

IMPROVING NEWBORN OUTCOMES THROUGH IMPLEMENTATION OF DELAYED  
BATHING: AN INTEGRATIVE REVIEW

A Scholarly Project

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By

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### **Abstract**

Evidence-based practice is foundational to ensuring patient safety and quality of care.

Implementing evidence-based practice is the responsibility of all care providers. The completion of an in-depth integrative review provides a project leader the opportunity to explore the benefits of delayed bathing of the newborn and impact of the practice on newborn outcomes. The goal of this integrative review is to identify the benefits of delayed bathing and ways to implement this practice in the clinical setting. This integrative review seeks to present care providers with the most recent research and guidelines as it relates to the practice of delayed bathing of the newborn and recommendations for how that practice might be integrated into current care delivery in order to improve exclusive breastfeeding (EBF) rates. This project will determine if the benefits of delayed bathing impact newborn breastfeeding outcomes. The information will then be disseminated to a Women and Infants' Department in Northcentral Wisconsin for practice implementation to provide an overview of the scholarly project and its implications.

*Keywords:* newborn, delayed, bathing, skin care, breastfeeding, exclusive.

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## **DEDICATION**

I would like to dedicate this manuscript to my family. First, I would like to thank my children, Aidan, Elaina, and Liam for your understanding, support, and encouragement as I have worked to achieve this goal. I hope my perseverance and accomplishment serve as examples for you in realizing whatever dreams you imagine for yourselves. “Anything worth having is worth working really hard for.” To my dad, thank you for always telling me how proud you are of me, it means more than you will ever know. And finally, to my husband, Tim, you are my biggest fan and encourager. Thank you for always believing in me and walking alongside me on this journey. I could not have done this without you. I love you A, B & C!

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## SECTION ONE: INTRODUCTION

While high quality care that provides the best outcomes for patients should be the expectation, care based in evidence is not always necessarily the standard, particularly when evidence changes at a rapid pace. Care of an infant in the immediate newborn period and specifically, timing of the first bath, can impact a number of newborn outcomes including infection, exclusive breastfeeding, thermoregulation, blood glucose stability, and bonding (DiCioccio et al., 2019; Gozen et al., 2018). A delay in the initial bathing of the newborn has been shown to impact these outcomes. Recommendations regarding delayed bathing have been provided from several different entities in order to guide practice as it relates to care of the newborn. Variation in practice often leads to inconsistent outcomes. A lack of understanding about the benefits of delayed bathing by both care providers and parents, as well the absence of developed practice policies, may contribute to variations seen in practice.

An integrative review provides the evidence to support a change in practice aimed at improving outcomes. The American Academy of Pediatrics (AAP) recommends infants be exclusively breastfed for the first six months of age and that breastfeeding continue for the first year of life or beyond (AAP, 2012). According to the Center for Disease Control's Breastfeeding report card, the goal for exclusive breastfeeding for 6 months is only being met by about a quarter of the U.S. population and by 28% in the state of Wisconsin (CDC, 2018). An intervention such as delayed bathing has the potential to influence the initiation of breastfeeding, thereby affecting exclusive breastfeeding rates at hospital discharge and into the first months of life.

## **Background**

The practice of delaying the first bath for newborns in order to impact outcomes, including breastfeeding, has been discussed for a number of years. Recommendations for timing vary from as little as two hours to as many as 24 hours. The Association of Women's Health, Obstetric and Neonatal Nurses (AWHONN) recommends a delay of eight hours (AWHONN, 2013), while the World Health Organization (WHO) recommends delaying bathing for 24 hours, or at minimum six hours, depending on cultural considerations (WHO, 2013).

## **Problem Statement**

While recommendations for exclusive breastfeeding have been in place in the United States for nearly two decades, as a nation, we consistently fail to meet established benchmarks (Bartick et al., 2016). A variety of factors admittedly affect breastfeeding initiation and continuation. In order to meet the goals related to exclusive breastfeeding, providers need to examine factors and implement interventions aimed at improving breastfeeding rates.

## **Purpose Statement**

The purpose of this project is to examine the value of delayed bathing as an appropriate intervention that can be implemented to increase exclusive breastfeeding rates at hospital discharge, thereby impacting exclusive breastfeeding rates at six months of age. The goal is to examine the literature to determine the impact of delayed bathing on breastfeeding outcomes. The project leader will seek to identify best practices related to implementation of delayed bathing practice. The review findings will be disseminated to the project leader's practicum site to determine the applicability of the findings to support a pilot project and policy development. This project has the potential to lead to the development of a formal delayed bathing policy for the organization as well as improve EBF rates at discharge and beyond.

## **Clinical Question**

Delayed bathing has been shown to impact a variety of outcomes effecting breastfeeding initiation and continuation, including infection, exclusive breastfeeding, thermoregulation, blood glucose stability, and bonding (DiCioccio et al., 2019; Gozen et al., 2018). Given this impact, the project leader investigated the following clinical question as the basis of this review. Does the implementation of delayed bathing contribute to increased rates of exclusive breastfeeding at discharge?

## **Building the Scholarly Project**

While there are admittedly many interventions that may impact exclusive breastfeeding rates, both at discharge and six months of age, this project is narrowly focused on the impact of delayed bathing. Examining the practice of delayed bathing will involve a thorough search of the literature and subsequent critique and analysis to determine whether this practice should and could be implemented by organizations as an effective intervention to assist families in reaching the benchmarks for exclusive breastfeeding.

## **Project Goals**

Two broad goals will guide this review as a means of answering the clinical question.

