2018). Prolonged illness in infants may result in developmental delays and precipitate mental health problems in parents impacting them financially (Joseph et al., 2019). Apart from the health benefits for infants, the immediate and

initial effects of breastfeeding for mothers include a decreased risk for hemorrhage, stress, and postpartum depression (Flemming, 2021).

Breastfeeding difficulties are the leading complication experienced by mothers of premature infants. Premature, also known as preterm, birth is defined as a baby born before 37 weeks of gestation has been completed (The Centers for Disease and Prevention, 2021). Due to poor muscle tone and neurodevelopmental immaturity, premature infants may not be able to generate adequate negative pressure to feed directly from their mothers' breasts (Dib et al., 2020; Slade, 2021). Premature infants are also more likely to experience rapid fatigue during feeding, lower stamina, fewer awake periods, and reduced effort to stimulate and empty the breast, consequently leading to poor milk production and inadequate intake (Dib et al., 2020). In this instance, mothers must express milk as a substitute for direct breastfeeding. Methods for milk expression include hand expression, breast pumping, and hands-on pumping. Hand expression, which is manual pumping, is a technique where a mother uses her hand or both hands to exert gentle pressure on the breast to express milk. Breast pumping mimics the infant suck by generating a vacuum-like latch that is created by a breastfeeding newborn. Hands-on pumping combines hand expression and bilateral breast pumping (Slade, 2021).

Maternal barriers to breastfeeding may include various factors associated with preterm birth, such as cesarean delivery, multiple births, or maternal psychological distress (Surmeli Onay, et al., 2021). Mothers of preterm infants may also experience higher levels of anxiety, depression, and stress; each is an independent risk factor for breastfeeding failure in this population (Dib et al., 2020). Lastly, some of the commonly cited breastfeeding challenges from mothers of preterm infants include perceived insufficient milk supply and inadequate support by health care providers post-discharge (Dib et al., 2020; Ericson et al., 2017). Despite evidence suggesting the use of relaxation techniques is beneficial for all human beings, it is a less commonly used approach for postpartum mothers (Dabas et al., 2019). Lowering parental stress can improve quality of life and facilitate healthy interactions between mother and preterm infant.

The key to addressing stress in this population includes identifying cost-effective, sustainable, nonpharmacologic interventions that reduce anxiety and improve birth outcomes for both mothers and infants (Joseph et al., 2019).

Several studies reported the effectiveness of relaxation techniques in reducing stress and anxiety in mothers with preterm infants while increasing milk yield (Yu et al., 2018). Mindful-based stress reduction (MSBR) is a type of meditation that increases an individual's awareness and acceptance of living in the present moment. MSBR has been shown to produce increased attention control and emotional regulation and decreased physiological reactivity (Joseph et al., 2019). Varisoglu and Gungor Satilmis (2020) report that music therapy balances heart rates in mothers leading to a reduction in depression, anxiety, and stress scores. Listening to music can stimulate alpha waves in the brain that cause relaxation by enhancing endothelial function, which expands blood vessels and increases the release of endorphins. Relaxation techniques are low in cost and have a positive effect on the stress and anxiety levels of mothers with preterm infants (Mohd Shukri et al., 2017).

Data Supporting Need for the Project

Global, National, Regional, and State Data

The World Health Organization (WHO) (2021) estimates that 15 million babies are born before 37 weeks gestation every year, which accounts for more than 1 out of 10 babies. In 2018, preterm birth and low birth weight accounted for 17% of infant deaths (WHO, 2021). Preterm infants must often be admitted to a NICU ranging from a few days up to several months. The estimated societal cost per preterm birth in United States Dollars (USD) currency, is 65 thousand dollars, which includes maternal delivery costs, early intervention services, special education services, and lost productivity (March of Dimes Foundation, 2021).

The Centers for Disease Control and Prevention (CDC) (2020) indicated that nationally about 1 in 8 women experience symptoms of postpartum depression. The overall incidence of postpartum depression is reported as 6.5 to 20%, and postpartum depression rates among

mothers with infants admitted to the NICU are excessive (Joseph et al., 2019; Warren, 2021). Women with decreased stress produce higher volumes of breast milk, which is ideal for infant development and reduces the financial impact of purchasing formula (Joseph et al., 2019).

Providing premature infants with breast milk reduces neonatal morbidity and positively impacts neuromotor development (Varisoglu & Gungor Satilmis, 2020). For example, in a large cohort of preterm infants, not receiving breastmilk at hospital discharge was an independent risk factor for moderate to severe cognitive impairment at 2 years of age (Dib et al., 2020). Globally only 41% of infants under six months of age are exclusively breastfed (WHO, 2021). Individualized support in the first few hours and days is critical to help mothers meet their breastfeeding goals. Although 84.1% of infants born in 2017 started breastfeeding, only 58.3% of infants were breastfeeding at six months (CDC, 2020).

Clinical Agency Data

A large hospital organization within the Midwest offers a Level III NICU that incorporates follow-up care for infants through an on-site developmental clinic. The developmental clinic focuses on uncovering developmental delays, education on how to improve delays, and referrals for community support (H. Tuthill, personal communication, June 2, 2021). The developmental clinic has an automatic referral for neonates under 32 weeks gestation and is physician referred when developmental delays are evident (H. Tuthill, personal communication, July 9, 2021). The clinical agency identifies an increasing awareness of the need for improving adherence to breastfeeding after discharge from the NICU (H. Tuthill, personal communication, June 9, 2021). This need was described by postpartum mothers of preterm infants at the developmental clinic, lactation nursing staff, as well as facilitators of the developmental clinic, consisting of a pediatric speech therapist and physical therapist. The evidence-based project (EBP) arose from the understanding that it is possible to increase overall adherence to breastfeeding by reducing the negative impact of stress on postpartum mothers.

For postpartum NICU mothers, the lactation nurses follow a protocol focusing on using a breast pump. “Gold standard within the facility is that a mom will start pumping within six hours after birth” (S. VanderLugt, personal communication, June 23, 2021). Education for mothers with babies in the NICU consists of cleaning the breast pump, hand hygiene, and how long as well as often to pump. No education is provided about stress reduction techniques (H. Tuthill; S. VanderLugt, personal communication, July 1, 2021). Breastfeeding classes are also provided two times a month, with an average of 15 mothers attending each class (S. VanderLugt, personal communication, July 1, 2021). No regular follow-up is provided unless the postpartum mother reaches out to the lactation nurses (H. Tuthill, personal communication, July 1, 2021). Key stakeholders at the clinical agency accepted this project with the understanding that stress reduction and breastfeeding at the clinical agency were not provided. Data about breastfeeding after discharge from the NICU were difficult to find due to the lack of consistency in charting across providers and the developmental clinic. The developmental clinic has no formal post-discharge breastfeeding protocol, and there was no standardized post-partum education about stress reduction and improving breastfeeding compliance.

Purpose of the Evidence-Based Practice Project

Purpose Statement and PICOT Question

The purpose of this EBP project is to increase adherence to breastfeeding preterm infants. The PICOT question developed to guide the EBP project and develop a systematic approach was “In breastfeeding mothers of preterm infants, does education on implementation of meditation and/or music therapy during breastfeeding, and telephone follow-up at one, two, and six weeks post-discharge, compared to the standard of care (three-month follow-up visit at the developmental clinic), increase breastfeeding compliance and decrease post-partum stress as measured by patient-reported assessment tool over three months?"

EBP Project Description

This EBP project will be implemented at a developmental clinic in Northwest, Indiana. Participants will be encouraged to participate in the project by the developmental clinic facilitators, who work with the preterm infants and their mothers during their NICU stay. Participants will include automatic referrals and physician-referred patients of the developmental clinic. The intervention for this project included education on how to facilitate meditation or music therapy (MT) during breastfeeding or pumping sessions and telephone follow-up calls post-implementation. The project facilitator will initiate education before NICU discharge. After discharge participants will receive follow-up phone calls by the project facilitator at one, two, and six weeks. This project aims to evaluate the associations between interventions and infant feeding types including exclusively breastfed (EBF), mixed-fed (MF), and formula-fed (FF) of infants in the first three months of life. The secondary outcome of decreased stress will be measured using Spielberger State-Trait Anxiety Inventory (STAI) before interventions and during the three-month developmental clinic visit. The expected outcome of this project is an increase in breastfeeding adherence due to a decrease in maternal stress.

CHAPTER 2

EBP MODEL AND REVIEW OF LITERATURE

Evidence-based Practice Model

Evidence-based models serve as systematic frameworks to integrate new evidence into nursing practice. For this EBP project, the Johns Hopkins Nursing Evidenced-Based Practice (JHNEBP) Model was chosen. The JHNEBP Model is composed of an open system with three interrelated concepts: Inquiry, practice, and learning. By having a model that is an open system, it accommodates for both internal and external factors to be incorporated within the model. Internal factors include policies, organizational culture, values, beliefs, equipment, supplies, staffing, and offered services (Melnyk & Fineout-Overhold, 2015). External factors include local, state, and federal regulations, accreditation bodies, and external stakeholders (Dang & Dearholt, 2017; Melnyk & Fineout-Overhold, 2015). This makes the model highly adaptable across many care settings.

Overview of EBP Model. The first three concepts addressed by the JHNEBP Model are inquiry, practice, and learning. Inquiry is the first step and is considered the starting point of EBP. This phase is hallmarked by inquisitiveness to examine a question, and collect information considering a concern, problem, or issue. It encourages addressing a problem and discovering solutions in innovative ways. Following an inquiry, comes practice, which is the transition of putting what is known into what is done. The practice embraces the standards that are established by professional nursing organizations and helps nurses operate within their scope of practice and meet professional performance standards. JHNEBP Model concludes with learning, which is considered an ongoing process, including keeping up with new information, technologies, skills, and clinical practices (Dang & Dearholt, 2017).

Once the process of inquiry has started, individuals or teams can start to pursue the best evidence to address a problem. These groupings work systematically through the **P**ractice

question that is being explored, the **E**vidence concerning the practice, and then the **T**ransition into practice, which is referred to by the acronym, PET (Dang & Dearholt, 2017). Since the PET process is informed by practice and an evolving understanding of solutions to the practice problem, new EBP processes can be triggered throughout this cycle.

Application of EBP model to EBP project. The current EBP project will follow the inquiry-practice-learning process and PET principles advocated in the JHNEBP Model. Because this chapter is limited to understanding the underlying problem and identifying potential solutions, this section will focus on the inquiry stage of the inquiry-practice-learning process and the practice and evidence principles of the PET acronym. The practice and learning stages and transition principles of PET will be described in subsequent chapters.

Inquiry and the practice problem. A problem-focused proposition was developed by the personal reflection of breastfeeding attempts and the evaluation of reasons efforts failed. Upon discussions with interdisciplinary team members, including a NICU nurse practitioner, lactation nurse consultants, and facilitators of the developmental clinic, it was determined that stress reduction and outpatient support in breastfeeding were largely unexplored. Increasing compliance in breastfeeding for clients was considered a priority and the project was approved by key stakeholders. After the problem was identified, discussions were held about where the gap was between current practice and desired practice.

Evidence. Once the practice problem was identified, an exhaustive literature search was performed to explore possible interventions to increase outpatient support and reduce stress in mothers of preterm infants to improve overall breastfeeding compliance. This evidence is described in greater detail later in this chapter. After evidence was collected, appraised for level and quality, and summarized, it was determined that stress reduction methods and outpatient support by proactive telephone calls needed to be implemented as a standard of care for breastfeeding mothers that attend the developmental clinic.

