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Nursing Knowledge and Breastfeeding Education

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This is to certify that the doctoral study by

Mary Delphine Miller

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

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Walden University
2023

Abstract

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MS, Walden University, 2018

BS, Lake Superior State University, 2012

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

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Abstract

According to the Centers for Disease Control and Prevention, the Healthy People 2020 breastfeeding goal immediately after birth of 81.9% was surpassed in 2016, with approximately 83.8% of babies breastfed shortly after delivery. However, by seven days post birth, this number decreased to 82.9%, reduced even more for infants who were exclusively breastfed to 64.7%. Local research has shown that breastfeeding decreases at one week after discharge, which may be due, in part, to the lack of nurses' knowledge related to breastfeeding. This lack of knowledge related to breastfeeding by the nurses, in turn, may negatively impact the support staff nurses are able to give to new mothers. The purpose of this Doctor of Nursing practice project was to plan, implement, and evaluate a staff education program on breastfeeding for five perinatal nurses on the unit for which the project was intended. One participant completed the evaluation of the program, stating that all 17 curriculum objectives were met. All participants demonstrated a change in knowledge from pretest to posttest. Using descriptive statistics, the mean score of Part 1 of the pretest was 7.8 and Part 2 of the pretest was 4.8. Part 1 of the posttest resulted in a mean score of 8.2, and Part 2 of the posttest was 8.6. The increase in change of knowledge ranged from 5% to 57%, indicating a positive change in knowledge from pretest to posttest among the participants. The intended project supports the idea of positive social change by enhancing the knowledge of nurses through educational curriculum, thus improving the well-being of the breastfeeding mother and enriching the nutrition of the newborn.

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Dedication

I dedicate this work to my family without whom I would not have kept on pushing to complete this endeavor. Specifically, my person, Rafael, who has supported and encouraged me through the various seasons of our time together. You have given me a strength that I have never thought I would ever be able to harness, and for you for all eternity, I will be truly grateful. I also would like to recognize my six beautiful children, Madeline, Calista, Isadora, Gabriel, Theodore, and Lincoln, without whom I would have never had the experience of breastfeeding, which led me down this path to create this educational work. You all bring me so much joy and happiness, words cannot even begin to express the love I feel watching you become your own selves every day.

Acknowledgments

I would like to first acknowledge and give a big “Thank You” to Dr. Joan Moon; without her and her unwavering patience, guidance, expertise, and numerous hours of help, I would have never ended up with such an accomplished final piece of work that spoke so clearly to my mission for creating this educational project. I would also like to acknowledge Dr. Anita Manns who offered perspective while reviewing my first dissertation; her relevant feedback held the project accountable to the disparities present in the breastfeeding space. Lastly, to past colleagues who lent their expertise on breastfeeding to this project to make sure it provided high quality, accurate, educational information to nurses.

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Section 1: Nature of the Project

Introduction

Breastmilk has been reported to tailors to a baby's needs as soon as the milk comes in; generally higher in protein and lower in sugar than colostrum, breastmilk is also compounded with antibodies to help protect infants from early infections (Van Dellen et al., 2019). Short-term benefits of breastfeeding for babies include decreasing the incidence of SIDS and increased immunity, which can be referred to as a mother's vaccine (Van Dellen et al., 2019). Long-term benefits to infants are decreased obesity rates, decreased risk of diabetes, as well as decreased chronic illness. Mothers, too, benefit from breastfeeding. A short-term benefit to mothers is that breastfeeding has been known to release hormones that decrease the risk or severity of postpartum depression (Jordan et al., 2019).Long term, mothers can find that they are at a decreased risk for breast, ovarian, and cervical cancers (Alharthi et al., 2019).

The Healthy People 2020 goal was to achieve 81.9% of mothers who breastfed at some point following the birth of a live baby (CDC, 2023a). This goal was not met in Healthy People 2010, where the percentage of mothers who breastfed babies after birth was only 74%. According to the Centers for Disease Control and Prevention (CDC, 2023b), the Healthy People 2020 goal of 81.9% had already been surpassed as of 2016, reporting that at any given time, approximately 83.8% of babies were breastfeeding when they were born. However, by 7 days postbirth, this number decreased to 82.9% for breastfed infants and was reduced even more for exclusively breastfed infants to 64.7% (CDC, 2023b). Furthermore, rates of breastfeeding duration and exclusivity for all

infants, regardless of initiation of breastfeeding, are lower among Black infants than among White infants. Specifically, fewer non-Hispanic Black infants (74.1%) are ever breastfed compared with Asian infants (90.8%), non-Hispanic White infants (85.3%), and Hispanic infants (83.0%; CDC, 2023a).

Problem Statement

The problem identified in this Doctor of Nursing Practice (DNP) project was the need for the education of perinatal staff nurses related to supporting the breastfeeding mother. Local research has shown that breastfeeding cessation rates of newborns significantly increase 1 week after discharge, which may be due, in part, to the lack of nurses' knowledge related to breastfeeding. This lack of knowledge related to breastfeeding by the nurses, in turn, may negatively impact the support staff nurses can give to new mothers. While the reason for this increase in breastfeeding cessation of newborns at the 1-week mark after discharge is currently unknown, I assessed the orientation materials of the local health department and the hospital OB unit related to breastfeeding with my previous supervisor, one of the lactation consultants on staff. We found that the perinatal nurses are supplied with limited educational tools during the orientation. Limited exposure to breastfeeding training materials may mean they are not adequately prepared to support the breastfeeding mothers they care for.

Nurses have a prominent role in breastfeeding success rates when considering their knowledge and perceptions about breastfeeding (Sandhi et al., 2023). One study revealed gaps in providers' knowledge and communication skills and their support of breastfeeding along with improvement in breastfeeding knowledge with breastfeeding

education (Sandhi et al., 2023). However, researchers also found that factors related to the initiation and duration of breastfeeding between hospital discharge and 2 weeks postpartum were positively influenced by having a perceived support system (Radzyminski & Callister, 2015).

Nurses' knowledge of breastfeeding and attitudes about breastfeeding can predict supportive behavior toward newly breastfeeding mothers. However, nurses' knowledge remains lacking in areas specific to lactation physiology, demonstrating nurses' inability to support breastfeeding mothers through this lack of knowledge alone (Sandhi et al., 2023). Recent research has shown that office nurses have both poor knowledge and negative attitudes about breastfeeding, with only 46% feeling confident working with breastfeeding mothers and pediatric nurses having moderate breastfeeding knowledge and opinions (Radzyminski & Callister, 2015). However, mothers with personal breastfeeding experience were more confident than those without (Radzyminski & Callister, 2015). Lastly, the hospital staff has behaviors that can predict breastfeeding cessation at 6 weeks postpartum if the mother reports feeling neutrality on the part of the hospital staff concerning her decision to breastfeed (Radzyminski & Callister, 2015).

Purpose Statement

The practice-focused questions that guided this project were as follows:

- What evidence in the literature supports the need for breastfeeding education for perinatal staff nurses to better support the breastfeeding mother?

- Will perinatal nurses who receive the staff education program on breastfeeding (SEPBF) have an increase in knowledge as determined by a pretest/posttest situation?
- Will a SEPBF meet the course objectives as evaluated by the perinatal nurse participants?

The purpose of this DNP project was to plan, implement, and evaluate a SEPBF for the perinatal nurse. The significant gap in practice was a lack of perinatal nurses' knowledge related to supporting the breastfeeding mother. This doctoral project aimed to address this practice gap by addressing the lack of nursing education by developing and presenting an educational program for perinatal staff nurses.

Nature of the Doctoral Project

Evidence to Support the Project

Sources of evidence used to support the SEPBF included but were not limited to a literature review from CINAHL, ProQuest, Medline, and Ovid. Professional organizations included the Academy of Breastfeeding Medicine, United States Lactation Consultant Association, American Academy of Pediatrics (AAP), United States Lactation Consultant Association, American College of Nurse-Midwives, and La Leche League International. Governmental organizations included the CDC, Healthy People 2020, and the World Health Organization. The literature review date range for this project included seminal work and research from 2015 to 2023.

Evidence Produced by the Project

Approach

The Walden University Manual on Staff Education was used to plan, implement, and evaluate the SEPBF. The analysis, design, development, implementation, and evaluation (ADDIE) model of instructional design was used within the Walden steps (see Appendix A). Initially, I aimed to plan and evaluate a curriculum and pretest/posttest because implementation had been impossible relative to COVID and hospital restrictions. However, a point came when implementing was determined to be possible. This change necessitated a revision accepted by the institutional review board (IRB), which was submitted, and a new IRB approval was obtained. Committee members were informed of the need for a change and were approved.

Planning

I met with my committee chair to explore a relevant topic and narrow my focus to select a project that met the requirements of a DNP staff education project. The analysis established the need and criteria for the SEPBF using existing data from current literature and anecdotal support from the vice president/chief nursing officer (VP/CNO) of the project site.

Content experts (CEs) were identified and confirmed to include three lactation consultants on staff with the local health department. Planning involved a review of the evidence-based literature to find an existing curriculum for the project and then tailor this curriculum to the organization's needs. A pretest/posttest was developed to reflect the

curriculum objectives and content. An expert with a Ph.D. with expertise in assessment also reviewed the construction of the test items.

Implementation

Based on the formative evaluation of the materials developed in the planning step, the curriculum was revised as part of the assessment and design phases of the ADDIE model. Impact evaluations were related to the evaluation of the staff education program by participants and the change in knowledge from the pretest to the posttest by participants. The VP/CNO at the organization where the program was implemented oversaw the educational program and all staff recruitment, as I was not on site. The PowerPoint presentation was recorded before administering the program, and the pretest/posttest was administered using SurveyMonkey. The organization's VP/CNO will manage all materials distributed concerning the SEPBF in the future after the program's completion.

Evaluation

In the planning step, the formative evaluation of the curriculum plan was conducted by the CEs, who also provided content validation of the pretest/posttest items. Following the implementation step, I analyzed an impact evaluation of the change in participant knowledge between the pretest and posttest. The participants also provided an impact evaluation using the education program related to the objectives being met using SurveyMonkey. A summative evaluation of the project, process, and my leadership was conducted upon completion of the project by the CEs.

Significance

The stakeholders for the SEPBF include the nurses, the hospital, and the mother/infant/family. The site hospital may benefit from this project by seeing an increase in nursing knowledge of the nurses who provide breastfeeding support to mothers during the initial postpartum stages, which can have a positive impact on breastfeeding statistics within the community (see Office of Disease Prevention and Health Promotion, 2019). The nurses can benefit by becoming more confident in their breastfeeding education skills. Stakeholders will find that this project supports and aligns with the views of the AAP by promoting breastfeeding, which provides protective support to infants in the form of decreased ear infections, respiratory illness, and allergies (AAP, 2012). By promoting breastfeeding, this project aligns with SIDS prevention recommendations, which report that breastfeeding reduces the rate of SIDS in infants by over a third and may decrease SIDS-related deaths specifically in rural counties (Thompson et al., 2017). Lastly, this project allows for investment opportunities for mothers and families because breastfeeding provides short-term options for infant health and long-term lifestyle and health benefits for infants and mothers (AAP, 2012). Other health departments and hospitals in similar rural settings may find that the strategies and programs developed by this project are transferable to their departments and clinics to help increase the knowledge of nurses working with breastfeeding mothers during the immediate postpartum period.

Summary

Section 1 introduced the scope of the problem along with the purpose of the project, including the practice-focused questions. The evidence to support the project along with evidence produced by the project were detailed. Planning for this project included approach, implementation, evaluation, and significance, which will all be further expanded on throughout the manuscript.

Section 2 addresses the ADDIE method used to drive this project. Relevance to nursing practice is expanded, including scholarly research regarding breastfeeding and the nursing profession. The literature illustrates how the lack of knowledge of perinatal nurses about breastfeeding affects breastfeeding success rates. The local background is further developed to portray how decreased breastfeeding success rates have affected the community, state, and county financially and medically. Lastly, my role as a DNP student includes motivation for this project and the role of the CEs discussed.

Section 2: Background and Context

Introduction

The problem identified in this DNP project was the need for education of perinatal staff nurses related to supporting the breastfeeding mother. The purpose of this DNP project was to plan, implement, and evaluate an SEPBF for the perinatal nurse. The practice-focused questions that guided this project were as follows:

- What evidence in the literature supports the need for breastfeeding education for perinatal staff nurses to support the breastfeeding mother?
- Will perinatal nurses who receive the SEPBF have an increase in knowledge as determined by a pretest/posttest situation?
- Will a SEPBF meet the course objectives as evaluated by the perinatal nurse participants?

In Section 1, the practice-focused questions were identified along with the purpose statement and nature of the doctoral project. In Section 2, further exploration of the instructional design, relevance to nursing practice, and role of myself and CEs is addressed.

Concepts, Models, and Theories

The ADDIE model was first developed at Florida State University in the Center for Educational Technology in the 1970s (Treser, 2021). The U.S. armed forces initially used this model, and it has become prominent in learning methodology. The ADDIE model is cyclical, which allows for flexibility throughout the process of discovery to allow for the correction of faults made in previous phases, leading to improved quality,

including identifying who the primary audience is for the learning project, which is reflected in the outlined goals that the creator would like to achieve. The analysis phase also determines physical or organizational limitations within the environments in which the educational program is implemented. These limitations include the length of the course and the amount of time the setting allows this educational course to take place, as well as if the setting impacts the effectiveness of the education being introduced. Other analysis considerations include technical requirements, structural characteristics of the material, and accessibility to any sources of information used and educational materials (Treser, 2021).

The design phase is comprised of maps that plan out training solutions. Throughout this phase, there is a focus on training and materials design. Many designers in this phase communicate with stakeholders, managers, and key project members. This phase is also critical to consider the individual who will be learning from this design method (Kurt, 2019). By choosing templates, guidelines, and styling tools, the training course ensures consistency between training materials if multiples are used (Kurt, 2019). Another significant component of the design phase is identifying the learning objectives by ensuring they are clearly stated, described fully, and measurable (Kurt, 2019).