- 1) Determine if evidence exists to support delayed bathing as an appropriate intervention to increase exclusive breastfeeding rates.
- 2) Investigate best practices for implementation of delayed bathing practice.

## **SECTION TWO: METHODS**

### **Organizing Framework**

The integrative review for this scholarly project applies an organizing framework to provide structure and a method to the review process. Whittemore and Knafl's integrative review

method was utilized by the project leader to guide the development of this integrative review. According to Whittmore & Knafl (2005), summary of literature allows for greater understanding of a particular healthcare problem. In an integrative review, both experimental and non-experimental research can be examined as a means of developing theory and applying research to practice. A systematic method of analyzing data is necessary to limit bias in a review (Whittmore & Knafl, 2005). Among the various methods for conducting a review of literature, the integrative review is the broadest method. This allows for a more comprehensive understanding of the phenomenon of interest (Whittmore & Knafl, 2005).

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework was used to enhance the integrative review process. This framework provides guidance for the search process, including literature selection, aggregation of results, and discussion of findings. Utilizing a checklist, the researcher is able to evaluate each section or topic of a research article, providing for a consistent and comprehensive approach to the review. The framework was especially helpful in this review in assisting the project lead to narrow the focus and inclusivity of the available resources.

### **Theoretical Framework**

Nursing theories provide guidance for nursing professionals engaged in practice and research. Theory can be applied to a scholarly project to provide an underpinning for project development. For this project, Pender's Theory of Health Promotion serves to provide the basis for care of the newborn and family as they transition through the newborn period and beyond.

The Theory of Health Promotion, intended to complement models of health protection, focuses on the goal of increasing patient's well-being (Nursing Theory, 2016). One of the four assumptions made by Pender include the fact health professionals, including nurses, represent a

part of the interpersonal environment of a patient, and thereby exert influence on patients throughout the span of their life (Nursing Theory, 2016). As it relates to this scholarly project, while the impact of health behaviors is manifested in the newborn, during the newborn period, the influence by the nurse is on the family. The practice of delayed bathing is beneficial to the newborn and may even be policy at an organization, however, parents ultimately have the ability to decide whether they want the initial bath delayed or not. The influence of the nurse is critical in the decision-making process of the parents.

In addition to four general assumptions, Pender outlines theoretical statements which provide the basis for work as it relates to health behaviors. The first statement that applies to this project is related to the fact patients most often commit to behaviors they view as personally beneficial (Nurse Theory, 2016). For the parents, they are likely to engage in health promotion behaviors, such as delayed bathing, if they find value in the behavior. They may see the practice of delayed bathing itself as beneficial or they may choose that practice as a means of improving breastfeeding success. Either way, it is important to discuss the benefits of delayed bathing with the parents as part of the education process and allow them to determine the value of the practice.

Another applicable statement discusses the notion that patients most often engage in health-promoting behaviors when they see those behaviors modeled by others, when the expectation is set for the behavior, and when there is support and assistance to engage in the behavior (Nursing Theory, 2016). Similarly, Pender explains the influence of families, peers, and health care providers, noting they are important sources of influence. The influence of these people can either increase or decrease a patient's commitment to and engagement in the specific health-promoting behavior (Nursing Theory, 2016). It would be helpful to consider and apply

Pender's Theory of Health Promotion as nurses seek to implement evidence-based practice and health behaviors.

### **Eligibility Criteria**

This integrative review was guided by the following research question: Does the implementation of delayed bathing contribute to increased rates of exclusive breastfeeding at discharge? The question was developed in response to inconsistent implementation of delayed bathing practice and the aim to determine the impact of an intervention to support the practice of delayed bathing, such as staff and patient education. Should the evidence support the practice of delayed bathing as a means of improving EBF rates, this information could be disseminated to support implementation of this practice and related interventions in the practice setting.

Eligibility criteria were established to ensure the best research was ascertained for this review. Inclusion criteria were primary research studies or reviews published in the English language in scholarly or peer-reviewed journals in the last five years. Research studies in other countries were included, however, research conducted in settings in non-Western countries that focused specifically on cultural differences were excluded as they limited generalizability. Gray literature including reports from the World Health Organization and Association of Women's Health, Obstetrics, and Neonatal Nurses were also included. Articles were further analyzed for applicability to the project and strength of evidence.

### **Information Sources**

A comprehensive appraisal is critical to gathering evidence pertinent to an integrative review. The examination of literature related to the practice of delayed bathing and exclusive breastfeeding included review of several databases including CINAHL, Cochrane Library, ProQuest, MEDLINE (Ebsco), Ovid, and PubMed. Within each database, criteria were used to

filter the findings to ensure the information was relevant to the practice of delayed bathing and exclusive breastfeeding. Resources were identified when they were found to align with the established inclusion and exclusion criteria.

## **Search**

The Iowa Model emphasizes the importance of conducting a comprehensive literature review when seeking to make a change in practice. For this project, an extensive review of literature was conducted to examine research findings specific to the practice of delayed bathing and its potential impact on exclusive breastfeeding. This review included search of databases including CINAHL, Cochrane Library, ProQuest, MEDLINE, Ovid, and PubMed. Keywords for the search included the terms newborn, delayed, bathing, skin care, breastfeeding, and exclusive. The keywords were searched in combination to further filter articles. The initial search of these keywords resulted in over 1200 articles. These articles were categorized using criteria including publication in the last 5 years, peer review, and publication in the English language. Research studies in other countries were included, however, research conducted in settings in non-Western countries that focused specifically on cultural differences were excluded as they limited generalizability. After the extensive search and application of inclusion criteria, 24 articles were selected based on their alignment with the focus of this project and level of evidence.