Translation and learning. The implementation plan will be described in chapter 3, along with the plan for evaluating the intervention. An explanation of what was learned through project implementation and evaluation will be provided in chapters 4 and 5.

The JHNEBP Model serves as an excellent framework to guide the implementation of the EBP from the inquiry of best practice to the dissemination of a project. The model guides users through a 19-step process and clearly explains what action is required to fulfill one step and move on to the next. The model is flexible enough to be used in acute care settings, outpatient clinics, and other points of care areas. The JHNEBP Model provides a powerful set of user-friendly tools that work to move evidence into practice. From the development of the question to literature critique and evaluation, to implementation and evaluation the tools systematically address each step of the process. Additionally, this EBP model encourages users to be concerned about both internal and external factors that the change might impact (Dang & Dearholt, 2017).

Literature Search

Sources Examined for Relevant Evidence

A search for evidence-based literature was conducted to find the best available evidence related to stress reduction methods for breastfeeding mothers of preterm infants. Databases searched for evidence included Cumulative Index to Nursing and Allied Health Literature (CINAHL), MEDLINE with full text via EBSCO, Cochrane Library, Joanna Briggs Institute (JBI), Nursing & Allied Health Premium, National Library of Medicine, and Turning Research into Practice (TRIP). In efforts to maintain consistency across the databases, terms utilized were *breastfeed* OR lactat** and *preterm OR premature*. Additional searched terms of *stress* OR cop** were included in the MEDLINE, CINAHL, National Library of Medicine, Nursing & Allied Health Database, and TRIP database searches. Citation chasing was also performed to locate the best available data.

The searches were limited to articles written in the English language, published between the years 2017-2021, and peer-reviewed articles. In the database Nursing & Allied Health the terms *breastfeed** OR *lactat** AND *stress** OR *cop** were searched within abstracts only, to decrease irrelevant articles. The National Library of Medicine applied the limiter of free full text for the search. In the database TRIP, the limiter of clinical practice guidelines was applied for the search. After the search process, a total of 380 pieces of evidence were identified. Abstracts were reviewed for the inclusion criteria. Inclusion criteria consisted of (a) studies including postpartum mothers of preterm infants, (b) parental stress reduction methods, (c) increasing adherence to breastfeeding preterm infants, and (d) interventions that could be targeted in an outpatient setting. Exclusion criteria consisted of (a) articles that focused on increasing breastmilk production by utilizing kangaroo care, (b) pharmacological interventions, (c) postpartum mothers of healthy term infants, and (d) studies that failed to include results or recommendations.

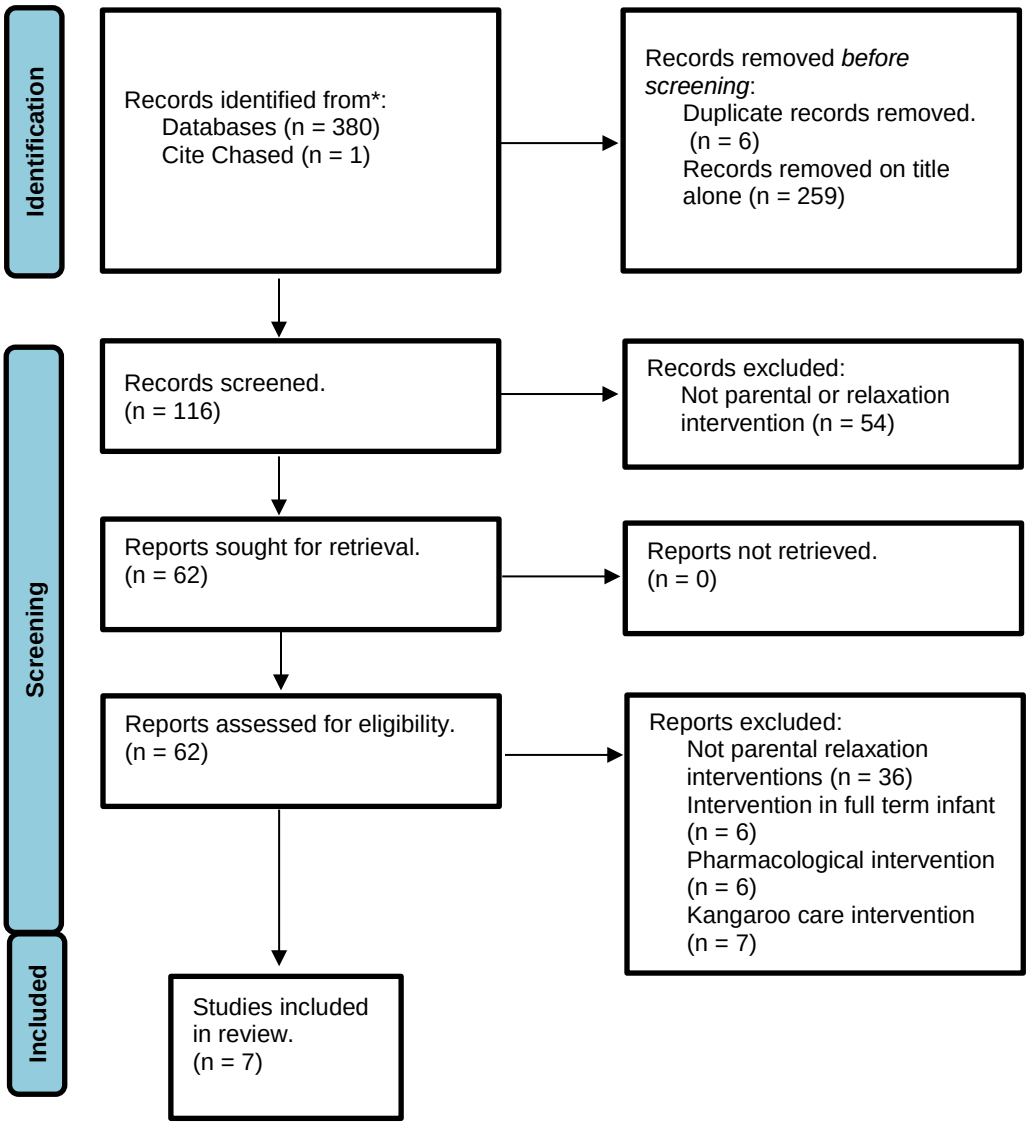
Search results. Completed search results from all databases are depicted in PRISMA. CINAHL yielded a total of 63 articles, 43 of which were excluded by title alone. Sixteen additional titles were eliminated after abstract review due to irrelevance to the purpose of this review, the remaining 4 articles were included for further analysis. Medline produced 112 results, after the removal of 4 duplicates, 68 articles were eliminated on the title alone. The remaining 40 articles underwent abstract review and resulted in elimination. A search was conducted in the Cochrane database and yielded a total of 38 results; 30 were irrelevant to the purpose of this review, and after an abstract review of the remaining 8 articles, none were determined to be appropriate for use in the project.

JBI revealed 58 results with 5 articles reviewed, and 1 was selected for inclusion. The Nursing & Allied Health Database produced 46 results, 15 abstracts were reviewed, and nothing was selected for inclusion. National Library of Medicine yielded 49 results, after the removal of 2 duplicates, 15 articles were eliminated on the title alone. The remaining 29 articles underwent

abstract review, leaving a total of 1 included in the review. Finally, TRIP was searched and revealed 14 results, none were determined to be appropriate for use in the project. A detailed review of cited literature yielded a total of 2 pieces of evidence that were chased and all 5 were reviewed with 1 meeting inclusion perimeters. Altogether, 7 unique pieces of evidence were included.

Figure 2.1

PRISMA Flow Chart of Literature Search



Levels of Evidence

Evidence for this EBP was assigned by following the stipulations provided in the evidence level and quality guide found in Appendix D of ©The Johns Hopkins Hospital/The John Hopkins University Nursing EBP Guide (Dang & Dearholt, 2017). Levels of evidence fall into five categories, listed as levels I – V. The tool describes level I evidence as designs that include only other level I studies, systematic reviews that are a combination of RCTs, quasi-experimental studies, or quasi-experimental studies alone, with or without meta-analysis. The lowest level of evidence provided by this method is level V, which is based on experiential and non-research evidence, including integrative reviews, literature reviews, quality improvement, programs, or financial evaluations, case reports, and opinions of naturally recognized experts based on experiential evidence (Dang & Dearholt, 2017). As shown in Table 2.2, there were two Level I RCTs, one Level I mixed methods design study, one Level II systematic review, one Level V evidence summary guideline, and one Level V literature review was obtained for the synthesis.

Analysis and Appraisal of Relevant Evidence

Quality ratings for the appraisal of evidence for each research article were assigned based on the quality rating system found in Appendix A of ©The Johns Hopkins Hospital/The John Hopkins University EBP nursing guide (Dang & Dearholt, 2017). Quality ratings are assigned as A, A/B, B, or C to each article. The application process of the critical appraisal tools made evaluating evidence comfortable by guiding the appraisal process with key questions. Each item within the appraisal tool had a detailed paragraph illustrating what the evaluator should examine within the study, which limits tool error. Refer to table 2.2 for a brief overview and Appendix E for the evidence table that summarizes evidence.

Table 2.2

Summary of Evidence

Author/yr.	Database(s)	Level of Evidence/Type	Quality/Tool
Ericson et al (2017)	CINAHL Medline Health Source: Nursing Academic edition	I/RCT	A/Johns Hopkins
Dabas et al. (2019)	CINAHL	I/RCT	A/Johns Hopkins
Varisoglu et al., (2020)	CINAHL Medline	I/RCT	A/Johns Hopkins
Erikson et al., (2017)	CINAHL	I/mixed-method study	A/Johns Hopkins
Mohd Shukri et al., (2017)	CC	II/SR	A/B/Johns Hopkins
Slade (2020)	JBI	V/ES	B/Johns Hopkins
Joseph et al., (2019)	National Library of Medicine	V/LR	B/Johns Hopkins

Note. CC = citation chased; CPG = clinical practice guideline; ES = evidence summary; LR = literature review; RCT = randomized controlled trial; SR = systematic review

Construction of Evidence-based Practice

Synthesis of Critically Appraised Literature

An in-depth appraisal of current and relevant literature exploring the best ways to increase adherence to breastfeeding for mothers with preterm infants allowed an intimate understanding of EBP measures. Through the synthesis of stress reduction methods, a plan of care will be developed focusing on the promotion of breastfeeding adherence with mothers of preterm infants in an outpatient care setting. The appraisal of the literature revealed four objectives in the prevention of stress for breastfeeding mothers with preterm infants. These objectives included (a) early identification of maternal stress (b) comprehensive education, (c) use of proactive and reactive support and (d) stress reduction methods. Overwhelmingly, the need for stress reduction methods was noted throughout the literature, with seven studies referencing the importance of this measure (Dabas et al., 2019; Ericson et al., 2017; Erikson et al., 2017; Joseph et al., 2019; Mohd Shukri et al., 2017; Slade, 2020; Varisoglu et al., 2020). Tools to monitor and assess for complications of maternal stress were noted as important themes in three studies (Dabas et al., 2019; Joseph et al., 2019; Mohd Shukri, 2017). Four studies referenced the need for proactive and reactive support for breastfeeding mothers (Ericson et al., 2017; Erikson et al.,2017; Joseph et al., 2019; and Slade, 2020). Another four studies concluded that stress reduction methods, including music therapy, meditation, and MBSR can decrease maternal stress and increase milk production (Dabas et al., 2019; Joseph et al., 2019; Mohd Shukri et al., 2017; Varisoglu et al., 2020).