Development encourages the team to create course materials; during this phase, a prototype is developed and drafted for a computer-based training course (Kurt, 2019). Once the prototype and draft are approved, the final product can be moved into the implementation phase (Kurt, 2019). During this phase, when surveys are used, they are developed with questions, such as who the participants are, what department they work

in, what their job role is, if they have any previous knowledge of the training, their experiences of the training, and why are they participating in the training (Kurt, 2019). Understanding the participants further makes the materials more engaging and tailored to their needs (Kurt, 2019).

The implementing phase requires training the individual overseeing the course, even when online platforms are applied (Kurt, 2019). Online information must be verified and validated before being delivered to participants. Any materials should be printed before the course for review during the course. Picking a place to hold the training can help with the education track. Also, posttraining follow-ups are essential so the participants can provide feedback about any problems they had during the training (Kurt, 2019).

The ADDIE method concludes with the evaluation phase, which can be conducted through different methods. First is a formative evaluation, which occurs at the end of each phase (Kurt, 2019). Summative evaluations are conducted after the training session (Kurt, 2019). Lastly, a standard evaluation model, well-known to the ADDIE method, is the Donald Kirkpatrick Four Levels of Evaluation (Kurt, 2019). This is an evaluation method that measures how the participants reacted to the training, what the participants learned, if their knowledge was increased, how the participant's behaviors changed because of the training, and lastly, analyzing the overall result of nursing education using the ADDIE model (Kurt, 2019). While beneficial to use a reputable method for this educational project, showing other research that has proven evidence-based materials through also using the ADDIE model is essential.

Use of the ADDIE Model in Nursing Education

The ADDIE model has been used in nursing education around the world. For example, web-based information systems have facilitated the monitoring and reporting of high-risk pregnancies in the remote area of Semarang, Indonesia. Through this evaluation system, the web-based program has positively contributed to the ease of reporting maternal risk factors (Ihsanti et al., 2017). This program has allowed for effectiveness in completeness, accuracy, and timeliness, which has decreased the maternal mortality rates in Indonesia (Ihsanti et al., 2017).

Midwifery students have enhanced their competencies through the ADDIE model, learning materials that were designed to facilitate learning and following structural guidelines from the Department of National Education of Indonesia (Selasih et al., 2017). The learning program showed that the method, E-partograph, was highly feasible when it came to delivering the subject matter and contributed positively to the competency of the midwifery students (Selasih et al., 2017).

Nursing informatics has also seen the use of ADDIE methods to help structure nursing information systems. New nurses often lack adequate training and harbor negative attitudes toward computer systems (Sheng-Chieh et al., 2016). A recent study was developed to train nurses through the best methods for local community nurse programs. The model implemented revealed that after the training course, self-efficacy had improved, as well as testing scores on the practical exam (Sheng-Chieh et al., 2016).

Relevance to Nursing Practice

Nurses Lack of Knowledge Related to Breastfeeding

For centuries, nurses have been relied on to provide continuous care to individuals throughout their childbearing period; with this, advanced practice nurses are also expected to offer guidance and knowledge related to breastfeeding practices. Nurses must be able to support, encourage, and assist mothers in best breastfeeding practices. However, according to literature reviews, mothers have continued to report a lack of breastfeeding support from nurses (Sandhi et al., 2023). Within these literature reviews, the research has demonstrated that nurses often lack knowledge regarding breastfeeding practice. This lack of knowledge has been found to stem from many areas, including nursing education programs where training harmed nursing students' knowledge, beliefs, and attitudes, directly resulting in nurses failing to support mothers when breastfeeding (Khriesat & Ismaile, 2017).

There is a consistency with other studies that have demonstrated that even with positive attitudes toward breastfeeding among healthcare professionals, if a lack of accurate knowledge and understanding of breastfeeding exists, there are still adverse breastfeeding outcomes (Cobb, 2014). Researchers have suggested that knowledge deficits can be addressed with consistent and sustainable methods in facilitating knowledge development of breastfeeding education and have positive breastfeeding outcomes (Cobb, 2014). Advanced practice nurses also impact breastfeeding when they lack the skills and knowledge to manage and counsel breastfeeding mothers (Fonseca-Machado et al., 2014).

In 2007, the CDC conducted a national Maternity Practices in Infant Nutrition and Care survey, which indicated that of the 2,690 responding hospitals, there was widespread use of maternity practices that were not evidence-based and interfered with breastfeeding (as cited in Cobb, 2014). Through this survey, researchers discovered that nurses were inadequately prepared to educate breastfeeding mothers.

Educating Nurses on Breastfeeding

Despite overwhelming evidence supporting breastfeeding practices, healthcare providers continue to give inconsistent messages to new mothers about breastfeeding. However, exposing nurses to consistent, evidence-based breastfeeding information through educational interventions has positively reflected on breastfeeding initiation rates (Fonseca-Machado et al., 2014). Sandhi et al. (2023) found that by providing postpartum nurses with current evidence-based breastfeeding knowledge, the research improved breastfeeding initiation rates, nurses' knowledge, and exclusivity.

Literature reviews have revealed some effective methods for improving nurses' breastfeeding knowledge, including group sessions, independent modules, self-learning packets, and literature format (Cobb, 2014). Many educational interventions aim to increase knowledge that would support breastfeeding practices. Literature supports these goals; educational programs for maternity nurses, patient satisfaction, hospital breastfeeding rates, and duration of breastfeeding have all been shown to be positively impacted (Cobb, 2014). Qualitative studies revealed that professional training is needed to promote, protect, and support successful breastfeeding practices (Fonseca-Machado et

al., 2014). However, competency is a significant factor in facilitating breastfeeding services (Fonseca-Machado et al., 2014).

Studies conducted in other countries found that lack of knowledge regarding breastfeeding translates globally, not just on a small local level. For instance, one Korean study indicated that many professionals are not qualified enough to provide good breastfeeding counseling to nursing mothers (Seighali et al., 2015). These gaps in nurses' knowledge of breastfeeding significantly improved once lactation programs were initiated; promotion and support activities positively impacted the nurse's ability to support nursing mothers (Seighali et al., 2015).

Local Background and Context

The organization where the SEPBF was conducted is based in Kentucky. The county has a population of approximately 24,300 individuals, with 6.6% being under the age of 5 years old (United States Census Bureau, 2023). Approximately 95.5% of the population identifies as White, and 2.3% identifies as Black or African American (United States Census Bureau, 2023). The rural hospital is considered a critical access hospital with 25 beds designated to acute care, surgery, emergency room, obstetrics, and swing bed patients. The obstetrics unit consists of three inpatient beds and two outpatient beds, and the approximate length of stay for a patient is less than 96 hours. The CDC (2021) reported that from 2018-2019, the county total of infants with live births was 629, approximately 68.8% of these initiated breastfeeding during the period between delivery and discharge from the birth facility. The hospital itself reported a 63% initiation rate for

exclusive breastfeeding during the period between delivery and discharge from the facility.

Role of the DNP Student

Doctoral education has been distinguished from other programs by completing scholarly projects that demonstrate the fusion of the student's work and the future practice in which they wish to engage (Staffileno et al., 2019). Successful transition through a DNP program allows students to collaborate with other professionals to improve the health of others, develop interprofessional teams, evaluate outcome processes, comprehend healthcare policy, and assume leadership roles (Hooshmand et al., 2019). This SEPBF reflects years of working closely with certified lactation consultants and mothers who have been unfulfilled with their powerlessness over breastfeeding abilities. As a mother of five children, I, too, at one point, felt a lack of support and was uneducated in the necessities essential to breastfeed successfully. I feel passionately about the benefits of breastfeeding and the idea that if a person chooses to breastfeed, they should have the aid of well-educated, confident, skilled nurses to support them in the process. After struggling personally with breastfeeding and not being able to find consistent resources within my rural town, I aimed to address the gap in knowledge of nurses who currently work within breastfeeding educational roles and giving them more support than they have had in the past. The relationship with the local health department is one of a former employee of that institution working closely with the lactation consultants. However, I did not work directly for the breastfeeding programs on which

the project is based. I am also a former local hospital employee; however, I did not work for the OB unit during the time spent employed for that institution.

Role of the CEs

Successful DNP projects require students to form collaborative relationships. These partnerships aid in the growth of educational and practice experiences (Hooshmand et al., 2019). CEs were used in this SEPBF to support my interprofessional communication and growth of clinical and organizational perspective and practice.

The CEs included three international board-certified lactation consultants (IBCLC) employed through my local health department. One of these IBCLCs was employed full time at the health department, while two were employed to do contractual work and do not work daily in the office. Duties of the IBCLCs include time dedicated to a warm line to offer breastfeeding support and teach breastfeeding courses and Lamaze. Through informal conversation, the curriculum, evidence, and relevance was discussed with the IBCLC who works in the office full time. For the two IBCLCs who do not work in the office, a breastfeeding coalition meeting was held where the curriculum information was presented, and open discussion occurred. Ongoing discussion continued over several months. Members were allowed 2 to 3 weeks to review the CE packet and provide feedback. Throughout the process, team members were welcome to share ideas and new information they had encountered that could have been helpful to the project development.

Summary

In Section 3, I review the evidence to support the project and the practice-focused questions. Participants were introduced to the protections of their involvement in the project in meeting IRB requirements. I then discuss the procedures for obtaining the evidence to be produced by the SEPBF. Finally, I discuss the analysis and synthesis of the data obtained.

Section 3: Collection and Analysis of Evidence

Introduction

The problem identified in this DNP project was the need for education of perinatal staff nurses related to supporting the breastfeeding mother. The purpose of this DNP project was to plan, implement, and evaluate the SEPBF for the perinatal nurse. Section 2 presented the ADDIE model, the phases of which were incorporated into the Walden University Manual for Staff Education steps of the project. The literature supporting the problem and the opportunity for resolution was described as well as describing the context of the site, my role in the project, and the role of the CEs.

Practice-Focused Questions

The practice-focused questions that guided this project were as follows:

- What evidence in the literature supports the need for breastfeeding education for perinatal staff nurses to support the breastfeeding mother?
- Will perinatal nurses who receive the SEPBF have an increase in knowledge as determined by a pretest/posttest situation?
- Will a SEPBF meet the course objectives as evaluated by the perinatal nurse participants?

The meaningful gap in practice included a lack of the perinatal nurse's knowledge related to supporting the breastfeeding mother. In this doctoral project, I sought to address this gap by developing the SEPBF with the goal of increasing the perinatal nurse's knowledge related to supporting the breastfeeding mother. This project addressed the practice-focused questions by demonstrating that evidence supported the need for

increased education for staff nurses while also indicating that pretest/posttest evaluations signified an increase in knowledge.

Sources of Evidence

Evidence to support the need for this project came from the review of the literature as discussed in Section 1 and was placed in the Literature Review Matrix. I also used the Curriculum Plan Evaluation by CEs (see Appendix B), the Pre/Posttest Content Validation by CEs (see Appendix C), Evaluation of the Staff Education Program by Participants (see Appendix D), the Pre/Posttest Change in Knowledge by Participants (see Appendix E), the Summary Evaluation of the Staff Education Project by CEs (see Appendix F), and, finally the Curriculum Plan Evaluation by CEs Summary (see Appendix G).

Participants

Participants engaged in the SEPBF included the three CEs who were chosen because they were each certified lactation consultants who worked with breastfeeding mothers. The CEs evaluated the curriculum and validated the pretest and posttest items, and upon completion of the SEPBF project, provided an evaluation of the staff education project, process, and my leadership. The second group of participants were the perinatal nurses who participated in the SEPBF education program and took the pretest/posttest, as well as provided a final evaluation of the program relative to the stated objectives.

Procedures

Templates used for this project were developed by my committee\chair for organizational purposes only. Thus, there was no reliability or validity needed. To assess

article components, Johns Hopkins designed the Johns Hopkins Nursing Evidence Appraisal Tools for Research and Non-Research. Johns Hopkins reported that while a panel of experts designed their tools and undergo review and revision regularly, they are not subject to validity and reliability testing because they are not designed to measure concepts (Dang et al., 2022).

Content Validity Index Tool

Content validity is the degree to which elements of an assessment instrument is relevant and represented for a particular assessment purpose. The first step to content validation is to ensure that CEs have clear expectations and an understanding of the project (Yusoff, 2019). Item-level content validity index (I-CVI) is the proportion of CEs giving an item a relevance rating of 3 or 4. Scale-level content validity index (S-CVI) is the average of I-CVI scores on the scale where all CEs judged the average proportion of relevance. Based on the scores, for the content validity to be considered satisfactory, CEs can agree and/or have universal agreement (see Yusoff, 2019).

CEs' Packet

The content packet included the Letter to CEs (see Appendix H) thanking them for participation in the project and instructions pertaining to the following forms in packet: The Literature Review Matrix, which provided content for the objectives, curriculum, and test items; the Curriculum Plan; the Curriculum Plan Evaluation by CEs (see Appendix B), which was completed by the CEs following the instructions to review the objectives and to determine if they were met or not met; and the Pretest/Posttest (see

Appendix I), which items were validated using the Pre/Posttest Content Validation by CEs (see Appendix C).

The packet was prepared by identifying collated materials with numbers only. Each expert had their own set of materials, and each packet had the corresponding number. The content packets were distributed anonymously by placing the packet in an unmarked manilla folder and distributing to each of the CEs' mailboxes at the health department. An email was sent to the CEs letting them know that the content packet was ready for them to come pick up at their convenience. For collection, the CEs placed the unmarked manilla folders in my mailbox at the health department.

Staff Education Project

The staff education project was recorded on Zoom and split into three different modules. The links for the Zoom recordings were sent to the VP/CNO to distribute to their nursing staff (see Appendix J).

Evaluation of the Staff Education Program by Participants

The evaluation was converted from a Word template into SurveyMonkey. Due to the length of the evaluation, the evaluation needed to be divided into a Part 1 and a Part 2. This evaluation followed the staff education project requirements as laid out by the *Walden University Manual for Staff Education*. Upon receiving all the posttest surveys Part 1 and Part 2 from SurveyMonkey, the link to the Evaluation of the Staff Education Program by Participants was submitted to the VP/CNO to disseminate to the staff who participated in the educational project.