To evaluate and organize the strength of the sources, Melnyk's Levels of Evidence framework was used. This framework categorizes research based on strength of the evidence from Level 1 to Level 7, with Level 1 representing the strongest level of evidence (Melnyk & Fineout-Overholt, 2015). The goal of the literature review was to find research with the strongest levels of evidence to ensure highest quality for this review.

Two systematic reviews of randomized controlled trials and two randomized controlled experimental trials represented the highest levels of evidence (Level 1 and Level 2, respectively) for this review. Other articles chosen based on inclusion criteria included one quasi-experimental study (Level 3), six cohort and cross-sectional studies (Level 4), four systematic reviews of mixed method research (Level 5), six descriptive or qualitative studies (Level 6), and two expert opinion reports. The detailed matrix of the included literature can be found in Appendix A.

### **Study Selection**

To determine the strength of evidence for the practice of delayed bathing as it relates to improving breastfeeding outcomes, an integrative review of current research was conducted to analyze the strength of evidence for this intervention. Using an evidence matrix, the literature in this review was analyzed and critiqued (Appendix A). The articles focused on the practice of delayed bathing and factors impacting exclusive breastfeeding. Liberty University's Institutional Review Board granted approval based on the institution's guidelines (Appendix B). A total of 24 articles were identified based on the defined search process.

### **Data Collection**

The process of collecting data from primary research can be challenging due to the numerous variables affecting breastfeeding outcomes. Remaining focused on the variable of interest is exceedingly important when conducting an integrative review to ensure the review provides the clearest understanding of the phenomenon or problem (Whittemore & Knafl, 2005). Inclusion of both experimental and non-experimental research allows the reviewer to apply findings directly to practice and policy.

The project leader is solely responsible for the collection of literature in this review and has completed the Collaborative Institutional Training Initiative (CITI) modules necessary to

meet institutional requirements (Appendix C). Assistance from a librarian provided additional guidance regarding database and keyword selection. A search of databases including CINAHL, Cochrane Library, ProQuest, MEDLINE (Ebsco), Ovid, and PubMed were conducted to identify applicable articles. The vast amount of literature on the topic required the search be limited to the use of peer-reviewed research published in English in the last five years.

### **Data Items**

Following the initial search of literature, the process of filtering and categorizing the data was initiated. This step in the integrative review allows for reduction of data according to inclusion criteria, date of publication, subject matter, and relevance to the review. Resulting in a more manageable amount of information, the remaining literature was further evaluated for rigor and its applicability to the clinical question. A more comprehensive review of the remaining literature allowed for the project leader to ascertain themes in the research.

### **Risk of Bias in Individual Studies**

Recognizing the risk for bias in the individual studies, the project leader must ensure the review is held to the same level of rigor as original research. A variety of types of reporting bias can impact the quality of a systematic review (Moher et al., 2009). The PRISMA flow diagram guides the search process from identification to inclusion (Moher et al., 2009). The use of this diagram helps to reduce risk which may be a result of a too narrowly focused search. No risk of bias was identified in the themes or outcomes of this integrative review.

### **Summary Measures**

The review of literature supports interventions aimed at improving breastfeeding rates, as we continue to fall short of breastfeeding goals. There is strong evidence to support the benefits of breastfeeding and therefore interventions to increase those rates. The purpose of this

integrative review was to identify evidence to support the practice of delayed bathing as an intervention to impact exclusive breastfeeding rates. This comprehensive review and analysis of literature resulted in several themes to support the practice of delayed bathing. The literature matrix used to review articles also provided analysis of findings, themes, strength of evidence, and limitations.

### **Synthesis of Results**

The results of this integrative review demonstrate the need for additional interventions aimed at improving EBF rates. Evidence for the practice of delayed bathing as an effective intervention for improving breastfeeding outcomes is strong. The implications of delayed bathing on other outcomes that may negatively impact breastfeeding initiation and continuation are also consistent in the literature. This evidence supports the implementation of a delayed bathing policy in the practice setting to align newborn care with best practice evidence and improve breastfeeding outcomes.

## **Results**

To gain a better understanding of the potential impact of the practice of delayed bathing on exclusive breastfeeding rates, a literature review was conducted. The review examined the benefits of delayed bathing and analyzed how those benefits might contribute to the successful initiation and continuation of breastfeeding. A review of the literature provides consideration of current evidence supporting the practice of delayed bathing to offer support for a change in this practice of newborn care.

### **Study Selection**

The first step in an integrative review is to conduct a comprehensive search of scholarly research related to the topic of interest. Whittemore & Knafl (2005) suggest including both

experimental and non-experimental research as well as grey literature. The rigor of the review must be such that biases are averted. The project leader for this review performed a comprehensive computer search of scholarly databases. Additional resources were gleaned from a review of the reference lists of various articles.

Databases including CINAHL, Cochrane Library, ProQuest, MEDLINE (Ebsco), Ovid, and PubMed were searched for current research. Keywords for the search, used both individually and in combination, included the terms newborn, delayed, bathing, skin care, breastfeeding, and exclusive. The PRISMA diagram assisted the project leader in the search and article analysis process (Appendix D).