Early Identification of Maternal Stress. An important prevention step, found in three of the studies, was that early identification of maternal stress could increase breastfeeding adherence (Dabas et al., 2019; Joseph et al., 2019; Mohd Shukri et al., 2017). Stress, if not addressed early, is known to cause exhaustion, poor performance, and negative health outcomes (Joseph et al., 2019). Maternal stress in NICU is often neglected, with care mainly focused on the neonate (Dabas et al., 2019). Maternal stress due to neonates' conditions

adversely affects infant-mother bonding and commonly decreased breast milk production (Dabas et al., 2021; Joseph et al., 2019).

Psychological distress in mothers and/or difficult behavior in infants could influence infant feeding and development during early life (Joseph et al., 2019; Mohd Shukri et al., 2017). Prolonged feelings of stress in the mother-infant relationship could lead to post-partum depression (Joseph et al., 2019). Unfortunately, among breastfeeding mothers, those with depressive symptoms tend to have low breastfeeding self-efficacy (Joseph et al., 2019; Mohd Shukri et al., 2017). Human studies have exhibited that emotional distress in mothers inhibits the let-down reflex leading to disruption of milk flow and reduced milk yield, hence affecting breastfeeding duration (Dabas et al., 2019; Joseph et al., 2019; Mohd Shukri et al., 2017). In addition, maternal psychological distress has also been associated with elevated maternal cortisol levels during the post-partum period (Mohd Shukri et al., 2017; Varisoglu and Gungor Satilmis, 2020). Cortisol has been suggested to interfere with the regulation of oxytocin and prolactin, which have been shown to influence breastfeeding frequency and duration (Varisoglu & Gungor Satilmis, 2020). Consequently, the combination of both depressive symptoms and difficulty in breastfeeding may eventually influence the duration of exclusive breastfeeding and breastfeeding success (Dabas et al., 2019; Joseph et al., 2019; Mohd Shukri et al., 2017; Varisoglu and Gungor Satilmis, 2020).

Comprehensive Education. Education regarding the significance and value of breastfeeding should start during pregnancy and be re-emphasized when premature delivery occurs (Slade, 2021). For many mothers, the transition from NICU to the home environment is difficult and needs facilitating (Ericson et al., 2017). Parental support and education are needed for the transition of care to home (Ericson et al., 2017; Joseph et al., 2019). Such efforts ease parental stress and anxiety during an infant's hospital stay and prepare parents to care confidently for their infants at home (Joseph et al., 2019). A quality improvement project implemented a comprehensive postnatal counseling package to facilitate early and frequent milk

expression by mothers of preterm infants admitted into NICU. These strategies include an increase in the lactation consultant workforce, early lactation consultation for mothers, tracking of breast milk supply, and physician education. Following the implementation of these strategies, a significant reduction in time to first maternal milk expression was observed (from 9 hours to 6 hours, p=0.06). There was no significant change in the proportion of infants receiving maternal breast milk at 28 days, however, the proportion of infants receiving maternal breast milk at discharge significantly increased from 37% to 59% (p=0.046) (Slade, 2020).

Proactive and Reactive Support. Ericson et al. (2017) noted that professional breastfeeding support is important for continued breastfeeding. To facilitate breastfeeding, adequate support should be person-centered and include continuity of care (Ericson et al., 2017; Slade, 2021). Erikson and colleagues (2017) define person-centered support as involving a professional's sympathetic presence, engagement, and shared decision making, having the potential to increase the recipient's satisfaction with and involvement in the support process. Slade (2021) evidence summary explained a pilot RCT that was conducted that estimated the effects of breast milk expression education and support intervention on breastmilk production in mothers of preterm infants. Mothers in the intervention group had a statistically significant higher duration of breast milk expression in minutes/day (p=0.043). Mothers in the intervention group received, in addition to standard care and breast pump, breast milk expression education, and support through a weekly telephone follow-up and helpline for six weeks.

An RCT was conducted to evaluate the effect of proactive breastfeeding support, in which the mothers received a daily telephone call, compared with only reactive support, in which the mothers had to initiate the telephone call themselves, for mothers of preterm infants discharged from the NICU (Ericson et al., 2017). The mothers allocated to the proactive support group could also obtain reactive support. The mothers in the proactive group showed significantly lower parental stress compared with the mothers in the reactive group (Erikson et al., 2017). A follow-up evaluation was conducted by Ericson and colleagues (2017) using a qualitative-drive,

concurrent, mixed-method approach in which data from questionnaires and telephone interviews were used. The study demonstrated that both proactive and reactive support have the potential to contribute to feelings of security and comfort. Mothers of premature infants should be provided access to various support interventions including telephone support, support groups for mothers of preterm infants, and individualized education from a lactation consultant (Joseph et al., 2019; Slade, 2020)

Relaxation Techniques. There was a total of four studies acknowledging the positive effects of relaxation techniques during breastfeeding (Dabas et al., 2019; Joseph et al., 2019; Mohd Shukri et al., 2017; Varisoglu et al., 2020). The use of audio-assisted relaxation techniques reduced maternal stress and anxiety which further helped improve breastmilk output (Dabas et al., 2019; Mohd Shukri et al., 2017). Varisoglu and Gungor Satilmis (2020) conducted an RCT and indicated that breast milk production was significantly higher in the music group compared with the control group on the third and fourth days ($p < 0.001$). Relaxation techniques such as meditation, MBSR, and music are simple and cost-effective interventions that video or audio recordings could be created and provided to parents for use at home or while in the NICU interacting with their infants (Joseph et al., 2019; Varisoglu et al., 2020).

Recommendation for Best Practice

Based on the synthesis of the literature and the feasibility of implementation at the project site, the most appropriate intervention would be a meditation-based audio recording or music for mothers to utilize during breast expression, with proactive and reactive education and support. Telephone follow-up should be conducted for at least 6 weeks after discharge (Slade, 2021). Meditation-based audio recording or music should be included in at least one 15-minute pumping session a day (Dabas et al., 2019; Mohd Shukri et al., 2017).

CHAPTER 3

IMPLEMENTATION OF PRACTICE CHANGE

The evidence presented in Chapter 2 upholds the development of a proactive support system along with the implementation of a meditation-based breastfeeding intervention to increase breastfeeding. Maternal stress and lack of support have been cited as major obstacles to breastfeeding adherence (Erickson et al., 2017; Joseph et al., 2019). This chapter will describe the setting, participants, outcomes, intervention, data management, and analysis plan. Also included are the steps to protect human participants. The purpose of this EBP project is to increase adherence with breastfeeding preterm infants. The PICOT question developed to guide the EBP project and develop a systematic approach was, "In breastfeeding mothers of preterm infants, does education on implementation of meditation and/or music therapy during breastfeeding, and telephone follow-up at one, two, and six weeks post-discharge, compared to the standard of care (three-month follow-up visit at the developmental clinic), increase breastfeeding compliance and decrease post-partum stress as measured by patient-reported assessment tool over three months?"

Participants and Setting

Eligible participants were mothers with preterm infants, gestational age less than 37 weeks, who had a referral to the developmental clinic. Participants must have breastfed or expressed breast milk while the premature infant was in the hospital. Exclusion criteria included: (a) mothers younger than 18 years of age, (b) pregnant women, (c) mothers who cannot give breast milk due to medical conditions, and (d) mothers who do not speak English. The project was conducted in a developmental clinic for a Level III NICU located in Northwest Indiana, which is currently working on securing its baby-friendly hospital certificate. According to the NICU enteral nutrition protocol, the first choice is breast milk, and the second choice is preterm/term infant formula in case of the complete absence of maternal breast milk.

Baseline data collection was completed with the utilization of the Spielberger State-Trait Anxiety Inventory (STAI), given to participants prior to interventions. Permission was obtained to use the tool for the project (Appendix A). Maternal demographic and socioeconomic characteristics included age, education level, employment status, and gestational age of the child when born was recorded. The mother also disclosed the pre-intervention feeding status of the pre-term infant.

Intervention

The intervention for this project included outpatient telephone support and education on how to facilitate meditation and/or music therapy (MT) during breastfeeding or pumping. Mothers received an educational pamphlet about MSBR and how this method could improve the breast pumping experience (Appendix H). Education was obtained on how mothers could utilize websites or telephone apps to access free breastfeeding meditation recordings and MT. Mothers were encouraged to take advantage of recordings as many times as they would like, but no less than once a day during a breastfeeding or pumping session. Follow-up telephone calls at one, two, and six weeks served to reinforce education and adherence to the program. Reactive support continued based on previous lactation protocols.

Comparison

Post-intervention data on maternal stress and anxiety were collected during the three-month developmental clinic appointment. The mothers completed the STAI and were asked if the infant was exclusively breastfeeding, supplementing, or not breastfeeding at all.

Outcomes

The primary outcome of this project was to evaluate the association between the interventions and the following feeding types: exclusively breastfed (EBF), mixed-fed (MF), or formula-fed (FF). The second outcome of this project was to assess the correlation between the interventions and maternal stress and anxiety.

Feeding type. All infants in this study were fed in accordance with the institution's NICU nutritional protocol. The feeding type (EBF, MF, or FF) of NICU infants at the time of discharge were recorded. EBF breastfeeding exclusivity was determined by the infant only receiving breast milk. MF was defined as feeding with breast milk and formula. FF was defined as an infant receiving formula exclusively.

Spielberger State-Trait Anxiety Inventory. Maternal anxiety was evaluated using the Spielberger State-Trait Anxiety Inventory (STAI). The STAI consists of a 40-item self-report measure assessing traits and transient state anxiety. Subjects answer how they feel generally or at a particular moment in each statement. In both the trait anxiety category and state anxiety category, higher scores indicate higher levels of anxiety (Spielberger et al., 1983; Spielberger, 1989). STAI scoring key from the manual was utilized to carefully record the questionnaire (Spielberger, 1989).

Data Collection

Mothers were invited to participate in the EBP project one week before discharge and during a consultation with the developmental clinic. Written consent was obtained from mothers who agreed to participate (Appendix B). In a quiet room, mothers independently completed the STAI before education was completed for the intervention. The follow-up STAI was given to mothers at their first development clinic appointment at 3 months after discharge. Data obtained from STAI surveys were double entered into an Excel spreadsheet and stored on a password-protected USB drive to ensure the accuracy and security of the quantitative data. When the USB drive was not in use, it was stored in a locked box at the site. Original surveys were then destroyed using the facility-provided secure shred service.

Inferential statistics were used to examine the differences in STAI scores between the pre-and post-intervention utilizing a paired t-test. Chi-squared analysis was used to determine the homogeneity of the participant in terms of their descriptive characteristics, which included the feeding type (EBF, MF, FF) of the preterm infant. The statistical significance level was set at

$p<0.05$ for all analyses, and calculations were performed by IBM SPSS Statistics for Windows, Version 28.0. (IBM Corporations, Armonk, New York).