Pretest/Posttest Change in Knowledge by Participants

The pre/posttest was converted from a Word template into a SurveyMonkey survey. Due to the questions amount restrictions with the free version, the pre/posttest needed to be divided into Part 1 and Part 2 to make sure all 20 questions were transferred to SurveyMonkey. The pre/posttest links were submitted to the VP/CNO along the Zoom recording of SEPBF Modules 1, 2, and 3 for the VP/CNO to disseminate appropriately to OB nursing staff. Participants had 25 minutes to complete the pretest on SurveyMonkey before moving into Module 1 content. The posttest was administered at the completion of Module 3 of the SEPBF also on SurveyMonkey by the VP/CNO disseminating the link to OB nursing staff.

The pre/posttest included questions relevant to the content of the SEPBF; the change in knowledge was identified by the ability of the participants to answer more correct questions during the posttest than were previously answered in the pretest.

Evaluation of the Staff Education Project, Process, and my Leadership by CEs

Evaluation of the Staff Education Project by CEs (see Appendix K) was administered to the CEs anonymously through packaging the evaluation into a manilla folder with a number on the outside to ensure anonymity. The lactation consultant at the local health department collected the folders from me and distributed them to the CEs; once completed, she gathered the evaluations again in manilla folders and notified me via email that all were completed. I then went to the local health department and accumulated the folders for analysis. The evaluation included several questions that spoke to the project, process, and their observations of me as the project leader. Questions included

effectiveness of the project approach, CE opinions of their involvement, and suggestions to improve the project process.

Protection

Protection of content was ensured by maintaining anonymity of the participants. The hospital was not identified, and the geographical location was generalized to a section of the country. All participant work was anonymous using a coding system. The CEs were with nurse participant codes being numerical. The IRB project number is 09-09-23-0587719. A copy of all documents reviewed will be maintained for at least 5 years after completion of the research at Walden University as required by my university (Office of the Commissioner, 2019).

Analysis and Synthesis

Curriculum Plan Evaluation by CEs Summary

Individual curriculum plan evaluations were completed by the CEs, after which a summary of the three evaluations was compiled (see Appendix G). The evaluation was conducted using a dichotomous scale, which consisted of a two categorical response of met = 1 or unmet = 2 and analyzed using descriptive statistics for frequency and percentage of responses in each category that were calculated by hand.

Pretest/Posttest CEs' Validity Index Scale Analysis

The CEs rated each test item to the extent of which the item was relevant to the objectives and would result in each item having a content validity index (CVI). All the CVIs were used to calculate the pretest/posttest CVI computed. This information was analyzed by calculating the I-CVI through having each CE determine the relevance of

each item on a 4-point scale. The scale of this tool was as follows: 1 = *not relevant*, 2 = *somewhat relevant*, 3 = *quite relevant*, 4 = *highly relevant* (Yusoff, 2019). For each item, the S-CVI was computed as the number of CEs giving a rating of either 3 or 4, divided by the number of experts: the proportion in agreement about relevance. To obtain the test CVI, the mean I-CVI was computed. The resulting T-CVI was the extent to which the test items represented the curriculum objectives overall (see Appendix L) .

Summary of the Evaluation of the Staff Education Program by Participants

The Summary of the Evaluation of the Staff Education Program by Participants (see Appendix M) was analyzed on a dichotomous scale based on whether each objective was met = 1 or unmet = 2. Summary of the analysis was through descriptive statistics based on frequency and percentage that were hand calculated.

Pretest/Posttest Change in Knowledge Results by Participants

Pretest/Posttest Change in Knowledge by Participants (see Appendix E) was analyzed through descriptive statistics, specifically inferential statistics, and inferential statistics were further applied to generalize the population of participants knowledge. Included was analysis of group range, numerical increase, percentage of change, high low range for the pretest/posttest, and percentage of change for the group.

Summary Evaluation of the Staff Education Project by CEs

Themes were compiled through analysis and synthesis of the evaluation of the project by the CEs. This information collected allowed me to develop in my role as a leader for future projects (see Appendix F).

Summary

Section 3 presented the evidence generated to support the SEPBF project and the evidence generated by the project, both of which were guided by the practice-focused questions. Participants were identified, and procedures describing how the SEPBF project was conducted were outlined. I also reviewed the protection of the participants to assure the integrity of the project and participants. Analysis and synthesis of the evidence were described, which was conducted using descriptive statistics or a thematic approach.

Section 4 presents the findings and recommendations based on the analysis results and the evidence syntheses. Furthermore, Section 4 covers recommendations to address the knowledge gap and summarizes the process of working with CEs to develop the breastfeeding program. Lastly, strengths and limitations are identified with future recommendations for like projects.

Section 4: Findings and Recommendations

Introduction

The problem identified in this SEPBF was the need for education of perinatal staff nurses related to supporting the breastfeeding mother. The purpose of this DNP project was to plan, implement, and evaluate a SEPBF for the perinatal nurse. The practice-focused questions that guided this project were as follows:

- What evidence in the literature supports the need for breastfeeding education for perinatal staff nurses to support the breastfeeding mother?
- Will perinatal nurses who receive the SEPBF have an increase in knowledge as determined by a pretest/posttest situation?
- Will a SEPBF meet the course objectives as evaluated by the perinatal nurse participants?

Evidence to support the need for this project came from the literature review and discussions with the VP/CNO about the need for further nursing education, which was supported by the community, as discussed in Section 1. Section 2 introduced the ADDIE model and how the phases were incorporated into the Walden University Manual for Staff Education steps of the project. The literature supporting the problem and the opportunity for resolution was described as well as defining the context of the site, my role in the project, and the role of the CEs. Section 3 presented the evidence generated to support the SEPBF and the evidence generated by the project, guided by the practice-focused questions. Procedures describing how program participants and organizations were protected throughout the doctoral project were outlined. In addition, procedures

explained how the integrity of the evidence was protected, and how CVI scores addressed outliers that may have occurred during the project. Analysis and synthesis of the evidence were described by summarizing the statistical tools used.

Findings and Implications

Curriculum Plan Evaluation by CEs Summary

The completion of the Curriculum Plan Evaluation by the CEs was represented through a scoring process using descriptive statistics showing the mean. If the CE felt the objective was met through the curriculum, then a score of a 1 was given. If the CE felt the objective was not met in the curriculum, a score of a 2 was given (see Appendix G). For all 17 objectives, it was determined through the summary that at least two CEs agreed that the objectives were met in the curriculum. If a CE felt an objective was not met, their comments were reviewed, and suggestions were taken into consideration with evidence-based practice literature. The CEs commented on language changes they would like to see and additions to the education curriculum, such as reverse pressure softening and return to work recommendations.

The limitation of the curriculum plan evaluation was that two of the CEs found the Curriculum Plan Evaluation by CEs template confusing, and while they were able to still use the form, there was a need to clarify this form several times, perhaps even confusing the “met” column with the “not met” column. Another limitation was that if a “not met” choice was selected, CEs did not comment on whether there was a problem with the content or the objective; instead, the CEs noted problems on the curriculum plan

template that made deciphering which content or objectives needed to be addressed more difficult.

Pretest/Posttest by CEs' Validity Scale Analysis

The S-CVI for the Pretest/Posttest was computed to be 0.93. In order to be considered excellent, the content validity should have an S-CVI of 0.8 and 0.9 or higher, meaning that for the purposes of this analysis, the pretest/posttest content was valid (see Shi et al., 2012). The four items that scored below 0.9 were reviewed based on CE recommendations and appropriate changes were made (see Appendix L).

Summary Evaluation of the Staff Education Program by Participants

The Summary Evaluation of the Staff Education Program by Participants (see Appendix D) had "met" = 1 or "not met" = 2 responses by staff who participated in the education program. Of the five staff who completed the education program and pretest/posttest surveys, only one staff completed the Evaluation of the Staff Education Program. The participant responses were analyzed, and all 17 objectives were "met" = 1.

Pretest/Posttest Change in Knowledge Results by Participants

Due to travel limitations during the staff education presentation, the pretest and posttest were given anonymously to the staff through SurveyMonkey. SurveyMonkey presented with limitations; having an anonymous survey on SurveyMonkey does not allow for an individual level chance in knowledge comparisons. Due to this limitation, all chance in knowledge calculations was on the group level. Overall, five participants completed the pretest. The pretest and posttest were split into two 10-question surveys, for a total of 20 questions. The individual scores for Part 1 of the pretests ranged from 7

(70%) to the highest score of 9 (90%), for a group mean of 7.8. The range of individual scores for Part 1 of the posttest was 6 (60%) to 9 (90%), with a group mean of 8.2. One question was again noted as having the most significant difficulty related to identifying specific parts of the mature breast, with 60% of respondents getting this question correct. The range of individual scores for Part 2 of the pretest was 3 (30%) to 7 (70%), resulting in a group mean score of 4.8. The range of scores for Part 2 of the posttest was from the lowest at 7 (70%) to the highest at 10 (100%), with a group mean of 8.6. The question identified with the most significant difficulty was when a mother experiencing nipple soreness should be seen by a provider, with only 20% of respondents getting the question correct. Again, the question identified with the most significant difficulty continued to be related to when a provider should see a mother experiencing nipple soreness; this time, however, 60% of respondents got the answer correct on the posttest.

Overall, there was a 5% increase in the mean score from Part 1 of the pretest to Part 1 of the posttest. This could have been partly due to almost half of these questions being true or false questions. Part 2 resulted in a 57% increase in the mean score from the pretest to the posttest. This result shows that both Part 1 and Part 2 of the posttest resulted in higher overall scoring of the staff participants, leading to a change in knowledge in Part 2 while the nurses appeared to have some foundational knowledge as shown in the Part 1 of the pretests (see Appendix E).

Summary Evaluation Results of the Staff Education Project by CEs

There were several themes noted in the summary of the staff education project by the CEs, including consensus that the project took significant time and effort to create,

along with the use of excellent resources (see Appendix F). Other themes included needing more communication from myself and a desire for more involvement as the role of the CE. The CEs expressed that they would have liked to have more of a role in the development of the project. A limitation to this portion of the project was the misunderstanding that CEs would have a say in the finished product; several CEs were under the impression that they would have the ability to also evaluate the creation of a PowerPoint presentation, which would highlight the curriculum. However, even with reassurance that the PowerPoint was not included in their roles in this project, there was still confusion related to this idea. Lastly, another limitation was that only two of the CEs responded to the Summary Evaluation of the Staff Education Project. Several attempts were made by different communication avenues to the CEs for the remaining one to return the evaluation, but the evaluation was never received.

Recommendations

This education curriculum could be incorporated into hospital education policy and used as a standard for orientation for new nurses at the rural hospital where it was implemented. It could serve as a tool to address the gap-in-practice of nurses as well at the local health department level along with OB unit perinatal nurses at other local hospitals. The need for this educational curriculum and pretest/posttest can further be implemented into orientation policies and used as an annual review for nurses working in the clinical setting at the local health department.

Contribution of the CEs

The CEs provided time and expertise in breastfeeding knowledge and curriculum planning; as three IBCLCs, they have had extensive training to be knowledgeable about how to create a successful breastfeeding educational curriculum. The process began with notifying the three CEs about the project. I met them at a local breastfeeding coalition meeting to present my project and gather local input. I kept the main CE informed of the progress of the project. Her responsibility was to share this progress with the other two CEs throughout the project. Once I had reached the point of distributing the CE packets, I notified the main CE to alert the others. Throughout the process of the CEs working on the packet, I exchanged emails, messages, and phone calls to clarify any questions or comments they had regarding the materials in the packet. Recommendations made by the CEs were all reviewed thoroughly, and evidence-based materials were further explored for overlapping recommendations to implement into the curriculum to align with the CE recommendations.

Strengths and Limitations of the Project

Strengths

Strengths for this SEPBF included the expertise of the CEs; with over 60 years of combined experience, I ensured that the content going into my curriculum was relevant to the curriculum objectives. The CEs quickly contacted me with questions or comments about the content, allowing for an easy information flow. I also had many resources available for the project; between CEs and resources they lent me that they use for their

practice, I connected with different national organizations that conduct breastfeeding education courses and offered me their coursework to use as a reference.

Limitations

For this project, there were several limitations, including the COVID-19 pandemic. The CE packet was more difficult to distribute due to remote work schedules; this also made communication challenging with the CEs due to communication predominately being through email. The CEs also needed help understanding the specifics of the packet templates. There needed to be more clarity about what to do on each template despite being described thoroughly in the opening letter and at the top of each template. In the future, I would like to give a presentation of these templates ahead of time to the CEs so that they are clear on the goals of each template, given that there are no restrictions on meeting in person at that time.

Summary

Section 4 reviewed the findings and recommendations of the analysis and synthesis of the breastfeeding education program, revisiting the practice-focused questions. I summarized recommendations and discussed the strengths and limitations of the project. Based on the summary evaluation results of the staff education project by the CEs, in Section 5, I review the dissemination plan, including an analysis of myself as a practitioner, scholar, and project manager, and then summarize the project.

Section 5: Dissemination Plan

For this SEPBF, there are plans to disseminate the program to my local health department and my local hospital obstetrics unit. Along with this, given my connection to the state health department through my employment, I will also share my findings and curriculum with the WIC department for potential to use when teaching other local health departments about breastfeeding education for nurses, along with state employed IBCLCs to use as a tool as they too educate other nurses across the state about breastfeeding education.

Analysis of Self

Practitioner

The DNP degree prepares nurse practitioners to improve healthcare delivery and health outcomes by integrating evidence-based practice and organizational leadership (Higgins & Newby, 2020). As a practitioner, I seek new ways to advance the patient experience through evidence-based integrations. While breastfeeding is not a new integration, ensuring that nurses in different clinical settings receive the same evidence-based educational materials to provide the best possible care to breastfeeding individuals has led this project from the inception. Also, addressing the gap in knowledge of these nurses working with breastfeeding parents to ensure better outcomes through the local health department and the local hospital can improve healthcare delivery practices for both organizations, thus leading to better outcomes for breastfeeding parents. I believe there is a practical responsibility of the practitioner to improve healthcare delivery in response to local and community needs, which is also a learning outcome of a Walden

University DNP program graduate (Walden University, 2022). After completing this DNP program, I plan to study and apply for my Family Nurse Practitioner boards. Once I pass them, my goal is to work for an organization specializing in women's health, where I can continue expanding breastfeeding education and mentoring new nurses and practitioners to allow for the best breastfeeding outcomes for patients.