Over 1300 articles were yielded in the first search with the chosen keywords. The PRISMA flow diagram reflects the relevant articles identified in the first search from the resulting database searches; CINAHL (294 articles), Cochrane Library (57 articles), MEDLINE (Ebsco) (311 articles), OVID (230 articles), PubMed (269 articles), and ProQuest (228 articles). To ensure the most relevant evidence was identified for this review, additional filtering criteria was applied to the search process. Criteria included publication in the English language in the last five years and in peer-reviewed journals.

Duplicate articles were removed, and analysis of the remaining literature was conducted to ensure the research aligned specifically with the research question for this project. A total of 48 articles were identified that were further reviewed for rigor and project alignment. Following that review, a total of 25 articles were selected to be included in the Integrative Review based on their level of evidence and alignment with the research question (Appendix A). Research studies in other countries were included, however, research conducted in settings in non-Western countries that focused specifically on cultural differences were excluded as they limited

generalizability. The final research articles that were selected for inclusion provide evidence for the implementation of the practice of delayed bathing as an intervention to improve exclusive breastfeeding rates.

The literature included in this review encompassed a variety of research methods, including qualitative, quantitative, and mixed methods designs. Several systematic reviews were also included in the final body of literature. Melnyk's Levels of Evidence was used to analyze the strength of the research as well as provide the ability to identify themes within the literature through the development of an evidence table. Similarities and differences were identified in the findings through the appraisal process. The PRISMA checklist guided the appraisal of the overall body of evidence and allowed the project leader to ascertain the level of support for the suggested intervention to be implemented in the practice setting.

### **Study Characteristics**

The focus of this integrative review was to determine the impact of delayed bathing of the newborn on EBF outcomes. While there are likely several variables that affect breastfeeding initiation, exclusivity, and duration, this review sought to focus solely on the practice of delayed bathing. Given this specific focus, and the vast amount of research on breastfeeding, it was important to refine the search of literature appropriately. In order for an integrative review to best contribute to a change in practice or policy, it must be comprehensive, yet focused in its scope (Whittemore & Knafl, 2005). Through the review process, literature was analyzed for its alignment with inclusion/exclusion criteria as well as relevance to the research question.

### **Results of Individual Studies**

Themes identified in the integrative review of literature included the benefits of exclusive breastfeeding, impact of education for staff and parents when implementing evidence-based

practice, importance of early breastfeeding, and the benefits of delayed bathing. The literature was grouped by theme to further analyze findings.

### ***Benefits of Breastfeeding***

The evidence for breastfeeding as the preferred method of nutrition for newborns and infants has been consistent and strong in the literature for years. The American Academy of Pediatrics recommends infants be exclusively breastfed for the first six months of life and breastfeeding continue at least through the first year (AAP, 2012). The World Health Organization has echoed the AAP recommendations, adding that breastfeeding extend through two years of age and beyond (WHO, 2011). In spite of long-standing and consistent recommendations, rates of EBF in the United States continue to be low. A recent analysis of the National Survey of Children's Health data found in their sample of 24,552 participants that 79% initiate breastfeeding, while only 17% are exclusively breastfeeding at six months of age (Stough et al., 2019). The high initiation rates indicate women desire to breastfeed their infants. The Centers for Disease Control (2018) identified lack of support by health care providers, family, and employers as contributing causes of low EBF rates.

Focused on the impact of suboptimal breastfeeding rates, Bartick et al. (2016) studied the impact of these low rates in the United States on a hypothetical cohort of 1.9 million women giving birth to 3.5 million infants, finding the suboptimal rates contribute significantly to maternal and infant deaths as well as excessive medical costs. The study found one maternal or child death could be prevented for every 597 women who optimally breastfeed. Similarly, a large study conducted in the United Kingdom examined the impact of EBF and found a significant risk for infection in infants with breastfeeding durations of less than four months (Quigley et al.,

2016). These studies emphasize the importance of supporting our families in meeting the established breastfeeding goals.

### ***Early Breastfeeding Initiation***

The American Academy of Pediatrics, in its policy statement related to the practice of breastfeeding and use of human milk, outlines several hospital practices to support breastfeeding success including breastfeeding in the first hour of life, early skin-to-skin contact, rooming-in, and avoidance of pacifier use (AAP, 2012). Additionally, the AAP states there needs to be revision of any policies that are disruptive to the practice of early skin-to-skin contact, which would include early bathing of the newborn and other standard newborn care practices.

In a large cross-sectional study conducted in Taiwan, intention to breastfeed was identified as one of the strongest factors associated with exclusive breastfeeding (Waits et al., 2017). The researchers found EBF rates are further impacted by a variety of factors, including skin-to-skin contact and rooming in. A systematic review published in the Cochrane Database supported this finding determining skin-to-skin contact to be associated with longer durations of exclusive breastfeeding (Moore et al., 2016). A cross-sectional study of nearly 8000 Indonesian participants found breastfeeding in the first hour of life to be associated with increased breastfeeding exclusivity (Paramashanti et al., 2016). In alignment with the Indonesian study, exclusive breastfeeding in the hospital was found to be a strong predictor of breastfeeding duration in a cohort study conducted in Canada by Vehling and colleagues (2018). Though a single qualitative study, the findings related to the examination of 3195 mother-infant dyads support practices that increase rates of exclusive breastfeeding in the hospital setting thereby contributing to success in meeting the goals of longer duration of exclusive breastfeeding.