Timetable

Implementation of the project began on September 22, 2021, and last until March 9, 2022. The project began on September 22 after the hospital's IRB meeting. Additionally, Northwest Health granted IRB approval before the initiation of the project (Appendix F). Administration of the STAI and demographic questionnaire was given one week before discharge. Education about meditation and breastfeeding was provided on-site and in a pamphlet. To increase proactive support for participants follow-up telephone calls at one, two, and six weeks assisted to reinforce education and adherence to the program. Reactive support with the lactation team will continue as is. Mothers received a follow-up STAI and were asked how they feed their infant at the 3-month development clinic appointment. See the Gantt chart in Appendix C for a visual timeline.

Protection of Human Subjects

Insurance of the protection of human rights occurred throughout the project. The project leader was required to undergo training in human rights protection and obtained a certificate of completion (NIH, 2019). Additionally, Valparaiso University and Northwest Health granted IRB exemption before the initiation of the project (Appendix D). Identifiable data (hard copy) collected, including contact data, was stored in a locked box. All data collection forms, questionnaires, and labels included only the participant's project ID number. These forms were stored in the lockbox. No identifiable data will be published or presented to maintain the anonymity of the participants.

Informed Consent Process. The informed consent was obtained within one week before discharge. The project facilitator presented the information to breastfeeding mothers. The project facilitator was available to be contacted by phone or email for questions, as well. HIPAA information will remain confidential. All information regarding patients' care was coded within the

code log that remained accessible only to the primary project facilitator. Since all staff is bound by HIPAA laws as employees of the hospital, personal information will not be shared outside of patient care.

Risk. No risks are anticipated. If harm is identified during the project, it will be terminated immediately. The interventions are evidence-based, so they are considered the standard of care for this patient population.

CHAPTER 4

FINDINGS

Breastfeeding provides several benefits for mothers and infants. An overwhelming amount of evidence indicates that breastmilk optimizes infant growth and develops the immune system (Yu et al., 2018). Apart from the health benefits for infants, the immediate effects of breastfeeding for mothers include a decreased risk for hemorrhage, stress, and postpartum depression (Flemming, 2021). A mother's psychological state impacts lactation success, mainly by affecting milk ejection (Dabas et al., 2019). Despite evidence suggesting that relaxation techniques are beneficial for all human beings, it is one of the least commonly used approaches for postpartum mothers (Joseph et al., 2019).

This chapter describes the results of a 12-week within-group evidence-based project, which consisted of a meditation-based audio recording or MT for one 15-minute pumping or breastfeeding session daily. Participants also received a follow-up telephone call at one, two, and six weeks that reinforced education and adherence to the program. Participants were asked to disclose post-intervention infant feeding type at the 12-week visit and complete an STAI to measure maternal stress. Statistically significant differences were observed in increased breastfeeding adherence and decreased maternal stress levels after the two-step intervention.

Participants

Size. A total of 15 mothers of pre-term infants met the inclusion criteria, but 11 total mothers (73%) consented to the project. Of the eligible participants, 11 (100%) completed the 12 weeks, resulting in a final sample size of 11 participants. There was no attrition rate for this project.

Characteristics. Demographic characteristics were collected utilizing a questionnaire that each participant completed when consent was obtained to participate. The questionnaire was formatted to gather descriptive information on the participants using a Likert-like scale.

Descriptive data obtained included the participant's age, education level, weekly hours worked, and the gestational age of the preterm infant. There was a total of 4 people (36%) that were between the ages of 18-20 years old, 4 people (36%) were between the ages of 21-29 years old, and 3 people (27%) were between the ages of 30-39 years old. A total of 36% of the participants had a high school degree or equivalent education. Many participants (46%) were employed and worked under 40 hours a week. At the same time, 18% of the participants worked around 40 hours a week. The rest of the population (36%) were not employed and not actively looking for employment at the time of the project. A total of 7 participants (64%) had a gestational age between 28 and 31 weeks, and four (36%) had between 32 and 35 weeks. Many of the participants (73%) MF their infants at the beginning of the intervention, while only 27% of the participants exclusively breastfed. According to the pre-intervention STAI, seven participants (64%) experienced severe anxiety, and four (36%) experienced moderate pressure before the intervention. The detailed descriptive statistics of the participants are summarized in Table 4.1.

Table 4.1 *Demographics of participants*

Demographic	**Frequency**	**Percent**
Number of participants	11	
Gender		
Female	11	100%
Age Range		
18-20	4	33.3%
21-29	4	33.3%
30-39	3	16.7%
40-49	0	4 (26.4)
Education		
Less than high school	1	8.3%
High school or equivalent	4	33.3%
Some college but no degree	2	16.7%
Associate degree	3	25.0 %
Bachelor's degree	1	8.3%
Employment Status		
Employed (40+ hrs.)	2	16.7%
Employed (1-39 hrs.)	5	41.7%
Not employed	4	33.3%
Gestational Age		
28 weeks- 31 weeks	7	58.3%
32 weeks- 35 weeks	4	33.3%

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

Changes in Outcomes

The PICOT question for this project was “In breastfeeding mothers of preterm infants, does education on implementation of meditation and music therapy (MT) during breastfeeding, and telephone follow-up at one, two-, and six-weeks post-discharge, compared to the standard of care (three-month follow-up visit at the developmental clinic), increase breastfeeding adherence, and decrease maternal stress as measured by a patient-reported assessment tool over three months?"

Statistical Testing and Significance

The IBM statistical software, SPSS version 25, was utilized to conduct statistical tests and data analysis on the effectiveness of the EBP project for mothers of preterm infants. A chi-square test analyzed the evaluation of the preterm infant feeding type pre-and post-intervention. A chi-square test of independence was calculated to compare participants' pre-and post-intervention infant feeding styles. A Wilcoxon test was used to measure the participant’s STAI scores pre-and post-intervention. The Wilcoxon test is the nonparametric equivalent of the paired-samples (dependent) t-test that tests whether two related samples are from the same distribution (Cronk, 2019). Statistical significance for data analysis was established at $p < 0.05$.

Findings

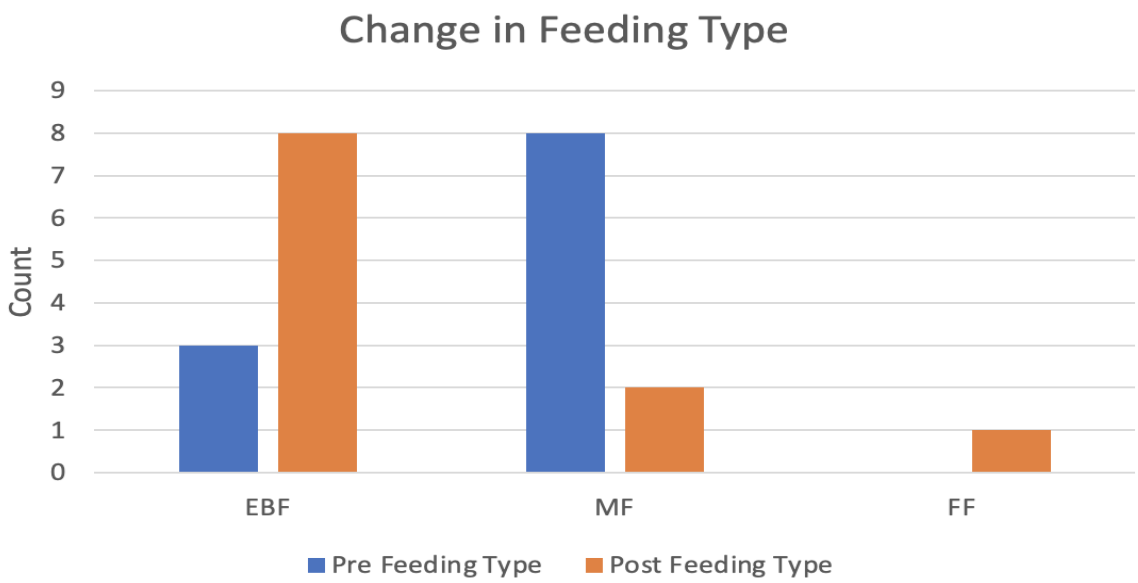
The primary outcome of this project was to evaluate the association between the interventions and feeding types exclusively breastfed (EBF), mixed-fed (MF), or formula-fed (FF). The second outcome of this project was to assess the correlation between the interventions and maternal stress and anxiety.

Primary Outcome

Infant Feeding Type. A self-report was used to determine this outcome. NICU infants' feeding type (EBF, MF, or FF) at discharge and the three-month developmental clinic visit were recorded. EBF breastfeeding exclusivity was determined by the infant only receiving breast milk. MF was defined as feeding with breast milk and formula. FF was described as an infant receiving

formula exclusively. Also, a Chi-square goodness of fit test was conducted comparing the frequency of occurrence of infant feeding type pre-and post-intervention. Out of the 11 participants, many participants achieved EBF (n=8, 72.73%), while the others (n=2, 18.18%) had MF after the intervention was completed. Results are displayed graphically in figure 4.1.

Figure 4.1



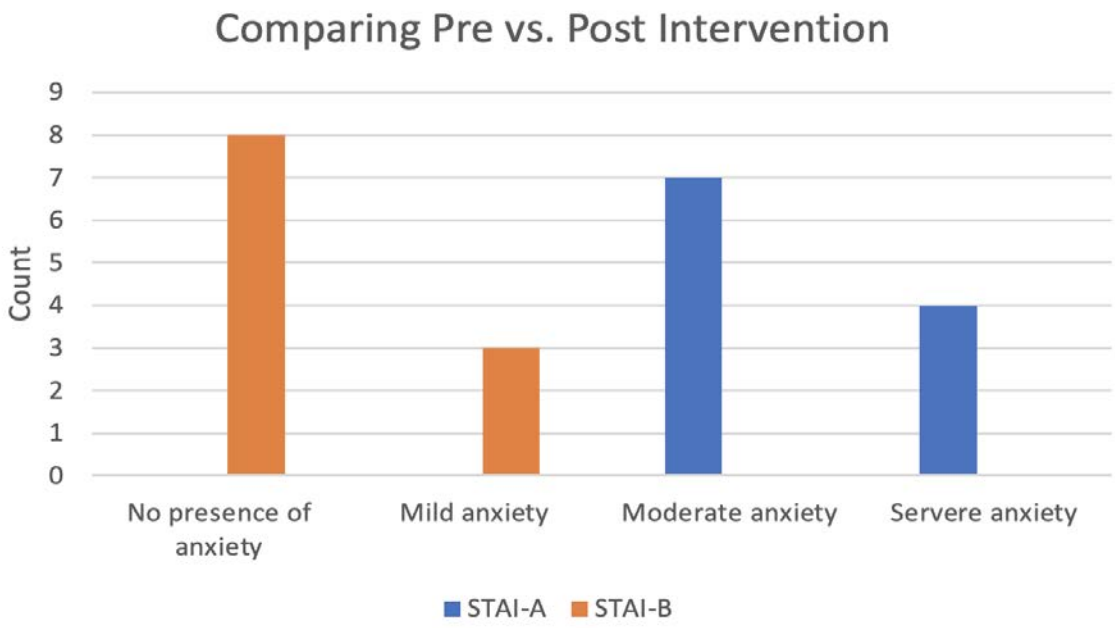
Summary: According to the graph, most of the participants did both breastfeeding and formula feeding before the intervention, while after the intervention, most of the participants were exclusively breastfed

Secondary Outcome

Maternal Stress Levels. A high degree of internal consistency was observed for each of the 40 items of the STAI with Cronbach's alpha for the total score being 0.86. The internal consistency coefficients for the STAI have ranged from .86 to .95; test-retest reliability coefficients have ranged from .65 to .75 (Spielberger et al., 1983). The STAI proved to be reliable, valid, and sensitive in measuring anxiety in mothers of preterm infants. Participants before the intervention had an STAI score indicating moderate to severe anxiety. In contrast, all the participants after the intervention had an STAI score indicating no presence of anxiety or mild

anxiety. After running a Wilcoxon Signed Rank Test, the p-value (p-value=0.001) is significant ($Z = -3.207$, $p < 0.05$). The overall data indicate that every post-STAI score was lower than the pre-STAI score. This means that the participants were less stressed at the end of the program compared to the beginning of the intervention. Results are displayed graphically in Figure 4.2.