Scholar

As a scholar, I refer to the learning outcomes from Walden University to guide my scholarly path. Some of these outcomes include establishing a foundation of lifelong learning through active involvement in professional organizations, which leads to contributions in the nursing field (Walden University LLC, 2023). I strive to continue learning, am never afraid to ask questions, and search for more than what is told. I have been on this scholarly journey for several years now, and through the process, I have learned from many people many different things. No one thought or teaching is wrong, but striving to find the absolute best for the people I serve in my practice and community keeps me engaged in my education and research. My plans include continuing to develop my professional relationships through organizations that strive to research best practices and advance healthcare policy by sharing these best practices. This project has improved my abilities to evaluate the evidence-based literature and analyze the results and quality to understand how to bring this evidence into practice. As a scholarly writer, this project has required me to push myself further than I have before, challenging my abilities to take criticism and critiques and apply those to better my academic works.

Project Manager

The role of the project manager dramatically impacted my career by allowing me to build the confidence to forge new projects and facilitate new collaborative teams to improve patient outcomes. As the project manager, I had to coordinate many moving parts, navigate creating a virtual education project along with virtual pretests/posttests and evaluations. I also had to learn to work with coordinating CEs who initially I could reach out to in person, but due to COVID, I had to transition to only working through one CE and coordinating with the rest virtually. Having to pivot my project midway through taught me to be flexible with my work, and it created the opportunity for me to stretch my abilities to educate even further by not just thinking of my reach as local but expanding this reach to other states to present my project. I learned how to improve my communications skills with CEs in the field of breastfeeding, as well as new creative ways to reach target audiences for my project by creating a completely virtual education project. Through my current work, I have used my project skills to develop new training that has been used at the state level. I have learned how to empower others to have a stronger voice in delivering their ideas. I plan to continue developing my leadership skills through new opportunities, allowing me to improve the community through new experiences and curriculum developments that lead to a more considerable social impact.

Summary

Local research has shown that breastfeeding cessation rates of newborns significantly increase 1 week after discharge, which may be due, in part, to the lack of nurses' knowledge related to breastfeeding. The literature has shown us that nurses are

vital to the success of breastfeeding individuals through proper breastfeeding education. However, this proper education is directly impacted by the nurse's understanding and knowledge of breastfeeding (Sandhi et al., 2023). Through this project, the participating extensive hospital system, local health department, and local hospital OB unit now have access to a breastfeeding curriculum that can adequately expose staff nurses and OB nurses to breastfeeding training materials that effectively prepare them to support the breastfeeding persons for whom they care.

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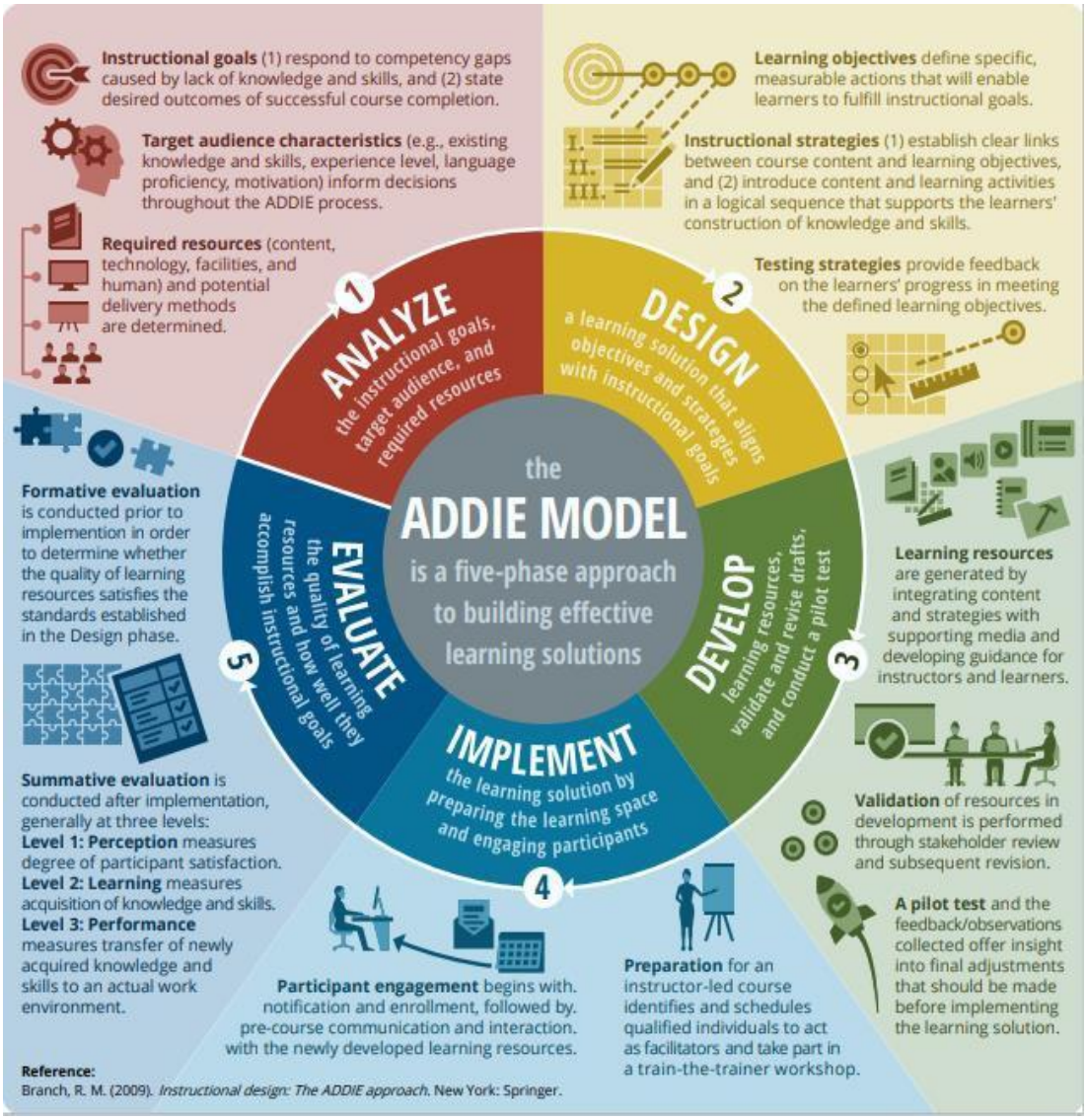
Appendix A: ADDIE Model of Instructional Design



Note. This ADDIE model of instructional design shows the five phase approach to building learning solutions; analyze, design, develop, implement, evaluate. Adapted from *The ADDIE Model Inforgraphic*, by e-Learning Infographics, 2017 (https://elearninginfographics.com/the-addie-model-infographic/). In the public domain.

Appendix B: Curriculum Plan Evaluation by CEs

Title of Project: Nursing Knowledge and Breastfeeding Education

Student: Mary D. Miller, MSN, RN

Respondent: (A, B, C)

Products for Review: Curriculum Plan, Complete Curriculum Content, Literature Review Matrix

Instructions: Please review each objective related to the curriculum plan, content, and matrix. The answer will be a "met" or "not met" with comments if there is a problem, understanding the content or if the content does not speak to the objective, At the conclusion of this educational experience, the participant will be able to:

Objective Number	Objective Statement	Met	Not Met	Comment
1	Recognize the breast anatomy and discuss breastfeeding physiology			
2	Define key properties of human milk			
3	Recall benefits, risks, and barriers of breastfeeding to mother and infant			
4	Discuss the definition of exclusive breastfeeding			
5	Summarize how prescription medications/drugs/alcohol affect breastfeeding			
6	Apply communication in counseling the breastfeeding mother			
7	Define a feeding			
8	Recognize what it means to establish breastfeeding			
9	Summarize approaches that support breastfeeding			
10	Explain determinants of weight gain			

11	Use different positioning techniques for breastfeeding			
12	Determine proper latching			
13	Determine signs of adequate milk intake			
14	Analyze and support techniques to manage sore nipples, mastitis, plugged ducts, and engorgement			
15	Determine signs of adequate infant weight gain			
16	Recognize the role that pacifiers, nipple shields, and breast pumps play to assist a breastfeeding mother			
17	Describe proper storage and use of expressed breastmilk			

Appendix C: Pretest/Posttest Content Validation by CEs

Title of Project: Nursing Knowledge and Breastfeeding Education

Student: Mary D. Miller, MSN, RN

Respondent: (A, B, C)

Accompanying Packet: Curriculum Plan, Pretest/Posttest with answers, Pretest/Posttest Expert Content Validation Form

INSTRUCTIONS: Please check each item to see if the question is representative of the course objective and the correct answer is reflected in the course content.

Test Item #	Comments	1	2	3	4
		Not Relevant	Somewhat Relevant	Relevant	Very Relevant
#1					
#2					
#3					
#4					
#5					
#6					
#7					

#8					
#9					
#10					
#11					
#12					
#13					
#14					
#15					
#16					
#17					
#18					
#19					
#20					

Appendix D: Evaluation of the Staff Education Program by Participants

Objective Statement	Were the objectives met? Please circle. Yes = 1 No = 2	Additional Comments
Recognize the breast anatomy and discuss breastfeeding physiology	Yes No	
Define key properties of human milk	Yes No	
Recall benefits, risks, and barriers of breastfeeding to mother and infant	Yes No	
Discuss the definition of exclusive breastfeeding	Yes No	
Summarize how prescription medications/drugs/alcohol affect breastfeeding	Yes No	
Apply communication in counseling the breastfeeding mother	Yes No	
Define a feeding	Yes No	
Recognize what it means to establish breastfeeding	Yes No	
Summarize approaches that support breastfeeding	Yes No	
Explain determinants of weight gain	Yes No	
Use different positioning techniques for breastfeeding	Yes No	
Determine proper latching	Yes No	
Determine signs of adequate milk intake	Yes No	
Analyze and support techniques to manage sore nipples, mastitis, plugged ducts, and engorgement	Yes No	
Determine signs of adequate infant weight gain	Yes No	
Recognize the role that pacifiers, nipple shields, and	Yes No	

breast pumps play to assist a breastfeeding mother		
Describe proper storage and use of expressed breastmilk	Yes No	

Appendix E: Pretest/Posttest Change in Knowledge by Participants

	Pretest Scores	Posttest Score	Total Numerical Difference	Percentage of Change
Pretest/Posttest Part 1	9, 7, 7 ,9 7	9, 8, 9, 9, 6	2	0.4
Pretest/Posttest Part 2	7, 5, 5, 4, 3	10, 10, 9, 7, 7	19	3.8

Group Range			
Pretest	6		
Posttest	4		
Group Numerical			
Pretest 1	7.8	Posttest 1	8.2
Pretest 2	4.8	Posttest 2	8.6
Group Percentage			
Pretest/posttest 1	4%		
Pretest/posttest2	38%		

- Group Range – Lowest and highest score overall for the pretest and the lowest and highest score overall for the posttest. Subtract the lowest score from the highest score to get the range.
    - Pretest:
        - Lowest – 3
        - Highest – 9
        - Range = 6
    - Posttest:
        - Lowest – 6
        - Highest – 10
        - Range = 4
- Group Numerical – Group mean for the Pretest and the group mean for the Posttest. Add all results and divide by the number of participants.
    - Pretest 1= 7.8
    - Pretest 2 = 4.8
    - Posttest 1 = 8.2

    - Posttest 2 = 8.6
- Group Percentage – Pretest and Posttest. Posttest minus the Pretest (called a gain score). Add up all scores and divide by the participants.
    - Pretest/posttest 1 – 4%
    - Pretest/Posttest 2 – 38%

Appendix F: Summary Evaluation Results of the Staff Education Project by CEs

Title of Project: Nursing Knowledge and Breastfeeding Education

Student: Mary D. Miller, MSN, RN

I. Content Expert Approach

a. Please describe the effectiveness of this project in terms of communication, and desired outcomes etc.

Evaluator A	Evaluator B	Evaluator C
Did not complete	This curriculum has an organized layout. It would be very useful as a guide for talking points with a presentation	This project took an enormous amount of time and effort which I greatly appreciate. The amount of material gathered would be enough for several classes. I took the time to read it completely and it would suffice for an excellent resource for someone studying about breastfeeding. All the WIC staff are required to attend a Breastfeeding Basics Class, which is a 3-day virtual class at this time. Many power points are used, but they basically have pictures on each slide with very few words. Your curriculum would serve as background information or notes for these slides.

How do you feel about your involvement as a content expert for this project?

Evaluator A	Evaluator B	Evaluator C

Did not complete	I was happy to offer my help.	I think I needed much more communication about the project so that I could better guide Mary on what she was trying to produce.

II. There were outcomes products in this project including an educational curriculum and pre/posttest.

Evaluator A	Evaluator B	Evaluator C
Did not complete	None.	I know we revised some topics along the way, but we did not talk about what the end product would look like.

Describe your involvement in participating in the development/approval of the products.

Evaluator A	Evaluator B	Evaluator C
Did not complete	I was asked to review the project for accuracy of information presented.	I am sure I did not participate enough in the development of this project.

d. Share how you might have liked to have participated in another way in developing/approving the products.

Evaluator A	Evaluator B	Evaluator C
Did not complete	No comment.	Work more closely with Mary as the project developed.

III. The role of the student was to be the leader of the project.
As a leader how did the student direct you to meet project goals?

Evaluator A	Evaluator B	Evaluator C
Did not complete	Mary kept me informed of the project goals by email.	Unknown

How did the student support you in meeting the project goals?

Evaluator A	Evaluator B	Evaluator C
Did not complete	Reminders as needed as to deadlines	Phone calls to discuss the project and clarify any questions.

IV. Please offer suggestions for improvement.

Evaluator A	Evaluator B	Evaluator C
Did not complete	No suggestions	I would love to sit down with Mary to discuss the project more, I marvel at the information she produced, and I am sure she learned a lot about breastfeeding along the way.