### ***Bathing Practices***

Several articles examined newborn bathing in general and the practice of delayed bathing of the newborn and its impact on breastfeeding and other newborn outcomes. Findings in two studies provide evidence that the practice of bathing itself can be stressful to the newborn, resulting in a physiologic response. Though a small study focused on preterm infants, Bembich et al. (2017) examined the response of infants to bathing, finding consistent expressions of stress response in the infants. In response to evidence of bathing being a stressful event for the newborn, Caka & Gozen (2017) conducted a study comparing traditional tub bathing and swaddled bathing using a randomized trial design of 80 infants. Their research found swaddled bathing allowed the infant to better maintain its temperature, oxygen saturation levels, and heart rate. Furthermore, infants who were bathed using the swaddled approach were found to have significantly less stress response during the bath (Caka & Gozen, 2017). When considering the timing and method of bathing, it is important to contemplate the potential impact the practice may have on the newborn. For instance, hypothermia requiring warming in a radiant warmer may be an outcome of a bath. This would cause the newborn to be separated from the mother, thereby impacting the ability to breastfeed.

Research looking specifically at the impact of delayed bathing supports the practice as a means of affecting several newborn outcomes. At this time there is not a standard recommendation as it relates to the practice of delayed bathing. The World Health Organization recommends a delay of 24 hours, or at least six hours if there are cultural reasons, while AWHONN recommends a delay of eight hours (Smith & Shell, 2017). A small experimental study conducted by Gozen et al. (2019) examined the body temperatures of infants following bathing at either 24 hours after birth or 48 hours after birth and found body temperatures in the

infants bathed at 48 hours were significantly higher than those bathed at 24 hours of life. Providing further evidence for the practice, a cross-sectional study conducted on over 3000 infants in Bangladesh found delayed bathing of 72 hours was significantly associated with a decrease in neonatal mortality (Dawson & Sibbritt, 2016). Both glucose stability and temperature regulation were found to be positively impacted by delayed bathing of 24 hours in a pre-post retrospective chart review study conducted in the Midwest of the United States (Chamberlain et al., 2019). A review of literature conducted by Lund (2016) supports the practice of delayed bathing, finding the practice to be associated with improved breastfeeding. In a larger study, DiCioccio and colleagues (2019) found similar evidence in their study of 996 mother-newborn dyads. In a retrospective, pre-postintervention study, DiCioccio et al. (2019) found delayed bathing to be significantly associated with an increase in exclusive breastfeeding rates in the hospital.

### ***Education for Staff and Parents***

Education for staff and parents is important to implementing an evidence-based practice into the clinical setting. Staff and parents would benefit from education both on the practice of delayed bathing and its impact on breastfeeding as the practice is integrated into the normal care of the mother-infant couplet. Several of the articles in this review focus on the factor of education in improving newborn outcomes. A systematic review of epidemiological studies in Brazil identified several factors associated with exclusive breastfeeding (Boccolini, et al., 2015). This review of 27 articles identified education received in the hospital setting and prenatally as factors associated with exclusive breastfeeding rates. Being a first-time mother, thereby increasing the need for education, was found to be a factor both in the study by Boccolini et al. (2015) and Cato et al. (2017) as they examined risk factors related with EBF of less than two

months. The first breastfeeding taking place outside of the delivery ward was identified as a factor associated with shorter duration of EBF. This finding supports the practice of initiating breastfeeding early and reserving newborn care practices, such as bathing, until the baby has had the opportunity to attempt a feeding. A positive first breastfeeding experience was associated with longer duration of EBF (Cato et al., 2017). A mixed methods systematic review of 72 articles examining the EBF policies in South Africa found postnatal support by staff, integrated care of the mother-baby couplet, and education of health staff to be significant in improving EBF rates (Nieuwoudt et al., 2019). Kim et al. (2018) conducted a systematic review of meta-analysis and randomized controlled trials, finding professional led interventions and a protocol for provider training to be significant in increasing EBF duration. The authors suggest a multicomponent approach to improving EBF rates and duration given the review found interventions aimed to promote breastfeeding significantly improved EBF rates at six months. The quasi-experimental study conducted by Susiloretni et al. (2015) resulted in findings similar to Kim et al. (2018) noting maternal knowledge of breastfeeding to be one of the major factors associated with EBF duration. Though specific to the beliefs and practices in African countries, Adejuyigbe et al. (2015) found in their qualitative study that practices related to thermal care of the newborn are often based in beliefs requiring clarification or education, such as the thought the presence of vernix is bad or delaying the bath will result in body odor in the newborn. This need for education can be applied to any population in which a new practice is being implemented.

## **Synthesis**

Integrative review results can be presented by utilizing a process which supports a detailed examination of the evidence. A four-step process, including data reduction, data display,

data comparison, and verification of conclusion are helpful in providing the most detailed presentation of results (Whittemore & Knafl, 2005).

### ***Data Reduction***

Data reduction involves the breakdown of data into categories or subgroups in order to manage the data that has come from a variety of methodologies (Whittemore & Knafl, 2005). Whittemore & Knafl (2005) suggest the use of a logical classification system, such as grouping studies by type of evidence. The next step, and one crucial to the rigor of the process, is the reduction of data through extraction and coding to further simplify and organize the data (Whittemore & Knafl, 2005). For this review the reduction of data began with classification by research design and then was further grouped conceptually as themed emerged specific to benefits of breastfeeding, early initiation of breastfeeding, delayed bathing, and education.

### ***Data Display***

The display of data allows for the visualization of patterns across the various sources and prepares the researcher for interpretation of the data (Whittemore & Knafl, 2005). In this review data was categorized in a matrix to allow for the identification of patterns within the literature. The matrix was categorized in vertical columns by source, study purpose, sample, methods, results, level of evidence, limitations, and relevant to research question.