Figure 4.2



Summary: According to the graph, all the participants before the intervention had moderate to severe anxiety. In contrast, all the participants after the intervention had no presence of anxiety to mild stress.

CHAPTER 5

DISCUSSION

This EBP project aims to enhance adherence to breastfeeding preterm infants and decrease maternal stress and anxiety levels. This EBP project served the purpose of answering the PICOT question, “In breastfeeding mothers of preterm infants, does education on implementation of meditation and music therapy (MT) during breastfeeding, and telephone follow-up at one, two-, and six-weeks post-discharge, compared to the standard of care (three-month follow-up visit at the developmental clinic), increase breastfeeding adherence and decrease maternal stress as measured by a patient-reported assessment tool over three months?" The primary outcome of this project evaluated the association between the interventions and feeding types exclusively breastfed (EBF), mixed-fed (MF), or formula-fed (FF). The second outcome of this project assessed the correlation between the interventions and maternal stress and anxiety. This chapter provides a comprehensive explanation of the findings and discusses the strengths and weaknesses of the EBP project. Future implications will be outlined in practice, research, and education. Also, the applicability of the EBP model that served to guide this EBP project was evaluated.

Explanation of Findings

Primary Outcome

A chi-square test was utilized in comparing the frequency of the occurrence in infant feeding types pre-and post-intervention. Out of 11 participants, a total of 8 participants achieved EBF (72.73%), while the others (n=2, 18.18%) continued MF after the intervention was completed. This is consistent with the existing literature. Stress and anxiety experienced by postpartum mothers of hospitalized preterm infants harm oxytocin and prolactin, which are generally required to establish lactation (Dabas et al., 2019). Mothers of preterm infants are three times more at risk of not producing adequate breastmilk than mothers of full-term infants (Dabas

et al., 2019). This EBP project concluded that audio assisted relaxation technique or MT had helped the mothers of pre-term infants in increasing adherence to breastfeeding, which is congruent with various studies in which MT, progressive muscle relaxation, and MBSR also led to an increase in milk output (Dabas et al., 2019; Joseph et al., 2019; Varisoglu et al., 2020).

Secondary Outcome

The STAI pre-and post-intervention measured maternal stress levels. Participants before the intervention had an STAI score indicating moderate to severe anxiety. In contrast, all the participants after the intervention had an STAI score indicating no presence of anxiety or mild anxiety. After running a Wilcoxon Signed Rank Test, the p-value (p-value=0.001) is significant ($Z = -3.207$, $p < 0.05$). The overall data indicated that every post-STAI score was lower than the pre-STAI score. These results are consistent with existing literature previously documented. For example, an RCT was conducted to evaluate the effect of proactive breastfeeding support. The mothers received a daily telephone call, compared with an only reactive support. Reactive support was defined as the mothers having to initiate the telephone call themselves to receive lactation support. The mothers in the proactive group demonstrated significantly lower parental stress than the mothers in the reactive group (Ericson et al., 2017). A follow-up evaluation was conducted by Ericson and colleagues (2017) using a qualitative-drive, contemporary, mixed-method approach in which data from questionnaires and telephone interviews were used. The study demonstrated that both proactive and reactive support have the potential to contribute to feelings of security and comfort, which is critical in decreasing maternal stress and anxiety.

Strengths and Limitations of the DNP Project.

Mothers experience stress when their infants are separated to receive care in the NICU, resulting in decreased breast milk production. The implementation of this project allowed the project facilitator, project site staff, and participants to see firsthand the value of utilizing audio-assisted meditation or music therapy during one breastfeeding pumping session could increase mothers with preterm infants breastfeeding adherence and decrease maternal stress and anxiety

levels, which the STAI measured. Nonpharmacological stress reduction methods during breastfeeding or pumping sessions are encouraged for best practice purposes. Several strengths and limitations were noted in this EBP project. Meditation-based audio and music are low in cost, provide rapid effects, and positively affect stress and anxiety levels and depression risk by helping mothers relax and increase breast milk output, ultimately increasing breastfeeding adherence.

Strengths

Several strengths are attributed to this project. One of the greatest strengths of this EBP project was the collaboration between the project facilitator and the staff at the developmental clinic. Additionally, the organizational culture was one that fully supported evidence-based practice and embraced the self-care foundations of this intervention. Upon formal approval of the EBP project from key stakeholders of the implementation site, the clinical providers, nurses, medical assistants, and human resources staff provided whatever support was necessary to implement and evaluate this project. For example, the NICU charge nurses assisted with the recruitment process. The current issue of decreased breastfeeding adherence of mothers with preterm infants created a sense of urgency to change practice to improve mothers of preterm infants breastfeeding adherence. The stakeholders recognized the importance and benefits of the EBP project for both mothers and preterm infants.

Another strength considered during the implementation of the EBP project was that brief meditation-based intervention is cost-effective and simplistic in many aspects, from the intervention to the education given to participants and staff. The utilization of meditation-based audio recordings or MT was highly accepted within this patient population, conceivably due to its nonpharmacological methods to reduce stress and anxiety making it safer for breastfeeding mothers. The EBP was straightforward to understand, which tied together many of its successes, including the strengths noted above, staff participation, and individuals agreeing to participate. Another strength of this EBP project was that it emerged from patient-centered care; permitting

mothers to have control of the audio meditations or MT that they decided to utilize during the breast pumping session. This allowed mothers to pick and choose what best suited them to make the experience unique to the mothers' needs.

Limitations

Despite the strengths of this project, there were several limitations worth mentioning. The most significant limitation is the recruitment of participants before the intended sample size was reached due to time constraints and the number of mothers who declined participation. Another limitation of this EBP project involved the size of the NICU where this project was completed. The 14-bed NICU size created difficulty in recruiting participants at a rapid pace, which was needed with the time constraints of the project.

Another limitation was the inconsistent reporting and lack of measurement of how frequently meditation or MT was listened to weekly by the mothers of preterm infants after discharge from the NICU. Many mothers did not log how often they listened to audio meditation or MT during breastfeeding. Even with discharge follow-up phone calls at one, two-, and six-weeks post-discharge from the NICU. This could be due to the lack of face-to-face implementation, which may have affected the consistency of reporting this data and the EBP project's overall results as research supported the efficacy of the intervention when face-to-face was combined with self-directed activities during breast pumping sessions (Dabas et al., 2019; Joseph et al., 2019; Mohd Shukri et al., 2017; Varisoglu et al., 2020).

Another weakness of this EBP project was the homogeneity of the participant population. Most of the participant's feeding types were EBF or MF before the intervention was initiated. A more diverse sample would have allowed the data to represent the overall population of mothers with preterm infants. An additional weakness in this project was that mothers who did not participate in the project or did not return the questionnaires had lower education levels than their counterparts. Low maternal educational level is a prominent negative factor influencing breastfeeding adherence (Dabas et al., 2019; Erikson et al., 2018; Mohd Shukri et al., 2017).

After running a linear regression test, the independent variables age (p-value = .476), education (p-value = .085), and employment status (p-value = .186) are not significant. This means that age, education, and employment status did not significantly impact the feeding type used at the end of the program. There were three types of feeding: MF, FF, and EBF. It is important to note that the independent education variable is close to the 0.05 value of being significant. In further research, if there were more participants, it could be possible to have a mother's education level affect the type of infant feeding type she utilized. Hence mothers recruited may have been committed to proceeding with breastfeeding and not those in the highest risk group for early cessation.

Sustainability

Unfortunately, due to the COVID-19 pandemic, there was a lack of staffing for outpatient clinics, and the staff was redirected to assist with high volumes of hospitalizations. The project facilitator completed all the steps of the EBP project's implementations, which may have decreased the EBP project's sustainability. Since the concept of mindful meditation and MT are relatively simple, video or audio recordings could be created and supplied to mothers for use during breastfeeding or pumping sessions. Further, NICU nurses or lactation consultants could facilitate an initial session or providing mothers the tools to practice meditation daily or weekly on their own would be inexpensive and realistic. Follow-up phone calls at one, two-, and six weeks post-discharge were helpful but could become time-consuming, and the concerns with staffing shortages due to the pandemic could be unsustainable.

Relevance for EBP Model

The JHNEBP Model guided this project's development, implementation, and evaluation. By providing a comprehensive yet flexible outline, this EBP model helped create a stepwise progression that the project facilitator could use to evaluate progress and adjust the execution of this project as necessary for successful implementation. Several characteristics of the JHNEBP Model made it a good fit for this project. First, it was flexible enough to withstand various internal

and external factors that could have derailed the project. By having a model that is an open system, it accommodates for both internal and external factors to be incorporated within the model. Internal factors include policies, organizational culture, values, beliefs, equipment, supplies, staffing, and offered services. For example, many internal factors affected this EBP project including the values and beliefs of the mothers and staff. This was easily manageable due to the flexibility of the JHNEBP Model. Second, the model prompted the investigator to solicit feedback and partnership from a multidisciplinary team at the implementation site. For example, the project site's IRB council changed the original timeline for proactive support. This turned out to be an essential key to the success of this project. Third, the JHNEBP Model also provides comprehensive tools for novices to follow, giving step-by-step guides towards project implementation, including identifying stakeholders, steps of the PET process, evidence assessment and appraisal tools, action planning, and dissemination tools. The model proved user-friendly, team-focused, and promoted deeper thinking about what would and would not work at the implementation site. There are three phases of the JHNEBP Model: inquiry and the practice problem, evidence, and transition into learning. Within these three phases are 19 steps that were closely followed to implement this EBP project (Dang & Dearholt, 2017).

Inquiry and the practice problem. A problem-focused proposition was developed by the personal reflection of breastfeeding attempts and the evaluation of reasons efforts failed. Upon discussions with interdisciplinary team members, including a NICU nurse practitioner, lactation nurse consultants, and facilitators of the developmental clinic, it was determined that stress reduction and outpatient support in breastfeeding were largely unexplored. Increasing compliance in breastfeeding for clients has been considered by key stakeholders approved as a priority and the project. After the problem was identified, discussions were held about the gap between current and desired practices.

Evidence. Once the practice problem was identified, an exhaustive literature search was performed to explore possible interventions to increase outpatient support and reduce stress in

mothers of preterm infants to improve overall breastfeeding compliance. Based on the synthesis of the literature and the feasibility of implementation at the project site, the most appropriate intervention would be a meditation-based audio recording or music for mothers to utilize during breast expression, with proactive and reactive education and support. Telephone follow-up should be conducted at least six weeks after discharge (Slade, 2021). Meditation-based audio recording or music should be included in at least one 15-minute pumping session a day (Dabas et al., 2019; Mohd Shukri et al., 2017).