Appendix G: Curriculum Plan Evaluation by CEs Summary

Met = 1 Not Met = 2

Objective Number and Statement	Evaluator A	Evaluator B	Evaluator C	Average Score
1. Recognize the breast anatomy and discuss breastfeeding physiology	1	1	1	1
2. Define key properties of human milk	1	2	1	1.33
3. Recall benefits, risks, and barriers of breastfeeding to mother and infant	1	2	1	1.33
4. Discuss the definition of exclusive breastfeeding	1	1	1	1
5. Summarize how prescription medications/drugs/alcohol affect breastfeeding	1	2	1	1.33
6. Apply communication in counseling the breastfeeding mother	1	2	1	1.33
7. Define a feeding	1	2	1	1.33
8. Recognize what it means to establish breastfeeding	1	1	1	1
9. Summarize approaches that support breastfeeding	1	1	1	1
10. Summarize approaches that support breastfeeding	1	2	1	1.33
11. Use different positioning techniques for breastfeeding	1	2	1	1.33
12. Determine proper latching	1	2	1	1.33
13. Determine signs of adequate milk intake	1	1	1	1
14. Analyze and support techniques to manage sore nipples, mastitis, plugged ducts, and engorgement	1	2	1	1.33

15. Determine signs of adequate infant weight gain	1	2	1	1.33
16. Recognize the role that pacifiers, nipple shields, and breast pumps play to assist a breastfeeding mother	1	2	1	1.33
17. Describe proper storage and use of expressed breastmilk	1	2	1	1.33

Comments:

- "Issues with fore and hindmilk and the use of the word 'emptied'.
- "Statement is correct, but I would prefer a statement that breast size does not impact ability to breastfeed".
- "Discuss 'pump and dump".
- "Use reverse pressure softening and compression".
- "Where is hand expression, all moms should learn prenatally".
- "Need something on back to work as many moms quit at this time or their production goes way down".

Appendix H: CEs' Letter

October 1st, 2021

Dear Content Experts,

Thank you for your participation in my Staff Education Program on Breastfeeding. Your time, expertise, and effort related to this project ensures that the information we are supplying to our local health department nurses and perinatal hospital nurses is of the highest standards related to breastfeeding education.

In this packet you will find forms related to the project with instructions at the top of each form.

1. The Literature Review Matrix - Highlights the objectives and content relayed in the curriculum for your review.
2. The Curriculum Plan – References an objective number and objective statement with a detailed content outline and evidence from the literature review matrix for your review.
3. Evaluation of Curriculum Plan by Content Experts - Please review each objective related to the curriculum plan, content, and matrix. The answer will be met or not met with comments if there is a problem understanding the content or if the content does not speak to the objective.
4. Pretest/Posttest – The questions that will be used to score the participants' change of knowledge related to breastfeeding education.
5. Pre-Posttest Content Validity by Content Experts- Please review each pretest/posttest question and ensure that the question meets the objectives presented and the answers can be found in the content. Please mark as not relevant, somewhat relevant, relevant, or very relevant.

All work completed related to your role as a content expert will be anonymous. To achieve anonymity, packets and forms were addressed with numbers only and passed out in unmarked manilla folders. To return these packets you can simply return them to Rosa Gardiner at the health department.

If you have any questions during your participation in this doctoral project, please, do not hesitate to reach out to me at any time.

Thank you,

Mary D. Miller, MSN, RN.
C: XXX
E: XXX@waldenu.edu

Appendix I Pretest Posttest

Pre-Test/ Post-Test: Nursing Knowledge and Breastfeeding Education

Student Name: Mary D. Miller, MSN, RN.

Date:

Time: Participants have 25 minutes to complete this pre/post-test examination on SurveyMonkey.

Purpose: Pre-test/post-test comparison of this Breastfeeding Education program will allow assessment of the educational intervention/training by determining differences in learning outcomes that occur between two points in time – before and after the training. The comparisons will assess changes in knowledge, skills, and attitudes as a direct result of the training.

Points Possible: Total of 32

- 1 point for true/ false
- 1 point for single answer questions
- 1 point for each answer circled correctly in the 'circle all that apply' questions.

For questions 1-4, choose True or False ONLY:
1. **Transitional milk is available between days 3 to 14** (Andreas et al., 2015). a. True b. False
2. **Breastfed babies are at a lower risk to have ear infections** (U.S. Department of Health and Human Services, 2011). a. True b. False

3. **Breastfeeding individuals have a higher risk of ovarian cancers** (U.S. Department of Health and Human services, 2011).
    a. True
    b. False

4. **It is NOT common for breasts to vary in size, shape, and placement on the chest wall (**Blair et al., 2003).
    a. True
    b. False

For questions 5-8 you will CHOOSE ALL THAT APPLY:

5. **Some common barriers to breastfeeding include (choose all that apply)** (Eglash et al., 2017)**:**
    a. Physical challenges, such as pain or engorged breasts
    b. Negative attitudes of family members or friends
    c. Embarrassment to breastfeed in public
    d. Worries about milk supply
    e. Challenges related to returning to work

6. **Breast shields do not fit all nipples, to ensure good fit breastfeeding persons should (Choose all that apply)** (Jaafar et al. 2012):
    a. Make sure the nipple does not move freely within the shield
    b. Ensure the nipples fit comfortably in the center of the shield
    c. Check that the shield does not draw in the areola into the tunnel
    d. Make sure the shield creates a good seal

7. **Tips for breast engorgement includes (choose all that apply)** (Barens et al., 2016)**:**
    a. Apply heat to the breast before pumping or breastfeeding
    b. Massage the breast
    c. Use anti-inflammatory medications
    d. Leave the breast alone
    e. Use cool compresses after nursing

8. **Breastfeeding persons should be encouraged to use these common positions for breastfeeding (Choose all that apply)** (Truchet & Honvo-Houeto, 2017).
    a. Cradle
    b. Laid-back
    c. Football hold
    d. Free exploration of a comfortable position

Questions 9-21 will have ONLY ONE right answer:

9. **Breastfeeding persons and babies who are relying on a nipple shield should be followed at least every** (Mckechnie, 2010)**:**
    a. 1-2 days
    b. 1-2 weeks
    c. 3-4 weeks
    d. Month

10. **This part of the mature breast contains smooth muscle fibers and sensory nerve endings** (Blair et al., 2003)…
    a. Areola
    b. Alveoli
    c. Nipple
    d. Mongomery glands

11. **All of these should be included in the infant latch, EXCEPT (**Eglash et al., 2017)**:**
    a. The lower lip is flanged out
    b. The nose and chin are close to the breast
    c. The baby clicks while sucking
    d. The baby is latched to the areola

12. **A baby should be weighted with...** (Riddle, 2017).
    1. The clothes on that they came in
    2. A wet diaper
    3. A mechanical scale
    4. Out clothing on (naked)

13. **Moms with sore nipples should be seen** (Feldman-Winter & Goldsmith, 2016) **…**
    a. Within 24 hours
    b. Within 48 hours
    c. Within 1 week
    d. As soon as the doctor is available

14. **The MOST COMMON reason individuals stop breastfeeding is** (Amir, 2014)**:**
    a. Inconvenience
    b. Engorgement
    c. Nipple pain
    d. Return to work

15. **Which is NOT a reason for insufficient infant weight gain** (Dos Santos et al., 2016)**?**
    a. Baby likes formula better
    b. Maternal milk supply is too low
    c. Parents place baby on a feeding schedule
    d. Baby has a tongue tie

16. **Pacifiers can be introduced when all the following are true, EXCEPT** (Andara et al., 2012)**:**
    a. Parents notice the baby wants to continue sucking after nursing
    b. The mom does not have severely sore nipples
    c. The baby's weight gain is fine
    d. That baby is less than 2 weeks old

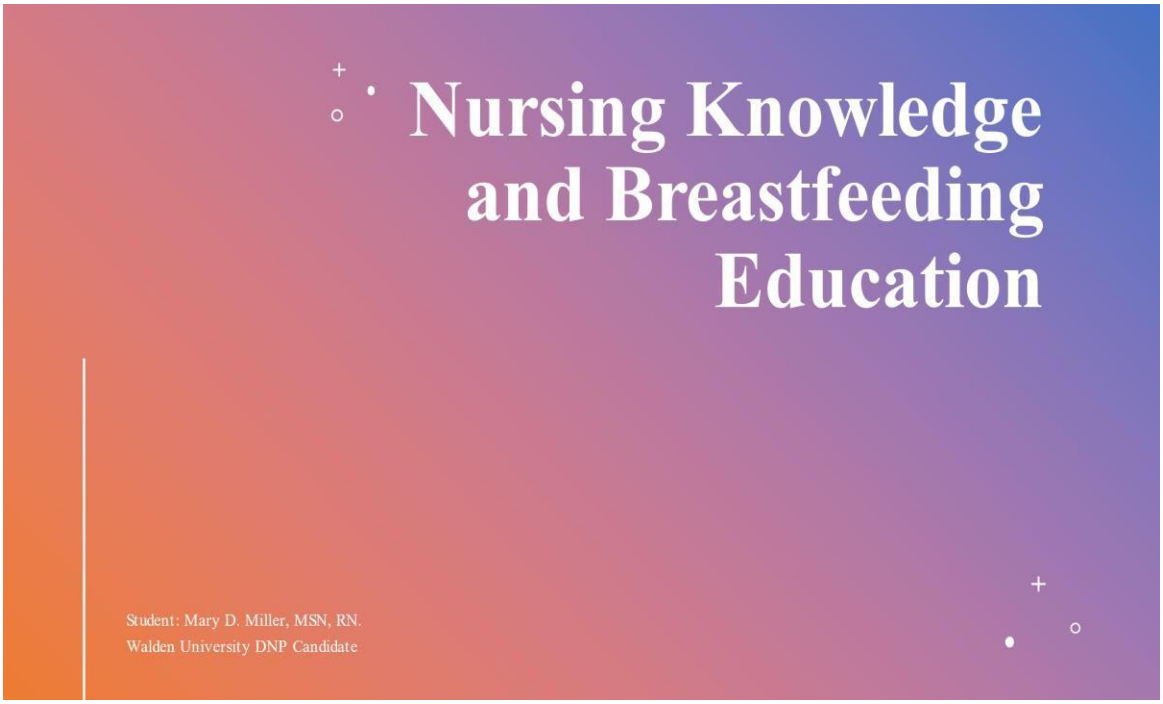
17. **Freshly expressed milk should be stored in a refrigerator for** (La Leche Legue, 2018)**:**
    a. 12 hours
    b. 24 hours
    c. 72 hours
    d. 1 week

18. **Characterization of a feeding is when a baby feeds from one or both breast and there are_____minutes before baby requests to feed again** (Love et al., 2004)**:**
    a. 20 minutes
    b. 60 minutes
    c. 2 hours
    d. 3 hours

19. **The most ideal place for the baby after birth whether born vaginally or via cesarian section is** (Infant Risk Center, 2018)**:**
    a. On the mom's chest (skin to skin)
    b. In the nursery
    c. Away from the mother so she can rest
    d. In a crib on its back

20. **When counseling a mother on breastfeeding, it is important to use language that assumes that** (Baker & Greer, 2010) **…**
    a. Breastfeeding is extra work
    b. Babies are needy
    c. Breastfeeding is the normal way to feed
    d. Breastfeeding should not be a regular way of life

Appendix J: Staff Education Program



Consent Form for Anonymous Questionnaires

To be given to the staff member prior to collecting pre/posttest responses—note that obtaining a "consent signature" is not appropriate for this type of pre/posttest and providing respondents with anonymity is required.

You are invited to take part in a staff education doctoral project that I am conducting.

Questionnaire Procedures:

- If you agree to take part, I will be asking you to provide your responses anonymously, to help reduce bias and any sort of pressure to respond a certain way. Staff members' pre/posttest responses will be analyzed as part of my doctoral project, along with any archival data, reports, and documents that the organization's leadership deems fit to share.

Voluntary Nature of the Project:

- This project is voluntary. If you decide to join the project now, you can still change your mind later.

Risks and Benefits of Being in the Project:

- Being in this project would not pose any risks beyond those of typical daily professional activities. This project's aim is to provide data and insights to support the organization's success.

Privacy:

- I might know that you completed a pre/posttest, but I will not know who provided which responses. Any reports, presentations, or publications related to this study will share general patterns from the data, without sharing the identities of individual respondents or partner organization(s). The pre/posttest data will be kept for a period of at least 5 years, as required by my university.

Contacts and Questions:

- If you want to talk privately about your rights in relation to this project, you can call my university's Advocate via the phone number 612-312-1210. Walden University's ethics approval number for this study is 09-09-23-0587719.

Before you start the pre/posttest, please share any questions or concerns you might have.