### ***Data Comparison***

Once data is organized systematically in a matrix, a comparison of the data can be executed. The process of data comparison involves examination of the data to “identify patterns, themes, or relationships” (Whittemore & Knafl, 2005, p. 551). The identification of higher-order relationships may be seen through clustering, identification of intervening factors, or common patterns (Whittemore & Knafl, 2005). Comparison of data in this review identified the

relationships among breastfeeding benefits, initiation, delayed bathing, education and EBF outcomes. The critical analysis of the research and comparison of the data resulted in the emergence of these themes and relationships.

### ***Conclusion Drawing and Verification***

The final phase in the data analysis process involves taking the patterns and relationships determined in the earlier steps and abstracting that data into more general concepts or generalizations (Whittemore & Knafl, 2005). Conclusion drawing and verification require revision to ensure as much data as possible is included (Whittemore & Knafl, 2005). The project leader must be open to seeing any patterns that emerge and must be careful not to exclude evidence that is pertinent but may not align with preconceived ideas (Whittemore & Knafl, 2005). In this review the project leader identified the themes and relationships while recognizing the many variables that ultimately impact exclusive breastfeeding rates. The relationships identified through this review provide the evidence for an organization to consider implementing the practice of delayed bathing into the clinical setting.

### ***Additional Analysis***

Given the themes and relationships identified within this literature review, the project leader was able to provide evidence to support the implementation of the practice of delayed bathing as a way to improve exclusive breastfeeding rates, both on discharge from the hospital and beyond. The first theme was the clear evidence of the benefits of breastfeeding, both for the mother and the infant. Organizations of authority consistently recommend exclusive breastfeeding for the first six months of life and through the first and second years of life (AAP, 2012; WHO, 2011). The rates of EBF in the United States are consistently lower than recommendations (Stough et al., 2019) and the impact of those suboptimal rates is significant

(Bartick et al., 2016; Quigley et al., 2016). Interventions aimed at improving these rates should be considered and implemented.

The impact of the early initiation of breastfeeding cannot be overstated as it relates to breastfeeding success and duration. This relationship must be considered when normal newborn practices such as foot printing, pictures, vaccinations, bathing, or other procedures needing completion. These procedures must be prioritized, and in some cases delayed, to allow the first breastfeeding to happen in the immediate period following delivery as breastfeeding in the first hour of life is associated with increased EBF duration (Paramashanti et al., 2016).

Bathing practices must also be considered as it relates to breastfeeding initiation and subsequent EBF duration. The relationship between the method and timing of bathing have been shown to impact breastfeeding. Any condition, such as hypothermia, hypoglycemia, or tachypnea may require separation from the mother, thereby limiting breastfeeding attempts. Delaying the bathing of the newborn is consistent with newborn care practices and has been shown to improve breastfeeding and other outcomes that may impact the ability to breastfeed (Chamberlain et al., 2019; Lund, 2016; DiCioccio et al., 2019).

The final theme of education for parents and staff supports the implementation of the delayed bathing practice, as evidence shows the benefits of increasing understanding of various interventions, both for those providing and receiving the care (Nieuwoudt et al., 2019; Kim et al., 2018). As it relates to the implementation of delayed bathing, this project leader would suggest a department develop education for the staff regarding the benefits and practice of delayed bathing. Additionally, an educational resource could be developed for parents covering the benefits of delayed bathing, common questions parents may have regarding the practice, and tips for bathing the newborn, both initially and once they are home. Increasing understanding of the practice,

both for staff and parents, may increase the likelihood implementation of the practice is successful.

### **Evaluation Methods**

This integrative review has been evaluated both by the project leader and project chair several times through the development process to ensure project rigor and quality. Consistent evaluation and revision of the review was conducted to ensure the project met the requirements of Liberty University's Doctor of Nursing Practice program. The development of the literature matrix and evaluation of the included literature by the project leader assisted in ensuring the identified themes were supported by the aggregated data. Further review was conducted to ensure no biases impacted the integrative review process. All references were cited properly.

A comprehensive review of the literature was performed to ensure the evidence included in the review was adequate in providing the basis for answering the identified research question. Type of study, methodology, and inclusion/exclusion criteria were aspects of the research that were examined as part of the evaluation process. The PRISMA flow chart was used and provided guidance for inclusion and exclusion of articles. The PRISMA flow chart developed by the project leader is included in this review as Appendix D.

Once an article was deemed to be appropriate given its alignment with the research question, Melynk's Levels of Evidence was used to assess the strength of each article (Melynk & Fineout-Overhold, 2011). This well-established tool assists the project leader in analyzing research strength. For this review, the leader sought to include the highest-level evidence. Evidence was evaluated according to research design as well as the validity and reliability of the research findings. Research limitations were also considered during the evaluation process.

Based on the evidence, and in collaboration with the project leader's practicum site, a proposed education plan was developed for staff and patients to guide implementation of a delayed bathing practice at the organization. The proposed implementation plan and resources (Appendices E, F, G) were evaluated by the Director of the Women and Infants' department, two managers of the department, and several staff members on the unit. Positive feedback was received and a request to use the pilot resources was granted by the project leader to the organization.

The organization may choose to evaluate the impact teaching of the staff and parents has on initial bathing times. In order to evaluate the impact of the practice of delayed bathing on exclusive breastfeeding rates on discharge, pre- and postintervention data should be collected by the organization. The department can use current breastfeeding data that is collected as part of the requirements of the Joint Commission to evaluate impact on EBF rates.