Translation and learning. The intervention for this project included outpatient telephone support and education on facilitating meditation and music therapy (MT) during breastfeeding or pumping. The translation phase began with gathering educational material to give participants. Mothers received an educational pamphlet about MSBR and how this method could improve the breast pumping experience (Appendix H). Education was obtained on how mothers could utilize websites or telephone apps to access free breastfeeding meditation recordings and MT. Mothers were encouraged to take advantage of recordings as many times as possible, but no less than once a day during a breastfeeding or pumping session. Follow-up telephone calls at one, two, and six weeks served to reinforce education and adherence to the program. Reactive support continued based on previous lactation protocols. The next phase is the learning phase.

The JHNEBP Model learning is considered an ongoing process and allows change when new information, clinical practices, or other factors can improve current processes. This model for EBP practice establishes that learning is lifelong, and project teams should be interprofessional and collaborative (Dang & Dearholt, 2017). The section for this EBP project consisted of multidisciplinary personnel, all working towards the same goal. The JHNEBP Model systematically addresses questions through exploring the **p**ractice question, the **e**vidence concerning the practice, and the **t**ransition into practice. For this EBP project, the transition phase from evidence synthesis into practice took the longest due to requested changes in the discharge telephone follow-up protocols, including an extra follow-up phone call at one-week

post-discharge for participants. The acronym PET refers to this process. Since the model is open, new EBP processes can be triggered throughout this cycle (Dang & Dearholt, 2017).

While the JHNEBP Model is highly utilized, it is not without limitations. Facilities that are not familiar with EBP must be taught some of the core principles and be provided with more information about sequences of steps. For example, developing a list of who could serve as change champions in their respected areas was a step needed. Instead of accepting the idea that everyone would immediately adopt the interventions, it was essential to have someone within their site to be able to reinforce the importance of the interventions. This allowed for valuable two-way feedback to the primary investigator about what was working well and about what processes needed to change.

Recommendations for the Future

Since meditation is relatively simple, video or audio recordings could be created and provided for mothers at home or while interacting with their infants in the NICU. Further, NICU nurses or lactation consultants could facilitate the initial session; providing mothers the tools to practice meditation daily or weekly on their own would be inexpensive and realistic. Alternatively, giving audio speakers at the bedside would allow parents to participate in mindful meditation while breast pumping or spending time with their pre-term infant. Participating in meditation at the infants' bedside could promote a unique sense of relaxation and stress reduction in what can otherwise be a traumatic environment. MBSR could also be encouraged while mothers are expressing or pumping breastmilk to reinforce the positive contribution they are making to their infant.

Research

This EBP project highlights the need for early identification and addressing maternal stress and anxiety among post-partum mothers of preterm neonates. Audio-assisted relaxation techniques should be utilized routinely for the postpartum mothers of hospitalized neonates daily to reduce their stress and anxiety. Research on audio-assisted relaxation or MT and its response

to the adherence to breastfeeding and decreasing maternal stress must be conducted to validate its effectiveness. Likewise, nurses' responsibilities, perceptions, and attitudes toward audio-assisted relaxation techniques during breastfeeding pumping sessions and their use need validation before establishing it as a possible standard of practice. More research is required to determine specific cost-effective, non-invasive meditation strategies to address maternal stress and breastfeeding adherence. Funding should be made available for researchers to investigate the outcomes of this emerging strategy and its feasibility in mothers of preterm infants.

Education

Nurse Practitioners must be educated in the identification and interventions shown to reduce stress. Nurse Practitioners, nurses, and lactation consultants should be aware of predictors of stress such as maternal education level, stressful events, postnatal depression, and improper infant behavior. Nurse practitioners need to develop skills for identifying maternal stress predictors and causes and be educated to provide nonpharmacological methods to reduce maternal stress. These skills will foster an environment of mutual support (nurse to nurse) as well administrative and interdisciplinary team support is essential to achieve this goal. New nurse practitioners must be oriented to available stress reduction strategies for mothers and know how to incorporate stress-reduction techniques in daily care. The nurse practitioner curriculum should include stress-related such problems as sources of stress, nonpharmacological approaches to stress reduction, and available resources for breastfeeding mothers.

Conclusion

Mothers experience stress when their infants are separated to receive care in the NICU, resulting in decreased breast milk production. The implementation of this project allowed the project facilitator, project site staff, and participants to see firsthand the value of utilizing audio-assisted meditation or music therapy during one breastfeeding pumping session could increase mothers with preterm infants breastfeeding adherence and decrease maternal stress and anxiety levels, which the STAI measured. Nurses in NICUs can support these mothers and teach them

strategies to reduce their stress and improve breastfeeding adherence. This project found that a meditation-based audio recording or MT can increase breast milk production in mothers with preterm infants, increasing breastfeeding adherence. These findings are consistent with the existing body of literature. Nonpharmacological stress reduction methods during breastfeeding or pumping sessions are encouraged for best practice purposes. Meditation-based audio and music are low in cost, provide rapid effects, and positively affect stress and anxiety levels and depression risk by helping mothers relax and increase breast milk output, ultimately increasing breastfeeding adherence.

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BIOGRAPHICAL MATERIAL

Ms. Glinski was honorably discharged from the Army in 2011, where she earned her veteran status by serving in multiple deployments during Operation Iraqi Freedom. Discovering her passion for nursing during her first deployment to Iraq, she soon enrolled in Morehead State University and graduated with a Bachelor of Science in Nursing (BSN) degree in 2012. During her time in Morehead, Kentucky, she had numerous opportunities to serve as crisis relief during natural disasters, including Hurricane Katrina. Her passion to help others during their time of need has been the foundation of her nursing career. This includes time spent in oncology, intensive care (ICU), and telemetry step-down units. To satisfy her desire to serve, she attends Valparaiso University where she plans to earn her Doctor of Nursing Practice (DNP) degree with a Family Nurse Practitioner (FNP) specialty and education certificate in May 2022. During her doctoral education, Jessica took a leave of absence to work with the Federal Emergency Management Agency (FEMA) to operate COVID-19 ICUs in New York City and Texas. In March 2020, she served during the first waves of healthcare workers to relieve New York's healthcare system in the beginning stages of the COVID-19 pandemic. Ms. Glinski is committed to caring for underserved populations and pursuing leadership positions that shape healthcare policy.

ACRONYM LIST

CDC: Centers for Disease Control and Prevention

CINAHL: Cumulative Index to Nursing and Allied Health Literature

EBF: Exclusively Breast Fed

EBP: Evidenced Based Project

FF: Formula fed

JHH: Johns Hopkins Hospital

JHNEBP Model: Johns Hopkins Nursing Evidenced-Based Practice Model

MBSR: mindfulness-based stress reduction

MF: Mixed Fed

RCTs: Randomized Control Trails

STAI: State-Trait Anxiety Inventory

TRIP: Turning Research into Practice

WHO: World Health Organization

APPENDIX A

Permission

6/29/2021 JHNEBP Model and Tools- Permission | IJHN Learning System

Thank you for your submission. We are happy to give you permission to use the JHNEBP model and tools in adherence of our legal terms noted below:

You may not modify the model or the tools without written approval from Johns Hopkins.

All reference to source forms should include "©The Johns Hopkins Hospital/The Johns Hopkins University."

The tools may not be used for commercial purposes without special permission.

If interested in commercial use or discussing changes to the tool, please email ijhn@jhmi.edu.

Downloads:

JHNEBP Tools-Printable Version JHNEBP Tools-Electronic Version

Do you prefer hands-on learning?

We are offering a 5-day intensive Boot Camp where you will learn and master the entire EBP process from beginning to end. Take advantage of our retreat-type setting to focus on your project, collaborate with peers, and get the expertise and assistance from our faculty. Click HERE to learn more about EBP Boot Camp. Group rates available,

email ijhn@jhmi.edu to inquire.

mind garden

www.mindgarden.com

To Whom It May Concern,

The above-named person has made a license purchase from Mind Garden, Inc. and has permission to administer the following copyrighted instrument up to that quantity purchased:

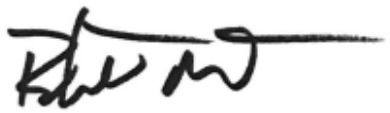
State-Trait Anxiety Inventory for Adults

The four sample items only from this instrument as specified below may be included in your thesis or dissertation. Any other use must receive prior written permission from Mind Garden. The entire instrument may not be included or reproduced at any time in any other published material. Please understand that disclosing more than we have authorized will compromise the integrity and value of the test.

Citation of the instrument must include the applicable copyright statement listed below.
Sample Items:

I feel at ease
I feel upset
I lack self-confidence
I am a steady person

Sincerely,



Robert Most
Mind Garden, Inc.
www.mindgarden.com

APPENDIX B

Informed Consent

Dear Participant:

I am a student at the College of Nursing at Valparaiso University. I am conducting an evidenced-based project focusing on maternal stress and breastfeeding support for mothers of preterm infants. I request permission for you to join.

The intervention for this project includes education on how to facilitate meditation or music therapy (MT) during breastfeeding or pumping sessions and telephone follow-up calls at two- and six weeks post-implementation. The project facilitator will initiate education prior to NICU discharge. After discharge participants will receive follow-up phone calls from the facilitator at 2 weeks and then 6 weeks. At the conclusion of the study, a summary of the group results can be made available to all interested participants by contathe cting project facilitator at jessica.glinski@valpo.edu. Individual results are not available to protect participants' identity and personal health information.

Participation in this project is voluntary. Your decision whether or not to participate will not affect the services normally provided to you at Northwest Hospital--Porter. Your participation in this study will not lead to the loss of any benefits to which you are otherwise entitled. You and your infant are not waiving any legal claims, rights, or remedies because of your participation in this evidence-based project. There are no physical risks to you by participating in the project.

Any information that is obtained in connection with this study and that can be identified with you, will remain confidential and will be disclosed only with your permission or as required by law. Confidentiality will be maintained by means of using a coded log. The coded log will be kept by the researchers in a doubled-locked location.

Should you have any questions or desire further information, please call or email me at jessica.glinski@valpo.edu or 219-252-0105. ***Keep this letter after tearing off and completing the bottom portion and give the signed letter to your infant's nurse.***

If you have any questions about your rights as a research subject, you may contact the Valparaiso University Institutional Review Board (IRB) by mail at 1400 Chapel Drive, Valparaiso, IN 46383 Arts and Sciences Building 208A or by Email: sponsored@valpo.edu or by Phone: 219.464.5798

Sincerely,
Jessica Glinski BSN, RN, Doctor of Nursing Practice Student at Valparaiso University

---

Please indicate whether you wish to participate in this project by checking one of the statements below, signing your name and handing it to your infant's nurse. Sign both copies and keep one for your records.

_____ I grant permission to participate in the evidenced based project regarding mindful breastfeeding.
_____ I do not grant permission to participate in the evidenced based project regarding mindful breastfeeding.