Module 1

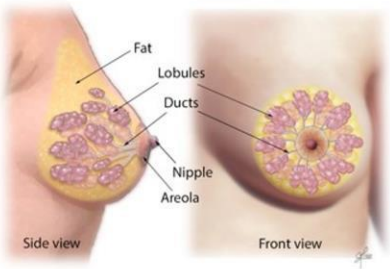
Pre-Test
Breast Anatomy and Breastfeeding Physiology
Break
Breastfeeding Considerations
Prescription Medication/Drugs/Alcohol

Module 1 Objectives:

- Recognize the breast anatomy and discuss breastfeeding physiology
- Define key properties of human milk
- Recall benefits, risks, and barriers of breastfeeding to mother and infant
- Discuss the definition of exclusive breastfeeding
- Summarize how prescription medications/drugs/alcohol affect breastfeeding

Breast Anatomy and Breastfeeding Physiology

Anatomy of the Mature Breast



- Nipple
- Nipple Pores
- Areola
- Montgomery Glands
- Alveoli

Breast and Nipple Variations

- Breasts vary in size, shape, and placement on the chest wall. It is very common for one breast to be larger than the other. Women with breasts that are tubular in shape or significantly asymmetrical are at a risk for problems with breast development during pregnancy.
- Nipples also vary in size, shape, and placement on the breasts. It is not necessary for the nipples to be everted or protrude for comfortable latch. Flat or inverted nipples occasionally provide challenges that require more time and a referral to a Lactation Consultant to obtain an effective latch

Properties of Human Milk

- Colostrum
- Transitional milk
- Mature Milk
  - Water – 87-90% of mature milk
  - Proteins– 0.8 to 1.0% of milk
  - Carbohydrates – 40% of baby's calorie needs
  - Fat – most variable component and related to the relative fullness or emptiness of the breast. Fat content is different between mothers, over the course of the day and over the course of time and from feeding to feeding

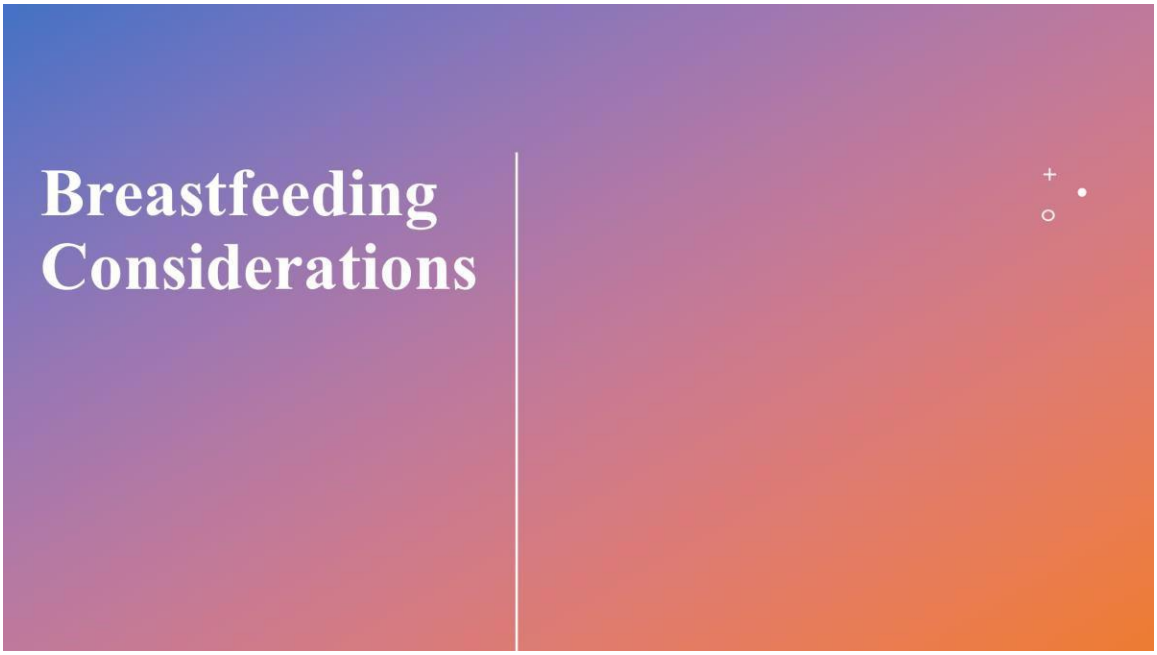
Physiology of Milk Production

- Lactocytes
- Lactogenesis I
- Lactogenesis II

Physiology of Milk Production

- Prolactin
  - Called the milk producing hormone, is released from the anterior pituitary gland in direct response to nipple stimulation. Frequent feeding with a deep, effective latch in the first month is important to keep the prolactin level up which is vital to establishment of a health milk supply .
- Oxytocin
  - Released from the posterior pituitary gland during labor, causes muscles of the uterus to contract. This same hormone stimulates the myoepithelial cells, which are muscle cells wrapped around the breast and alveoli and ducts. Oxytocin triggers these cells to contract, propelling milk through the ductal system of the breast. This is called the milk ejection reflex.


5 Minute Break


Breastfeeding
Considerations

Benefits of Breastfeeding

- Psychosocial effects of breastfeeding
- Economic effects
- Environmental effects

Current Recommendations

- The World Health Organization, UNICEF, the United States centers for Disease Control and Prevention, American Academy of Family Physicians, American Academy of Pediatrics, the American College of Obstetrics and Gynecology and similar organizations around the world have created recommendations for breastfeeding.

Barriers To Breastfeeding

- Lack of education
- Lack of social support from family members and friends
- Embarrassment to breastfeed in public
- Previous breastfeeding difficulty
- Return to work barriers
- Historical trauma

Risks of Not Breastfeeding

- Infant risks
- Maternal Adverse Effects

Exclusive Breastfeeding

- Is defined as only mothers' milk apart from vitamin and mineral supplements, medicines
  - Until accepted guidelines normalizing vitamin D in breastmilk have been set
    - All breastfeeding infants can be supplemented with 400 IU of vitamin D a day
    - OR the lactating individual can take oral vitamin D3 6,400 IU/day

Prescription Medication/ Drugs/ Alcohol

Prescription Medication

- Most mothers can continue to breastfeed their infants and take certain medications without risk to the infant. It is generally accepted that all medications transfer into mothers' milk to some degree. Only rarely does the amount transferred into breastmilk produce clinical doses in the infant. Antineoplastic agents are contraindicated, and radiopharmaceuticals may require temporary discontinuation of breastfeeding.

Tobacco Use

- Mothers who smoke may nurse their babies
- Problems with smoking during lactation
- Mothers who smoke and breastfeed should be encouraged to switch to a nicotine replacement, such as the Patch, in the lowest possible dose

Alcohol Use

- Casual use of alcohol is unlikely to cause either short- or long-term problems in the nursing infant, especially if the mother waits 2 to 2 1/2 hours per drink before nursing.
  - Breast milk alcohol levels closely parallel blood alcohol levels.
  - Alcohol decreases milk production, with three drinks or more (300mg/dL)
  - Daily heavy use of alcohol, more than two drinks daily, may affect infants negatively and appear to decrease the length of time that mothers breastfeed their infants.

Thank you for your participation!

Nursing Knowledge and Breastfeeding Education

Student: Mary D. Miller, MSN, RN.
Walden University DNP Candidate
Email: Mary.miller8@waldenu.edu
Resources available upon request*

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Before you start the pre/posttest, please share any questions or concerns you might have.

Module 2

Care of the Feeding Mother/Infant Dyad
Break
Positioning for Breastfeeding
Infant Latch
Identification/Care of Problems

Module 2 Objectives:

- Apply communication in counseling the breastfeeding mother
- Define a feeding
- Recognize what it means to establish breastfeeding
- Summarize approaches that support breastfeeding
- Explain determinants of weight gain
- Use different positioning techniques for breastfeeding
- Determine proper latching
- Determine signs of adequate milk intake

Care of the Feeding Mother/ Infant Dyad

Communication in Counseling the Breastfeeding Mother

- Communication in Counseling the Breastfeeding Mother
  - Language of the message
- Tone of voice
  - Manner of your speech can set the atmosphere
- Listening to identify strengths and resources
  - Be aware of one's own beliefs and attitudes regarding pregnancy, childbirth and parenting, and what is appropriate behavior.
  - Teach just what is needed
- Always follow up

Immediate Postpartum Period

- Babies are very awake and alert the first two hours after they are born. Babies often sleep for the next several hours, and sometimes rest of the day, following the first feeding
- The baby can be dried on mom's belly/chest and procedures such as the infant weight, drops in eyes, and bathing should be delayed until at least 24 hours

○ Skin-to-skin

  - Right after the baby is born, it is ideal to place the baby skin -to-skin with mom whether the infant is born vaginally or via a cesarean birth. The baby is placed prone, skin to skin on mom's chest between her breasts with a blanked over the baby to help maintain warmth.

○ Self-led latch (Magical Hour)

  - Self-led latch is defined by the baby finding her way down to the beast from the chest -chest position.

Immediate Postpartum Period

- Delivery of the Placenta
- Newborns need to nurse from both breasts frequently will eventually consume a total of approximately two to four teaspoons each feeding

Defining a Feeding

- This intimate act between mother and her baby enhances their relationship, provides nourishment for the baby's growth, and provides important protection against illness and stimulation for neurodevelopment though skin contact and smells
- The pause in the chin as the baby opens his mouth to the maximum, just before closing his mouth, indicates his mouth is filling up with milk; the longer the pause, the more milk the baby is taking in

Defining a Feeding

- Cluster feeding
- Non-nutritive suckling (Nibbling)
- Nutritive suckling
- Audible swallow

Feeding Frequency and Duration

- During the first 6 weeks of life, the newborn will feed every 1 -3 hours, often at irregular intervals. These frequent feedings protect are the key to abundant milk production
- Breastfeeding is baby driven. Offer the breast with early hunger cues rather than with crying that cannot be soothed. Early hunger cues include
- Teach mom to allow baby to remain on the first breast until the baby spontaneously releases the breast, falls asleep, or discontinues suck/swallow pattern
- Teach mom to allow baby to remain on the first breast until the baby spontaneously releases the breast, falls asleep, or discontinues suck/swallow pattern

Establishing Breastfeeding

- More recent research has led us to view babies as having inborn feeding behaviors. These inborn feeding behaviors are present in most healthy babies at birth and throughout the first several months of life.
- These behaviors are part of the baby's survival skills. Reassuring a new mother that her baby is born with reflexes to help him breastfeed can build a mother confidence and relieve a lot of stress.

Approaches that Support Breastfeeding

- The baby should be in a quiet, alert state. Calming will be needed before breastfeeding a fussy or anxious newborn. Crying is considered a late indicator of hunger.
- A baby in deep sleep may not respond to the breast with rooting. If that baby is losing weight or having slow weight gain, then undressing the baby and providing a gentile massage of the back or the soles of the feed may help change the baby's state and stimulate feeding reflexes.
- The mother position should be free of muscle strain with the shoulders and neck relaxed and the body well supported. Pillows are very helpful in achieving relaxation. A footstool can also help mother sit back in her chair.

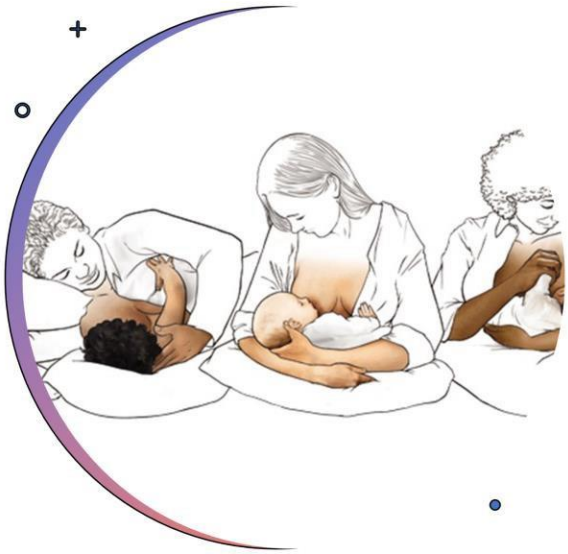
Approaches that Support Breastfeeding

- The mother may support her breast will all four fingers below and the thumb resting on top. Her thumb and fingers would be away for the areola which is where baby will latch. This is often called the "C" hold.
- The baby's body is turned towards and supported on the mother's body, or a pillow, the baby's ear, shoulder, and hip are on one level plane to avoid awkward twisting of baby's head or neck. (Baby at breast level)
- In a mother led latch, the mother offers the breast to the baby in a way that promotes good attachment with the baby's nose to nipple and the baby opening her mouth wide to take a mouthful of breast.
- In an infant led latch or biological positioning, the baby clothed in a diaper only is placed midline between his mother's breasts. The mother rests in a semi-reclined potion with pillows for support. The mother supports baby's inborn feeding behaviors to find the breast and attaches to the nipple.

Determinants of Weight Gain

- Infant Weight Checks
  - Pre/post feed weights
- Immediately after birth, infants lose approximately 10% of their body weight because of fluid loss and some breakdown of tissue. They usually regain their birth weight within 7 days.
- On average, infants gain 4 to 7 oz per week in the first 4 to 6 months and 3 to 5 oz per week from ages 6 to 18 months.

5 Minute Break



Positioning for Breastfeeding

- Feeding positions are approached from the viewpoint of what helps breastfeeding work rather than what is a proper or improper feeding hold. The infant will latch most effectively and remain most comfortable if his nose, belly button, and knees are all in one line.
- A mother will choose a position based on several factors, such as her own comfort level, length of her arms, the furniture she is in, the rate of her milk flow, the degree of fatigue, and the infants age and strength.

Cradle Hold

- The infant lies across the mother at the level of the breast. The baby is held close and is supported on the mother's forearm, on the side that the baby will feed from. The baby's head rests in the bend of mother's elbow or midway down the forearm, whichever results in the best positioning. Baby's body is turned toward the mother with baby's nose to mother's nipple, the ear, shoulder, and hip in a line. The mothers hand holds the baby's buttocks.

Football Hold

- The baby is placed on pillows beside the mother, and a pillow behind the mothers back. Position the baby with his bottom against the surface supporting mother back, feet aiming toward the ceiling. The mothers arm slips under the baby's back with the heel of her hand resting between the shoulder blades and the back of the baby's head falling between her thumb and index finger.

Modified Cross Cradle Hold

- The baby lies across the mother and is held by the arm opposite the breast that the baby will feed from. The mother hand cups the baby's neck, and the base of the head falls between the thumb and first finger, bringing the nose to nipple. Avoid holding or pushing on the baby's head as most babies will react negatively to this.

Upright Seated Hold

- The baby is seated facing mother, in her lap while mother sits cross legged, or straddled over one of mother's thighs, the mothers arm holds the infants back and neck, with the back of the baby's head falling between thumb and index finger, bringing chin into contact with the breast. Mother holds her breast with the other hand.

Laid Back Positioning

- The mother leans back with good body support in a chair, recliner, or on pillows. The baby lies tummy down on the mother's body, so gravity allows close contact and makes it easy for the baby to reach the breast. This position optimized the baby's inborn feeding behaviors and self-attachment through stimulation of reflexes.

Side-lying Position

- The mother and baby lay side by side in bed. The mother's lower arm is above her baby, perhaps tucked under her head pillow. The baby is turned towards the breast with nose to nipple, chin touching breast and hips held closed to the mother with her own arm.

Positioning for Breastfeeding

- Exploration to Find Comfortable Position
  - Mothers and babies can be trusted to explore and find a comfortable position for breastfeeding.
  - Helping a mother to create a relaxing environment:
    - Insure the mother's privacy, warmth, and comfort
    - Respect her choices and reinforce what is working
    - Educate mom that keeping the baby positioned with nose, belly button and knees in alignment will enable a relaxed deep latch and avoid nipple trauma
    - Attachment, deep latch, and frequency of nursing is the most important factor for preventing early problems that lead to premature weaning.