## **Discussion**

### **Summary of Evidence**

This integrative review provided evidence to support delayed bathing practice as an intervention to improve exclusive breastfeeding rates (Bembich et al., 2017; DiCioccio et al., 2019; Gozen et al., 2019). The review was intended to provide support for the intervention to improve EBF rates on discharge from the hospital setting in hopes of ultimately aligning overall EBF duration with current recommendations (AAP, 2012; WHO, 2011). Several of the studies provided evidence specific to the impact of delayed bathing on EBF rates (Bembich et al., 2017; DiCioccio et al., 2019; Gozen et al., 2019).

Additional research provided evidence of the effect bathing itself has on the newborn, which may in turn negatively impact the ability of the infant to breastfeed early (Chamberlain et

al., 2019; Caka & Gozen, 2017; Gozen et al., 2019; Waits et al., 2018). Early initiation of breastfeeding has been found to impact EBF rates and duration (Vehling et al., 2018; Kim et al., 2018; Paramashanti et al., 2016). Education was a consistent theme noted in the literature when it comes to improving breastfeeding outcomes (Cato et al., 2017; Boccolini et al., 2015; Kim et al., 2018; Susiloretni et al., 2015; Nieuwoudt et al., 2019; Sinha et al., 2015). Given the evidence derived from this integrative review, a pilot project to implement the practice should be considered as a means of improving this important newborn outcome.

### **Dissemination**

This review of current literature related to the practice of delayed bathing and its potential impact on exclusive breastfeeding rates provides evidence to support implementation of the intervention. Implementing a new practice must be a thoughtful, deliberative process to increase the likelihood of success. Grounded in Pender's Theory of Health Promotion, implementation of this practice serves to increase the well-being of both the mother and child (Quigley et al., 2016; Bartrick et al., 2016). The proposed educational resources (Appendices E, F, G) further support the Theory as Pender explains the importance of buy-in as it relates to health promoting behaviors as well as the influence of the nurse in a patient's decision to engage in certain behaviors (Nursing Theory, 2016). Implementing the practice of delayed bathing, through the education of staff and parents, has the potential to make a significant impact on newborn outcomes.

A variety of avenues may be considered as it relates to the dissemination of this project. The project leader, having comprehensively reviewed and analyzed the literature, might seek to publish the integrative review in a journal specific to the care of the newborn population, such as the *Journal of Neonatal Nursing*. Sharing the project in this way would serve to reach

stakeholders and providers who are engaged in caring for this patient population. Dissemination of this review and proposed implementation has the potential to spur others to engage in a similar project in their practice settings.

Submission of this project to a conference, either locally or nationally, for a poster or podium presentation, is another consideration for dissemination. A poster presentation is a great option for the novice presenter, providing the opportunity to reach more attendees and engage in networking with participants (Saver, 2017). A podium presentation allows the presenter to share their research with a group in a more formal manner, allowing interested participants to gain knowledge and seek clarification (Saver, 2017).

The results of this integrative review will be disseminated to the project leader's practicum site. As part of this project, the leader has developed resources to support practice implementation, including an educational PowerPoint for staff, post-education quiz, and educational handout for parents (Appendices E, F, G). These evidence-based resources provide stakeholders the materials needed to begin the implementation process should they be interested in doing so following project dissemination.

### **Limitations**

A barrier to implementation of this project may be competing priorities within an organization. Leaders must be able to see the value of the practice change in order to support its implementation. This integrative review provides the evidence for the practice of delayed bathing and the developed resources may help to support the implementation process. Grounded in this evidence, departmental or organizational leaders must be able to get buy-in from the various stakeholders, including department staff, care providers, and parents. Metrics specific to current exclusive breastfeeding rates, such as those reported in the Joint Commission's National

Quality Measures PC-05 can be used to support efforts to improve outcomes related to exclusive breastfeeding rates.

Consideration must be given to any concerns nursing staff may have about how implementation of this practice might impact their current workflow. Their perception of the change in practice, either negative or positive, is critical to the success of the project. Engaging nursing staff in the pilot process allows for their input, likely increasing the success of the practice implementation. The education developed for staff as part of this project could serve an important resource as it provides nurses the evidence to support the practice as well as discusses how the practice can be implemented through parent education. As previously discussed, the influence of nurses is significant when it comes to patients engaging in health promotion behaviors (Nurse Theory, 2016). This theory further emphasizes the need to first get buy-in from the nursing staff before attempting to implement this change in practice and delivery of care for patients. While the evidence supports the practice of delayed bathing, without the opportunity to pilot the project, it cannot be said the developed resources would definitively impact the process of practice implementation.

While this integrative review provides the evidence to support the practice of delayed bathing as a means of improving exclusive breastfeeding rates, limitations in the process must be noted. This review would benefit from a larger number of research articles with a higher level of evidence. Given the vulnerability of the newborn population, it was difficult to find randomized-controlled studies examining the direct association between delayed bathing and exclusive breastfeeding. Conclusions can be drawn based on the evidence; however, additional research is needed to determine a direct association. The outcome of exclusive breastfeeding is affected by a variety of confounding variables and therefore it is difficult to control for a single intervention,

such as delayed bathing, particularly when dealing with the vulnerable newborn population. Another limitation that should be noted is the project leader was the sole source of the literature review. While the use of the PRISMA flowchart and checklist was used to reduce the risk of researcher bias, this is a limitation that has the potential to influence the findings of this integrative review.