_____ _____
Signature of Parent/Guardian Printed Parent/Guardian Name

_____ _____
Printed Name of Child Date

_____ _____
Witness Date

_____ _____
Witness Date

Appendix C

HIPAA Authorization Form to Use or Disclose Protected Health Information for Research

Research Participant's Name: _____

Address: _____

Evidence-Based Practice Project: Mindful Breastfeeding: A two-step approach to increase breastfeeding adherence in mothers of preterm infants

Principal Investigator: Jessica Glinski RN, BSN

Sponsors: Valparaiso University

Project Evaluator: Christina Cavinder, DNP, RN, CPNP-PC

Research Site: Northwest Health--Porter

You have been asked to participate in the Research Study. If you sign this Authorization Form, you agree to the use and disclosure (release) of your health information for the Research Study, as described in this Authorization Form.

1. The following health information about you will be collected for this Research Study: Your baby's gestation, whether you are breastfeeding or not, and the State-Trait Anxiety Inventory (STAI) before and after interventions are concluded.

2. This health information may be disclosed by the Principal Investigator; the Research Site and its representatives; Valparaiso University and its representatives; government agencies in the United States that regulate clinical research, including the Food and Drug Administration (FDA) and the Office for Human Research Protection; the Institutional Review Board that is responsible for reviewing the Research Study; Institutional Review Board for Valparaiso University.

3. If you do not sign this form, you cannot be in the evidence-based project. However, if you do not sign this form, it will not affect your treatment, the payment for that treatment, or enrollment or eligibility for benefits.

4. You will not have access to your health information related to the evidence-based project until the project is complete. At the end of the project, you may ask for access to information in the form as an aggregate (only in group reporting).

5. The Research Participant's PHI will be kept in a research repository: You are also being asked to consent to have your health information stored in the primary investigator's repository, which will be used for future research. All PHI is coded, and double password protected. You do not have to agree to have your health information stored in the research repository to participate in the Study. If you agree to have your health information stored in the research repository, please check the following box: ☐

6. You may change your mind and revoke (take back) this Authorization Form at any time, except if your health information was already disclosed based on this Authorization Form or if it is necessary to continuing using your health information to maintain the integrity of the Research Study. To revoke this Authorization, you must write to: Jessica Glinski PO Box 87 Kouts, IN, 46347. This Authorization does not expire unless you revoke it.

_____ _____

Signature Date

_____

Printed Name

APPENDIX D

Valparaiso University & Northwest Health IRB Approval

VALPARAISO UNIVERSITY

Jessica Glinski <jessica.glinski@valpo.edu>

Fwd: IRB Questionnaire Response
1 message

Valpo IRB <valpoirb@valpo.edu> Wed, Jul 28, 2021 at 9:39 AM
To: Jessica Glinski <jessica.glinski@valpo.edu>

Hi, Jessica,

An IRB member has reviewed your questionnaire and determined that your project does not need to be reviewed by the IRB. Good luck!

Dorothy Warner
IRB Administrator

---------- Forwarded message ---------
From: <valpoirb@valpo.edu>
Date: Fri, Jul 23, 2021 at 8:47 AM
Subject: IRB Questionnaire Response
To: <jennifer.winquist@valpo.edu>, <valpoirb@valpo.edu>

Response summary

Timestamp
Fri Jul 23 2021 09:47:03 GMT-0400 (EDT)

Username
jessica.glinski@valpo.edu

Are you a student, faculty, or staff?
Student

Provide a title for your project
Mindful Breastfeeding

If you are a student, type the VU EMAIL ADDRESS of the faculty member supervising your project. Be sure it is their VU email address.
christina.cavinder@valpo.edu

Is this project for the Doctor of Nursing Practice (DNP) Program?
Yes

Does your project meet all 8 criteria described above?
Yes

I certify that the information provided in this application is complete and accurate. I understand that as the Principal Investigator I have ultimate responsibility for the conduct and ethical performance of the study, the protection of the rights and welfare of human participants.
I agree with this statement

--
Valpo IRB Team

Northwest Health
Porter

To: Jessica Glinski RN, BSN

Re: Institutional Review Board: Study Approval: Mindful Breastfeeding: A two-step approach to increase breastfeeding adherence in mothers of preterm infants

Date: September 28, 2021

Dear Jessica,

Thank you for requesting approval of the above named study. Approval is granted as of this date September 28, 2021 and will remain in effect until September 28, 2022. Just a reminder it will be your responsibility to report any adverse effects, request annual approval as well as submit an annual report of activities to the committee.

Sincerely,

Dr. Natalie Painter
Physician Chair

Debra Polster, DNP, MS, RN, CCNS, CCRN-K
Committee Chair

APPENDIX E

Evidence Table

Table 2.2

Evidence Table

Lead Author/ Year/Quality	Purpose/ Design/Sample	Interventions	Measurement/ Outcomes	Results/ Findings	Strengths/ Limitations
Level I Evidence					
Ericson, J., et al., (2017) Level 1 Grade A	**Purpose**: The aim was to evaluate the effectiveness of proactive telephone support provided to breastfeeding mothers of preterm infants after discharge from NICU. **Design**: RCT was conducts at six NICU's across Sweden **Sample**: Eligible participants for randomization	The intervention consisted of a daily telephone call to the mother initiated by a member of the BST, that is proactive support, from day one until day 14 after discharge, including weekends. In addition, the mother had the option to choose sparser calls or stop calls at any time.	**Outcomes**: The primary outcome was exclusive breastfeeding eight weeks after hospital discharge. Secondary outcome is a decrease in parental stress. **Measurement:** To study the effects between intervention group and control group on the primary outcome measure, a logistic regression analysis was used.	**Results:** In a total, 493 mothers were randomized, 231 in intervention group and 262 in control group. There were no differences between the groups for exclusive breastfeeding, odds ratio 0.96, 95% CI 0.66-1.38, nor for maternal satisfaction with breastfeeding, attachment, or quality of life. The intervention group reported significantly less parental stress than the control group, t=2.44, 95% CI 0.03-0.23. **Findings**: In this trial, proactive telephone support was not associated with increased exclusive	**Strengths**: This is the largest randomized controlled trial of a breastfeeding telephone intervention delivered after discharge to mothers of preterm infants. Low dropout rate for the primary outcome, 1%. **Limitations:** The

	were mothers with preterm infants, gestation age greater than 37 weeks, who had been admitted to one of the NICUs for at least 48 hours and who breastfed or expressed milk.			breastfeeding prevalence at eight weeks following discharge from a NICU, nor was the support associated with breastfeeding satisfaction, attachment, or quality of life for mothers. However, the mothers who received proactive breastfeeding support showed significantly lower parental stress compared to mothers in the control group.	intervention was delivered over a short time with relatively intense contact. Many mothers declined daily contact and preferred contact every second day or less often.
Dabas, S., et al., (2019) Level I Grade A	**Purpose:** To assess the impact of relaxation technique on stress, anxiety, and milk output. **Design:** non-blinded randomized controlled trial with total enumeration sampling techniques. **Sample:** postpartum mothers who met the inclusion	Audio Assisted relaxation technique that included deep breathing exercises under the guidance of a yoga therapist.	**Measurement**: Data collection was done using pre-tested and post-test method that included a demographic sheet, standardized Parental Stress Scale: NICU, and standardized Parental Stress Scale: NICU, and perinatal anxiety screening scale. Post-intervention data on maternal stress, anxiety, and milk output was the volume of milk expressed using electric breast pump till the complete emptying of breast.	**Results:** Significant improvement in the mean anxiety scores of postpartum mothers in experimental group was compared to control group (19.8 +/- 6.7 vs. 28.18 +/- 11.7, $p < 0.05$). Similarly, within the experimental group a significant reduction in the mean anxiety scores ($p = 0.001$) was observed following intervention. **Findings**: There was significant reduction observed in maternal stress and improvement in milk output in experimental group as compared to control group.	**Strength:** Administration of standardized audio-assisted relaxation technique by yoga therapist and trained researcher in small group and the use of standardized tools and allowance of one-to-one interaction with the postpartum mothers.

	criteria with preterm infants		**Outcomes**: decreasing mothers stress and anxiety will help increase milk production.		**Limitations:** small sample size, single center and non-blinded study limit the generalizability of study findings.
Varisoglu and Gungor Satilmis (2020) Level I Grade A	Study was a RCT to determine the effects of listening to music on breast milk production in Turkish mothers with premature newborns.	On first day mothers were provided training for milking with pumps. On the second- and fourth-days mothers in the music group underwent two sessions of milking with music and a pump for 15 minutes at 1100 and 1600; the mothers in control group underwent two sessions of milking without music.	**Measurement:** Spielberger's State-Trait Anxiety Inventory was administered, and salivary cortisol test were taken on the first and final day of the study. **Outcomes**: Decreasing stress will help improve breastmilk production	**Results**: The state and total anxiety scores of the music group were statistically low ($p < 0.05$). There was no difference between music group and control group in the amount of breast milk produced; however, the final cortisol levels of the MG group were significantly lower compared with the pretest measurements ($p < 0.05$). **Findings**: Listening to music in the NICU while breastfeeding can help reduce stress levels in mothers to premature newborns and support breast milk production	**Strengths:** the experimental design of randomized controlled trial, which minimizes the potential for confusion. **Limitations**: Follow-up period of the study was limited to 4 days due to hospital discharge. The number of times the mothers provided milk with pumps and how much they

					provided were not measured; the mother only stated orally that they took this into consideration
Level II Evidence					
Ericson, J., et al., (2017) Level II Grade A/B .	**Purpose:** To explore the mother's experiences of the proactive and reactive telephone support. **Method**s: This study is qualitatively driven mixed method design, using three data sources: questionnaires with qualitative open-ended questions, visual analogue scales, and telephone interviews. **Sample**: Eligible participants were	The mothers were randomized to either proactive support (intervention group) or reactive support (control group). The intervention group received daily telephone calls from a member of a breastfeeding support team (BST) from day 1 to day 14. In addition, the intervention group had the option to call someone from the BST during the same period. Control group only received reactive support.	**Measurement**: An open-ended questionnaire about breastfeeding and breast-feeding support was given to mothers at 8 weeks after discharge and then when the infant was 6 months old and 12 months old. The answers from the questionnaire were scored on a 10-cm VAS scale than ranges from very dissatisfied/not at all involved (0) to very satisfied/ involved (10). Telephone interviews were guided by a semi-structured interview guide was also completed and at the end of the interview the mothers were given an	**Results**: The mothers in the proactive and reactive support groups were more satisfied with the group allocation than the mothers in the reactive group (98% n=167 vs. 88%, n= 171, p<0.001). **Findings**: In the analysis of the narrative regarding proactive and reactive support, two global themes emerged; Empowered by proactive support and duality of reactive support	**Strength**: Many participants and the mix method approach, which included quantitative and qualitative data that added to each other and drew attention to different perspectives. The study described experiences from those included in the intervention group as well

	mothers with preterm infants, gestation age greater than 37 weeks, who had been admitted to one of the NICUs for at least 48 hours and who breastfed or expressed milk		opportunity to express their views. Telephone interviews were audio recorded. **Outcomes**: Proactive telephone support decreases stress in breastfeeding mothers of preterm infants		as those in the control group. **Limitations**: Qualitative interviews were conducted over the telephone instead of face-to-face
Mohd Shukri et al., (2017) Level II Grade B	Evaluated the effectiveness of interventions using relaxation therapy to improve breastfeeding outcomes and to assess the consequent impacts on infant growth and behavior. Systematic Review utilizing3 RCTs and 2 non-randomized or quasi-experimental studies.	Four studies that used a guided imagery recording or meditation as a relaxation therapy involved mother practicing a progressive muscle relaxation technique such a taking deep and rhythmic breaths. Two RCTs included descriptions of pleasant surroundings, positive and supportive messages about breastfeeding and mother-infant bonding. Another two studies involved meditation to aid or stimulate relaxation in general	All studies in systematic review reflected on maternal stress. There are several plausible potential mechanisms for observed effect of relaxation therapy on breast milk outcomes (a) mothers who are more relaxed have better milk ejection, thus producing higher milk volume, and (b) mothers who are more relaxed produce breast milk with altered composition in terms of macronutrients and, potentially other bioactive agents.	The review identifies three studies investigating the effects of relaxation therapy on breast feeding outcomes breast milk produced and composition. Two RCTs found that listening to relaxation therapy significantly increased milk yield compared to mothers in control group. One RCT reported an improvement of overall maternal psychological state: reduction in stress and anxiety and higher scores in self-efficacy, self-compassion, and mindfulness among mothers in the intervention group. One study found no effect of the relaxation intervention on both (a) and (b). One study all mothers	**Strengths:** All RCTs indicated that both control and intervention groups were similar at baseline. **Limitations:** Limited studies and inconclusive evidence on the effectiveness of relaxation therapy on both primary and secondary outcomes