Infant Latch

- The infant attachment to the breast is called 'Latch'. Infants need to latch very deeply on the breast. This means that the infant is latching onto the breast itself, not just the nipple. The nipple needs to be brought far back into the baby's mouth, to the soft palate, so that the nipple does not become compressed between the hard palate and the tongue.

Infant Latch

- Signs of Proper Latch
  - The upper and lower jaws are open wide as the baby is nursing
  - The lower lip is flanged out and the upper lip appears relaxed
  - The tongue is visible at times
  - The nose and chin are brought into the breast as close as possible
  - The baby has a double chin
  - The baby does not click, which is a sound made when baby breaks suction while nursing
  - The baby has a relaxed suck, swallow, breathe routine

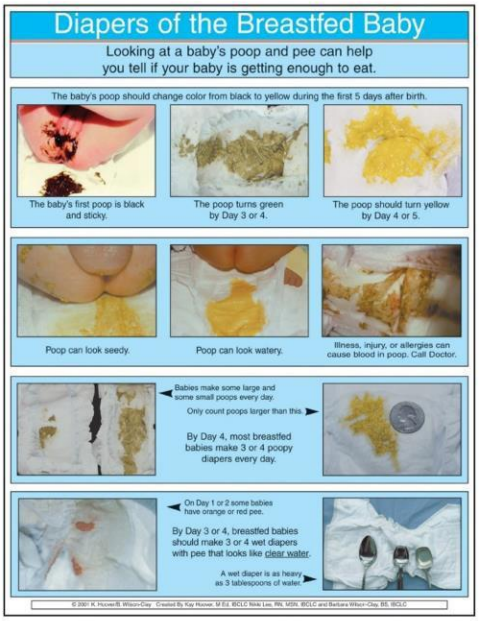
Infant Latch

Good Latch - lips are >120° angle, lower lip covers more areola

Poor Latch - lips are <90° angle, lower lip is just below nipple.

Infant and Maternal Signs of Adequate Milk Intake

- Signs of Adequate Intake for Infant
  - Frequent, soft bowel movements during the early weeks
  - The baby should always have a wet diaper when lactogenesis is complete
  - The baby will appear content between feedings
  - Weight gain of 20 to 30 grams (2/3 to one ounce) per day or 100 to 200 grams per week (five to seven ounces)



Infant and Maternal Signs of Adequate Milk Intake

- Signs of effective breastfeeding for mother
  - Mothers' breasts feel full before a feeding and softer after
  - Uterine cramping may be felt with every feeding during the first few days of nursing
  - Leaking from the other breast during feeding
  - Mother becomes thirsty
  - Absence of nipple pain lasting longer than a few seconds at first latch or damage
  - Mother feels relaxed
  - Increased milk volume and change in appearance by day five.

Identification / Care of Problems

Sore Nipples/Latch Pain

- Sore Nipples
  - Maybe the first nursing difficulty and is often cited as the main reason women stop breastfeeding.
  - During the first one to two weeks of breastfeeding, mild nipple tenderness and soreness are considered normal.
- Latch Tenderness
  - Occurs when the baby first attaches to the nipple and will last less than 30 seconds, until the baby draws the nipple to the comfort zone at the juncture of the heart and soft palate. Mom will then feel a comfortable tug on her nipple as a baby nurses. Latch tenderness gradually resolves within one to two weeks postpartum.

Sore Nipples/Latch Pain

- Latch Pain
  - Intense and prolonged
  - Nipple damage and persistent soreness
  - Most often the cause of sore nipples is mechanical
    - The most common mechanical cause for nipple soreness:
      - Positioning of mom and or baby is not optimal for a wide deep latch.
      - Breast engorgement that prevents the baby from latching on deeply to the breast.
      - Reverse pressure softening can be taught by a lactation consultant to help baby latch.
      - Infant problems that make it difficult for the baby to latch on deeply such as tongue tie, prematurity, torticollis, and nasal congestion.
      - Pump trauma

REVERSE PRESSURE SOFTENING

K. Jean Cotterman RNC-E, IBCLC, (mellomom@gmail.com)

(This may be used as a two-sided, thorough instruction sheet, or as a one-sided basic how-to instruction sheet)

What is reverse pressure softening?

- It's a new way to soften the **a-re-o-la** (the circle around your nipple)
- to make latching and removing your milk easy while your baby and you are learning.
- **LATCHING SHOULD NOT BE PAINFUL.**
  - This new method is not the same as removing milk with your fingers.
  - Don't expect milk to come from your nipple each time.
  - But it's OK if some milk does come out.

Why does reverse pressure softening work?

- Early swelling, firmness or "fullness" may be **only partly due to milk.**
- Some swelling may be from **extra fluid** stored (retained) in the spongy, **protective tissue** around your milk ducts.
- (This extra fluid **can never** go to your baby.)
- **Delayed milk removal** often leads later to **retained tissue fluid.** Frequent, regular removal of small amounts of early milk is best.
- Intravenous (IV) fluids, or drugs such as ***pitocin*** may often cause **early, extra retained tissue fluid,** sometimes taking 7-14 days to go away.
- **Reverse pressure softening** briefly moves mild or firmer swelling away from under your **areola**, slightly backward into your breast for a short period of 5-10 minutes.
- This allows your **areola** to change shape very easily, and makes latching easier.
- The softened **areola** helps your nipple extend more deeply into baby's mouth.
- **Reverse pressure softening also causes a "let-down" reflex.** (This signals your breasts to **quickly release more milk forward,** so baby's tongue can reach it.)
- A soft **areola** also makes it easier to remove milk with fingertips or with
- **SHORT PERIODS OF SLOW GENTLE PUMPING.**
- If you need to remove milk for your baby with fingertips or pump, use **reverse pressure softening,** whenever needed. You may also gently massage milk forward in the breast.
- Avoid long pumping sessions and high vacuum settings on breast pumps to avoid movement of extra retained tissue fluid into the **areola and nipple.**

When is reverse pressure softening helpful?

- In the first weeks, for firmness of the **areola**, latch problems or breast swelling.
- At any time, to get a **"let-down" reflex**, before or while pumping.
- Feel your **areola** and the **tissue deeper inside it.**
- Is it soft and easy to squeeze, like your earlobe or your lip?
- If not, it's time to try **reverse pressure softening** each time just before your baby wants your breast.
- (Some mothers soften their **areola** before each feeding, for a week or longer, till swelling goes down, latching is deep and easy, and milk is flowing well.

REVERSE PRESSURE SOFTENING SHOULD CAUSE NO DISCOMFORT. (Over)

(CAUTION-NEVER TO BE USED FOR MASTITIS, PLUGGED DUCTS OR ABCESS)

How to do REVERSE PRESSURE SOFTENING

-developed by K. Jean Cotterman RNC-E, IBCLC mellomom@gmail.com

Try this if pain, swelling, or fullness create problems during the early weeks of learning to breastfeed.

The key is making the areola very soft right around the base of the nipple, for better latching.

- A softer areola helps baby's tongue remove more milk, while being very gentle to your nipple.
- Mothers say curved fingers work best. (Fig. 1 or 2) Ask someone to show you if needed
- Press inward toward the chest wall, counting slowly to 50; ***count very slowly if very swollen.***
- Moms with ***very swollen breasts get more relief lying on their back, (using gravity.)***
- This delays return of swelling to the areola, giving more time to latch.
- (For long fingernails, try another way shown below.).
- If mom wishes, someone else may help, using thumbs (Fig. 5).
- Soften the areola right before each feeding (or pumping) till swelling goes away.
- For some mothers, this takes 2-4 days or more.
- Make any pumping sessions short, with pauses to re-soften the areola if needed.
- Use medium or low vacuum, to reduce the return of swelling into the areola.

Fig. 1
One handed "flower hold":
Fingernails short,
Fingertips curved, placed where baby's tongue will go

Fig. 2
Two handed, one-step method:
Fingernails short,
Fingertips curved, each one touching the side of the nipple

Fig. 3
You may ask someone to help press by placing fingers or thumbs on top of yours

Fig. 4
Two step method, two hands:
using 2 or 3 straight fingers each side, first knuckles touching nipple. Move ¼ turn, repeat above & below nipple

Fig. 5
Two step method, two hands:
using straight thumbs, base of thumbnail at side of nipple.
Move ¼ turn, repeat, thumbs above & below nipple

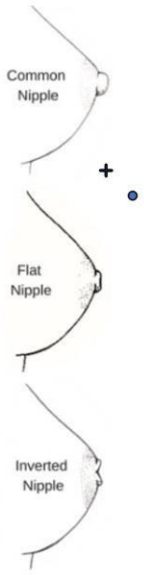
Fig. 6
Soft ring method:
Cut off bottom half of an artificial nipple to place on areola to press with fingers

Sore Nipples/Latch Pain

- Proper positioning and deep effective latch can prevent and resolve sore nipples-positioning in a way that supports mom and the baby comfortably, proper alignment is essential to breastfeeding success.

Lactation Consultant

- If mom continues to have pain with nursing, mom needs to see lactation consultant within 24 hours. There are several reasons why the above steps may not help.
- Common reasons to refer to a lactation consultant for nipple pain
  - Flat Or Inverted Nipples
  - Tongue Tie/lip tie
  - Torticollis




Thank you for your participation!
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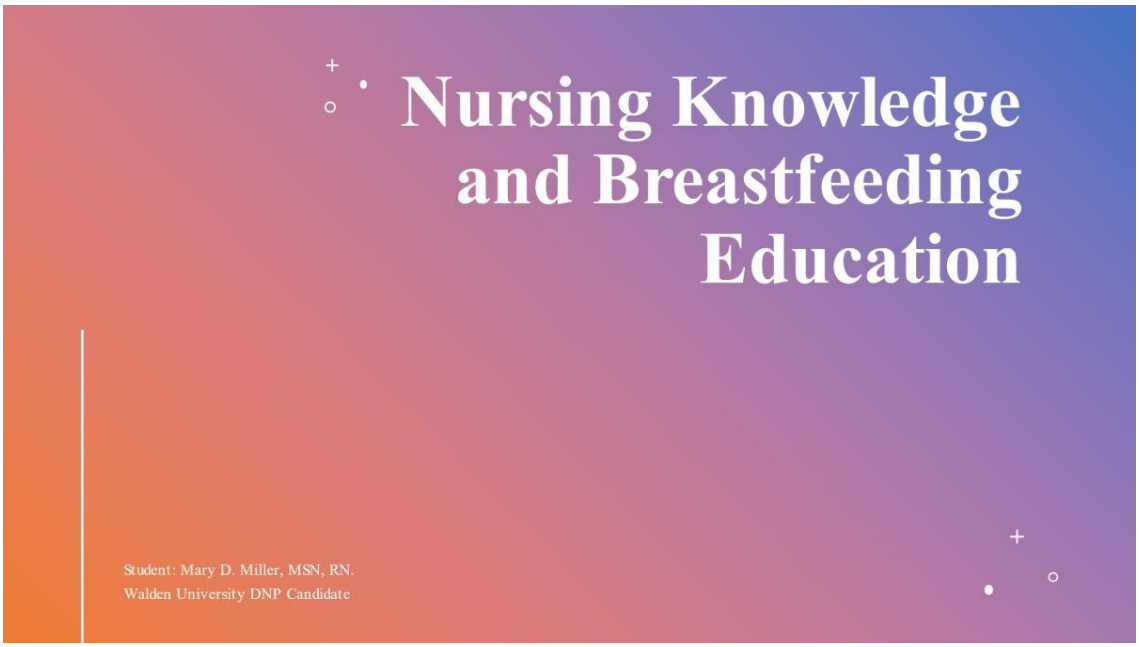
Resources available upon request*


Nursing Knowledge and Breastfeeding Education
Student: Mary D. Miller, MSN, RN.
Walden University DNP Candidate

Consent Form for Anonymous Questionnaires

To be given to the staff member prior to collecting pre/posttest responses-note that obtaining a "consent signature" is not appropriate for this type of pre/posttest and providing respondents with anonymity is required.

You are invited to take part in a staff education doctoral project that I am conducting.

Questionnaire Procedures:

- If you agree to take part, I will be asking you to provide your responses anonymously, to help reduce bias and any sort of pressure to respond a certain way. Staff members' pre/posttest responses will be analyzed as part of my doctoral project, along with any archival data, reports, and documents that the organization's leadership deems fit to share.

Voluntary Nature of the Project:

- This project is voluntary. If you decide to join the project now, you can still change your mind later.

Risks and Benefits of Being in the Project:

- Being in this project would not pose any risks beyond those of typical daily professional activities. This project's aim is to provide data and insights to support the organization's success.

Privacy:

- I might know that you completed a pre/posttest, but I will not know who provided which responses. Any reports, presentations, or publications related to this study will share general patterns from the data, without sharing the identities of individual respondents or partner organization(s). The pre/posttest data will be kept for a period of at least 5 years, as required by my university.

Contacts and Questions:

- If you want to talk privately about your rights in relation to this project, you can call my university's Advocate via the phone number 612-312-1210. Walden University's ethics approval number for this study is 09-09-23-0587719.

Before you start the pre/posttest, please share any questions or concerns you might have.

Module 3

Identification/Care of Problems Continued
Break
Devices to Help a Breastfeeding Person
Storage and Use of Breastmilk
Post-Test

Module 3 Objectives:

- Analyze and support techniques to manage sore nipples, mastitis, plugged ducts, and engorgement
- Determine signs of adequate infant weight gain
- Recognize the role that pacifiers, nipple shields, and breast pumps play to assist a breastfeeding mother
- Describe proper storage and use of expressed breastmilk

Breast Swelling and Engorgement

- Occurs as the milk becomes more abundant, usually between two to three days postpartum for a multiparous mom and between three to five days postpartum for a primiparous mom.
- The breasts may feel quite full and diffusely warm and pink and tender.
- Can contribute to latch difficulty and pain because the baby cannot latch deeply onto the breast or may refuse to latch.
- Most problematic on days three to six postpartum period however, some mothers have a capacity for high milk supply, and they remain engorged for several weeks or months until the milk supply reduces naturally or through medical advice.
- Can be minimized by making sure the baby nurses very often, at least every two to three hours, and is kept awake for feedings.