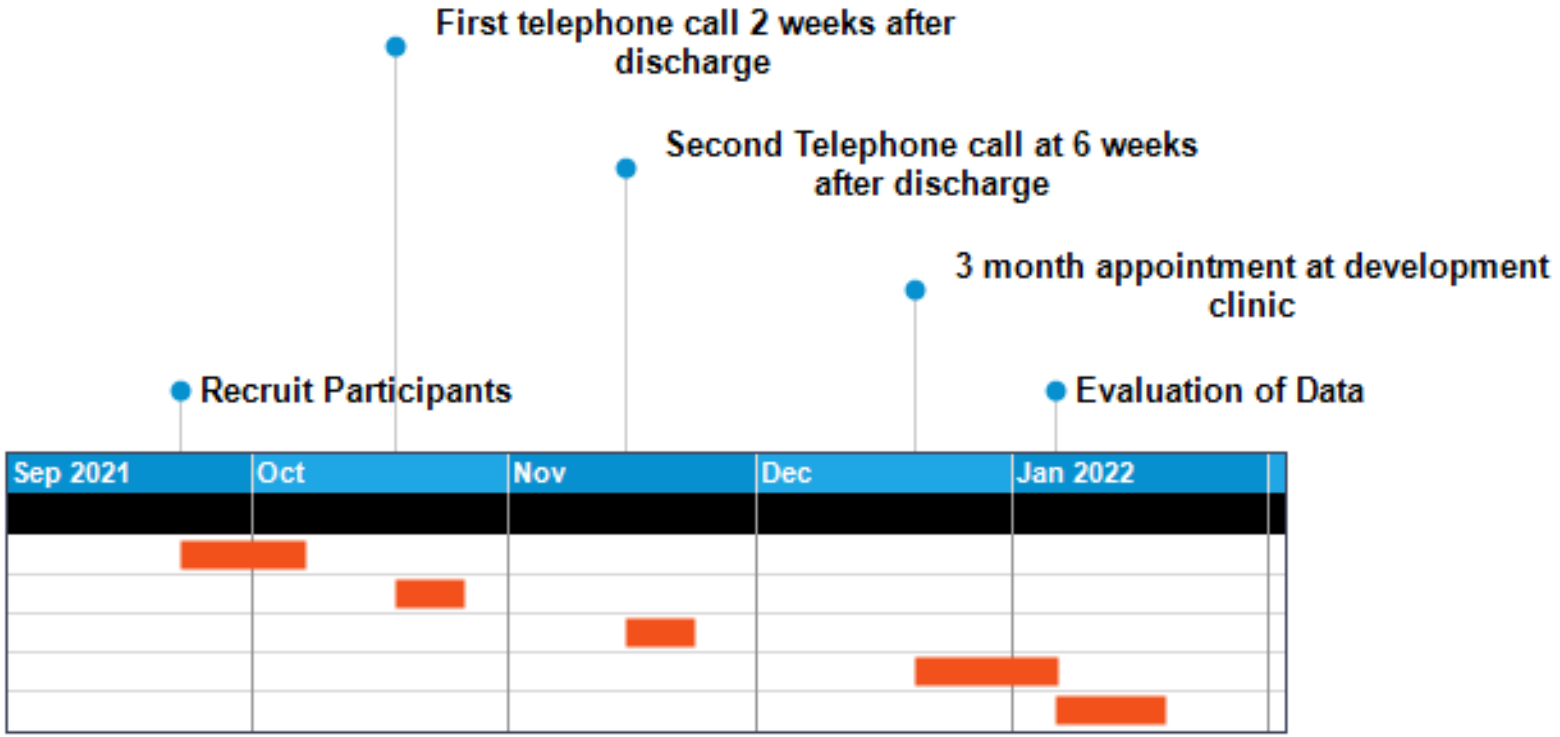
				received the intervention at different time points, hence, all mothers were exposed to the relaxation therapy, and this may have had carry-over effects even at the point where they were not receiving therapy. Thus, the changes in breast milk composition and psychological state because of the intervention could not be established between groups.	considered in review
Level V Evidence					
Joseph, R. et al., (2019) Level V Grade B	. **Purpose**: The article explores the application of mindfulness-based strategies to reduce stress in parents of infants in the NICU. **Method**: Literature Review	Explanation of mindfulness-based stress reduction (MSBR) by using the Transactional Model of Stress and Coping. Implementation of MBSR in the NICU setting by video or audio recordings that could be provided to parents for use at home or while in the NICU interacting with their infants. NICU nurses could facilitate an initial session if desired by parents; providing parents the tools to practice	N/A	Parents experience stress when their infants are separated to receive care in a NICU. Nurses in NICU's can support these parents and teach them strategies to reduce their stress. Some of the common practices researched so far include relaxation, art therapy, and meditation.	**Strengths:** The lit review give clear and concise reason on why implications for nursing education, practice and research should include MSBR to help relieve stress. The transactional Model of Stress and Coping was

		MBSR daily or weekly on their own would be inexpensive and realistic. MSBR could be promoted while mothers are expressing breast milk to reinforce the positive contribution they are making to their infant.			utilized to better explain MSBR and how it decreases patient stress. **Limitations**: Research on MSBR effectiveness and its use as an intervention needs validation prior to establishing it as a potential standard of care.
Slade, S. (2020) Level V Grade B	Summarize evidence regarding expression of milk for pre-term infants	18 sources of evidence consisting of literature reviews, quality improvement projects that included a pre-posttest design, retrospective studies, RCTs, qualitative	N/A	Mothers of premature infants should be provided access to various support interventions (e.g., Functional, and easy to use breast pumps, pumping rooms, telephone support) to facilitate milk expression.	Best practice recommendations are limited to the expression of milk via breast pump.

		study, descriptive survey, qualitative descriptive study, descriptive survey, and cross-sectional study.			

APPENDIX F

Implementation of EBP Project Timeline



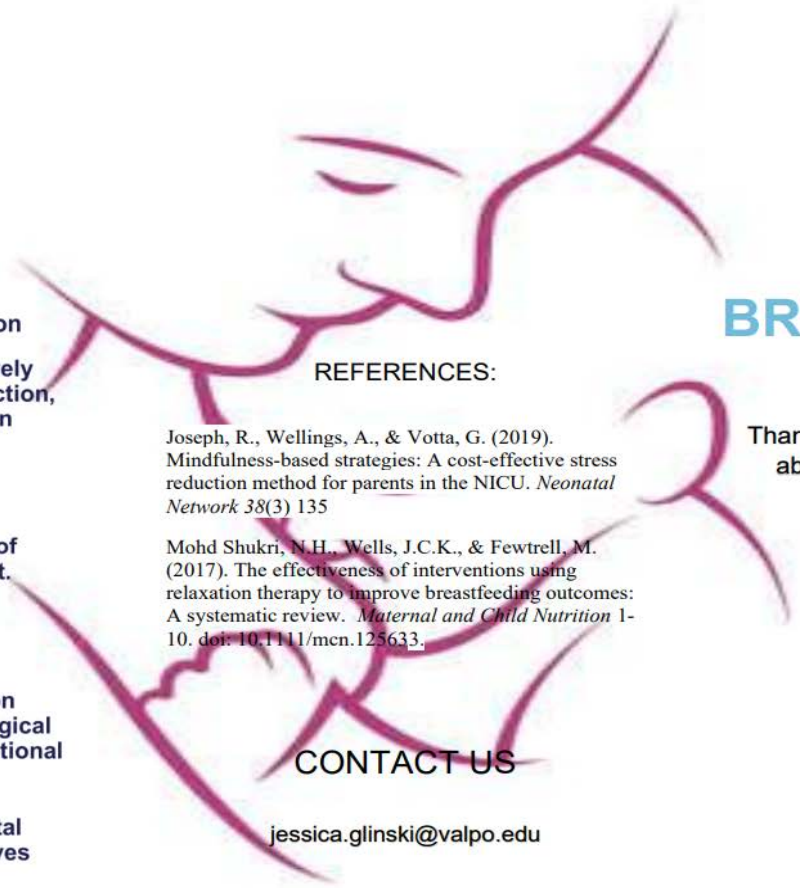
APPENDIX H

Educational Pamphlet

WHAT IS….

Mindfulness-based Stress Reduction

- **Stress reduction can positively influence breast milk production, which is ideal nutrition for an infant.**
- **A type of meditation that increases an individual's awareness and acceptance of living in the present moment.**
- **Noninvasive and nonpharmacological**
- **Produces increased attention control, decreased physiological reactivity, and increase emotional regulation.**
- **Improves physical and mental health and ultimately improves quality of life.**



MINDFUL BREASTFEEDING

REFERENCES:

Joseph, R., Wellings, A., & Votta, G. (2019). Mindfulness-based strategies: A cost-effective stress reduction method for parents in the NICU. *Neonatal Network 38*(3) 135

Mohd Shukri, N.H., Wells, J.C.K., & Fewtrell, M. (2017). The effectiveness of interventions using relaxation therapy to improve breastfeeding outcomes: A systematic review. *Maternal and Child Nutrition* 1-10. doi: 10.1111/mcn.125633.

Thank you for taking the time to learn about Mindfulness-based Stress Reduction

CONTACT US

jessica.glinski@valpo.edu

GREAT MINDFULNESS-BASED STRESS REDUCTION RESOURCES

MEDITATION

Guided Meditation for Easier Breastfeeding - YouTube

Mindfulness Meditation - Guided 10 Minutes - YouTube

RELAXING MUSIC

Relaxing Sleep Music • Deep Sleeping Music, Relaxing Music, Stress Relief, Meditation Music (Flying) - YouTube

Or simply choose your own music that you can relax and deep breathe during breast pumping.

How to Meditate

First, find a comfortable place where you can sit without distractions for at least 15 minutes.

Sit comfortably with your back upright and without back support, if physically possible.

Close your eyes and focus within.

Focus your attention.

You can focus your attention on your breath and breathing. Breathe in and out. Just watch the movement of your in and out breaths.

You can use any other method with which you feel comfortable.

When you have completed meditating, it is a good idea to give yourself a few minutes to acclimate slowly back into the activities of your day.

"If you are depressed you are living in the past. if you are anxious you are living in the future. If you are at peace you are living in the present"

- Lao Tzu -