Breast Swelling and Engorgement

- Tips For Managing Breast Swelling an Engorgement
  - Instruct mom to make sure she is nursing at least every two to three hours throughout the day and night in the first few weeks.
  - If the baby does not nurse well, she may need to pump or manually express her breasts at least every two to three hours.
  - Before nursing or pumping, apply heat to the breast to stimulate a letdown an improve milk flow.

Breast Swelling and Engorgement

- Tips for managing breast swelling an engorgement
  - Before nursing or pumping, massage the breast from the chest wall towards the nipple.
    - This can be done during or after applying heat.
    - This stimulates the flow of blood and lymph fluid, thus reducing congestion from these body fluids.
    - The skin contact will also stimulate the release of oxytocin, helping the milk to begin to let down as the breast is massage period to do the massage, suggest mom make small circles over the breasts, while lying flat on her back.
    - Move from the chest wall towards the nipple, and then around the breast.

Breast Swelling and Engorgement

- Tips For Managing Breast Swelling An Engorgement
  - After nursing or pumping, advise mom to apply cool compresses or cold packs, such as ice packs, bags of frozen vegetables, cabbage leaves, or frozen wet towels, applied for 20 minutes to the breast while laying down. Cold items will help to decrease swelling.
  - Anti-inflammatory medications such as ibuprofen may be helpful to reduce pain and inflammation of engorgement.
  - Manual expression of engorged breasts may be needed to soften a noncompressible areola. Many women have not purchased at pump yet, so manual expression is an important skill to teach new moms.

Reasons for Insufficient Weight Gain

- There are many reasons why a nursing baby doesn't gain weight.
- Often the reasons are pertinent to the age of the baby.
- When a baby does not gain well, the baby does not take enough milk, leading to a lower milk supply

Reasons for Insufficient Weight Gain

- From Birth to Three Months
  - Infant does not transfer sufficient milk due to several possible reasons such as low milk flow or a tongue/lip tie
  - Maternal milk supply is too low due to poor latch, return to work, or unnecessary supplement with formula
  - Mom does not nurse frequently enough
  - Parents limit lactation
  - Baby is placed on a feeding schedule or a sleep schedule, preventing ad lib feeding when the infant is hungry
  - Infant illness such as gastroesophageal reflux, milk protein allergy, undiagnosed cleft palate, heart disease, etc.

Reasons for Insufficient Weight Gain

- Baby Over Four Months
  - Baby is not feeling well due to gastroesophageal reflex, allergies, or other illness.
  - Moms milk supply is low
  - Baby is distracted with nursing or won't take a bottle during the day, and baby is not fed overnight
  - Baby is placed on a feeding schedule, preventing ad lib feeding when the baby is hungry

Reasons for Insufficient Weight Gain

- Ways to Address Infant Weight
  - Triage phone calls when parents call concerned about whether their babies are getting enough milk
  - Determine, based on that phone call, if the baby should come in for a weight check with a trained nurse or lactation consultant or whether the baby should be seen by the provider.
  - Help identify sleepy babies who don't transfer milk well, and refer them to the lactation consultant
  - Help identify moms who might have a low milk supply and provide initial support, and referral to a lactation consultant.

Devices to Help a Breastfeeding Mother

Pacifiers

- It is generally recommended that babies do not receive pacifiers until breastfeeding is well established. Studies show that pacifiers don't cause a problem at 2 weeks postpartum if nursing is going well. Conflicting studies suggest there is a risk of lower milk supply due to lack of stimulation.
- Reasons why introduction of pacifiers before 2 weeks of age can be a problem include:
- If pacifiers do become a parent's choice, they can be introduced when all the following are true:

Nipple Shields

- Nipple Shields are covers made of pliable silicone that fit over the nipple or areola region they are firmer than the breast and allowed the breast to feel more like the bottle when the baby latches on. The silicone provides a firm stimulus to the babies' pallet, which wakes the baby and can encourage the baby to stay latched on and suck. However, there are significant problems with the nipple shield:
  - Mothers need to be shown how to correctly apply a nipple shield by a Lactation Consultant to reduce risk of decreased milk supply over time from potential misuse.
  - There might be a decreased transfer of milk from the breast to the baby if shield prevents a deep latch on to the breast tissue. The nipple shield may blunt mom's nipple from feeding the baby nursing at the breast. This decrease in nipple sensation can reduce mom's prolactin level.
  - Some mothers who have sore nipples experienced more pain when using a nipple shield, because the nipple shield puts pressure on the nipples.

Nipple Shields

- For all the of these reasons, the nurse should not recommend nipple shields to nursing moms unless they have training.
  - The recommendation to using shields should be done by the lactation consultant only after they have evaluated both mom and baby and have given informed consent to mom about the risk of using a nipple shield.
  - Mothers and babies who are relying on a nipple shield may need to be followed at least every one to two weeks to monitor infant growth period, mothers may also need guidance on how to transition away from using the nipple shield over time.

Breast Pumps - Manual

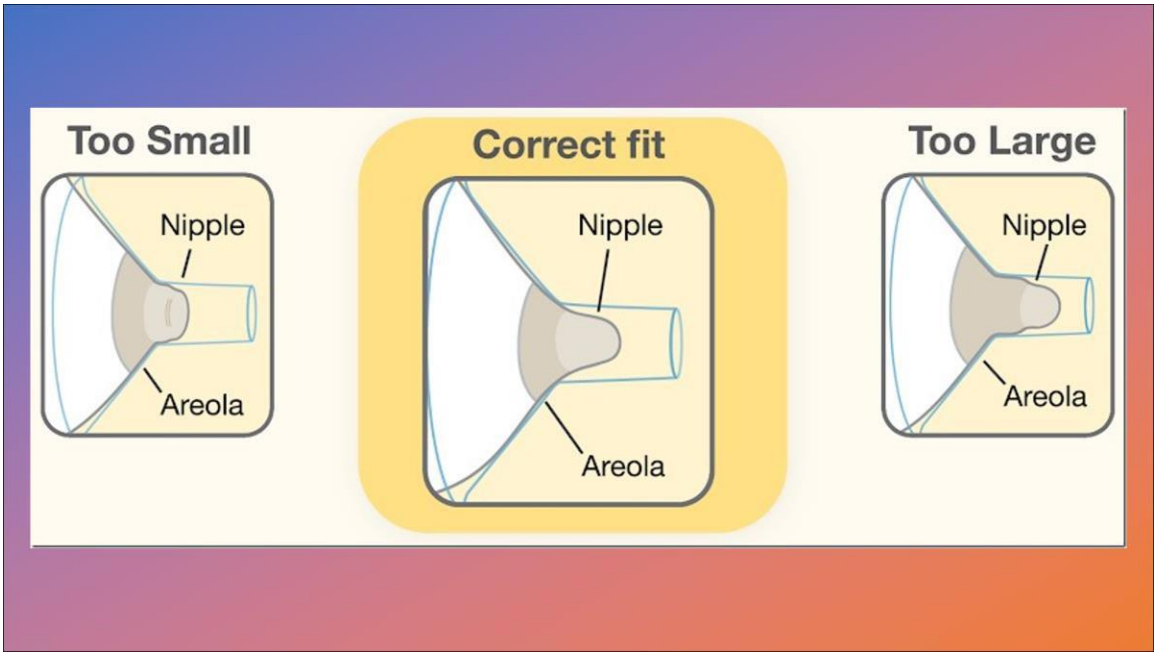
- Manual breast pumps do not use electricity, the mother applies the breast shield to her breast, and she creates a vacuum by squeezing the handle or lever. The milk is unexpressed into the container
- Most manual breast pumps are single sided, meaning that one breast is expressed at a time the mother has control over the duration of each cycle and the frequency of the cycles.

Breast Pumps - Battery or Electric

- Electric breast pumps use either electricity or a battery to create energy for section and have a control panel that allows the mother to determine the intensity of the suction. Usually, these pumps can be used to single or double pump. Most electric breast pumps have a setting that mother can use to control the pattern of suction.
- Women who rely on the electric breast pumps need to make sure that they have a backup manual pump or know how to manually express in case of an emergency, or electricity is not available.

Pump Flanges and Cleaning Pump Parts

- Fitting Breast Pump Flanges
  - Most breast pumps come with a standard size flange although one size does not fit all. The nipples should fit comfortably in the center of the flange or shield. And once the pump is turned on, the nipples should move easily forward and back through the shield. The areola should not be drawn into the tunnel of the shield. It is expected that the nipple will gently rub along the sides of the tunnel. The shield should provide a good seal around the breast and pumping should not pinch, pull, or irritate the nipple, areola, or breast.
- Cleaning Breast Pump Parts
  - All breast pump parts that come into direct contact with breast milk, such breast flanges, should be cleaned after each use by washing in warm soapy water using a clean brush then rinsed. Sterilization by boiling or steam bags is not necessary to keep these parts safe and sanitary.
  - However, cleaning each time is not necessary with certain pumps– refer to the user's guide of your specific pump model for directions on cleaning.



Storage and Use of Breastmilk

Storage of Expressed Milk

- Containers for milk storage may include:
  - Hard plastic BPA-free bottles
  - Glass bottles
  - BPA-free sturdy plastic bags, made for milk storage
- Container should be washed in hot soapy water or in a dishwasher before used for storing breastmilk
- Freshly expressed breastmilk may be stored safely at room temperature for four to six hours.
- Freshly expressed breastmilk that is stored in small coolers with ice packs is safe for 24 hours before being frozen or used.
- Freshly expressed breastmilk may be stored in a refrigerator for up to six days. After six days, it is best if the milk is either used or put in the freezer.

Storage of Expressed Milk

- Freshly expressed breastmilk may be kept in a freezer for 12 months, ideally in the back of the freezer where repeated re-warming will not occur.
- Containers of breastmilk intended for the freezer should have some room left for expansion due to freezing
- All storage containers of breast milk should be labeled with a date of milk expression in the name of the child if the milk will be used in a daycare setting
- Usually, babies will take 2 to 4 ounces of expressed breast milk in a bottle, so freezing in two-to-four-ounce increments helps to prevent waste.
- Families will occasionally complain that stored breast milk smells or tastes funny. These changes are due to the breakdown of fat into fatty acids. The fatty acids become oxidized, or rancid, the older the milk is. This is like what happens to age cheese. Usually, infants won't refuse to drink the milk if the milk is safe .

Use of Expressed Breastmilk

- Fresh milk is healthier than frozen milk
- Sometimes babies don't mind drinking cooled breast milk.
- Never microwave breast milk. Microwaving causes hot pockets in the milk and destroys many healthful properties of breast milk.
- Frozen breast milk may be defrosted in the refrigerator overnight or in a container of warm water.
- Once a baby begins drinking express breast milk, the milk becomes contaminated with bacteria from the baby's mouth.
- If a mother has a bacterial or yeast infection of the breast, it is still fine to store and feed the milk later.


Thank you for your participation!
Nursing Knowledge and Breastfeeding Education
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Resources available upon request*

Appendix K: Evaluation of the Staff Education Project, Process, and my Leadership by CEs

Title of Project: Nursing Knowledge and Breastfeeding Education

Student: Mary D. Miller, MSN, RN.

Instructions: Thank you for completing the Summary Evaluation on my project. Please complete and send anonymously via interoffice mail to:

I. Content Expert Approach

a. Please describe the effectiveness of this project in terms of communication, and desired outcomes etc.

b. How do you feel about your involvement as a content expert member for this project?

c. What aspects of the content expert process would you like to see improved?

II. There were outcome products involved in this project including an educational curriculum and pre/ posttest.

a. Describe your involvement in participating in the development/approval of the products.

b. Share how you might have liked to have participated in another way in developing/approving the products.

III. The role of the student was to be the leader of the project.

a. As a leader how did the student direct you to meet the project goals?

b. How did the leader support you in meeting the project goals?

IV. Please offer suggestions for improvement.

Appendix L: Pretest/Posttest CEs' Validity Index Scale Analysis

Rating *on X-Items Scale by Three Experts on a 4-point Likert Scale*

Test Item	Expert 1	Expert 2	Expert 3	Items Experts in Agreement	I-CVI
1	1	1	1	3	1.00
2	1	1	1	2	1.00
3	0	1	1	2	0.67
4	1	1	1	2	1.00
5	1	1	1	3	1.00
6	1	1	1	3	1.00
7	1	1	1	3	1.00
8	1	1	1	3	1.00
9	0	1	1	2	0.67
10	1	1	1	3	1.00
11	1	1	1	3	1.00
12	1	1	1	3	1.00
13	1	1	1	3	1.00
14	1	1	1	3	1.00
15	0	1	1	2	0.67
16	1	1	1	3	1.00
17	1	1	1	3	1.00
18	1	1	1	3	1.00
19	0	1	1	2	0.67
20	1	1	1	3	1.00
				S-CVI/Ave	0.93

S-CVI/UA, scale-level content validity index, universal agreement calculation method
Adopted from Polit, D. F., & Beck, C. T. (2006). The content validity index

Appendix M: Summary of the Evaluation of the Staff Education Program by Participants

"Met = 1" "Not Met" = 2

Objective Statement	Response	Number
1. Recognize the breast anatomy and discuss breastfeeding physiology	Yes No	1
2. Define key properties of human milk	Yes No	1
3. Recall benefits, risks, and barriers of breastfeeding to mother and infant	Yes No	1
4. Discuss the definition of exclusive breastfeeding	Yes No	1
5. Summarize how prescription medications/drugs/alcohol affect breastfeeding	Yes No	1
6. Apply communication in counseling the breastfeeding mother	Yes No	1
7. Define a feeding	Yes No	1
8. Recognize what it means to establish breastfeeding	Yes No	1
9. Summarize approaches that support breastfeeding	Yes No	1

10. Summarize approaches that support breastfeeding	Yes No	1
11. Use different positioning techniques for breastfeeding	Yes No	1
12. Determine proper latching	Yes No	1
13. Determine signs of adequate milk intake	Yes No	1
14. Analyze and support techniques to manage sore nipples, mastitis, plugged ducts, and engorgement	Yes No	1
15. Determine signs of adequate infant weight gain	Yes No	1
16. Recognize the role that pacifiers, nipple shields, and breast pumps play to assist a breastfeeding mother	Yes No	1
17. Describe proper storage and use of expressed breastmilk	Yes No	1
Average Score		*1
Comments:		