## **Conclusion**

This integrative review examining the practice of delayed bathing as a means of improving exclusive breastfeeding rates provides the evidence for implementation of this practice in the clinical setting. Aggregation of evidence, both qualitative and quantitative, provided a thorough examination of the impact of delayed bathing on exclusive breastfeeding outcomes. The process of breastfeeding is complex, and therefore the project leader aimed to include a comprehensive and strong body of evidence to support the practice of delayed bathing as one intervention that has the potential to affect outcomes.

The review of evidence demonstrated the complexity of breastfeeding outcomes and the benefit of a multi-intervention approach to improving those outcomes (Waits et al., 2017; Kim et al., 2018). Delayed bathing is one approach that can be implemented and would likely further improve outcomes if practiced in combination with other interventions including skin-to-skin contact and early breastfeeding initiation. The cost of suboptimal breastfeeding, both financial and physical, is significant and therefore steps should be taken to improve exclusive breastfeeding rates (Bartick et al., 2016).

Education for staff and parents would be an important first step in the implementation of this practice in the clinical setting. Resources such as those developed by the project leader can support an organization in obtaining buy-in from staff and parents prior to practice

implementation. According to Pender's Theory of Health Promotion, the influence of nurses cannot be understated when planning for practice changes aimed at improving health promotion behaviors.

The positive impact of breastfeeding on the health of the mother and child is clear (Bartick et al., 2016). While the process is complex, gains can be made through the implementation of practices that have been shown to impact outcomes. This integrative review identifies delayed bathing as an intervention helping to meet established exclusive breastfeeding goals. Healthcare organizations providing care to this patient population should consider implementation of the practice of delayed bathing as a means of improving outcomes. Following completion of a pilot study, an organization can collect and analyze data to determine the sustainability of this practice change in their organization.

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## Appendix A

### Evidence Table

Source	Study Purpose	Sample	Methods	Study Results	Level of Evidence (Melnik)	Study Limitations	Would Use as Evidence to Support a Change? Provide Rationale.
Adejuyigbe, E.A., Bee, M.H., Amare, Y., Omotara, S.A., Iganus, R.B., Manzi, F., Shamba, D.D., Skordis-Worrall, J., Odebiyi, A., & Hill, Z.E. (2015). "Why not bathe the baby?": A qualitative study of thermal care beliefs and practices in four African sites. <i>BMC Pediatrics</i> , 15(156), 1-7. <a href="https://doi.org/10.1186/s12887-015-0470-0">https://doi.org/10.1186/s12887-015-0470-0</a>	To examine the beliefs and practices of neonatal thermal care and its impact on newborn outcomes.	Based on saturation sampling, resulting in different sizes at each of the 4 sites. Included 16-20 care narratives, 8 observations, and 40 in-depth interviews.	Qualitative study	Culture guides beliefs and practices resulting in early and frequent bathing of newborn. Education is needed to promote thermal care	Level 6: descriptive design	Does not include thermal care practice impact on breastfeeding, small geographical area, small sample size	Yes-Even though level 6, provides information on the overall benefits of delayed bathing practices which support project, but does not provide data specific to breastfeeding.
American Academy of Pediatrics. (2012). Policy statement: Breastfeeding and the use of human milk. <i>Pediatrics</i> , 129(3).	Policy Statement				Level 7- Expert opinion		Policy from AAP

<p>e827-841.  <a href="https://pediatrics.aappublications.org/content/pediatrics/129/3/e827.full.pdf">https://pediatrics.aappublications.org/content/pediatrics/129/3/e827.full.pdf</a></p>							
<p>Bartick, M.C., Schwarz, E.B., Green, B.D., Jegier, B.J., Reinhold, A.R., Colaizy, T.T., Bogen, D., Schaefer, A.J., &amp; Stuebe, A.M. (2016). Suboptimal breastfeeding in the United States: Maternal and pediatric health outcomes and costs. <i>Maternal &amp; Child Nutrition</i>, 13(1), e12366.  <a href="https://doi.org/10.1111/mcn.12366">https://doi.org/10.1111/mcn.12366</a></p>	<p>Examine impact of suboptimal BF rates in the US.</p>	<p>Cohort of women aged 15 in 2002 and children they bore, modeled cohort using 2 different BF scenarios.</p>	<p>Monte Carlo Simulation models. Cohort study</p>	<p>For every 597 women who BF, the death of one child or mother is prevented.</p>	<p>Level 4- Cohort study</p>	<p>Findings dependent on assumptions of model used.</p>	<p>Yes. Supports any interventions aimed at improving rates to impact overall health outcomes for mothers and infants.</p>
<p>Bembich, S., Fiani, G., Strajn, T., Sanesi, C., Demarini, S., &amp; Sanson, G. (2017). Longitudinal responses to weighing and bathing procedures in preterm infants. <i>Journal of Perinatal Neonatal Nursing</i>, 31(1), 67-74.  <a href="https://doi.org/10.1097/JPN.0000000000000228">https://doi.org/10.1097/JPN.0000000000000228</a></p>	<p>Gather information on how nursing-induced stress impacts outcomes in preterm infants. Specifically weighing and bathing.</p>	<p>Convenience sample of 11 preterm infants between 26- and 31-weeks gestational age (postnatal days ranged from 4-63).</p>	<p>Responses assessed through observation based on Synactive Theory of Development. Nonparametric statistics were used to compare stability during and after procedures.</p>	<p>Preterm infants demonstrated stress as a result of weighing and bathing up to 35 to 35 weeks postmenstrual age. Interventions such as swaddling and nesting decreased recovery time.</p>	<p>Level 6: Single Longitudinal quantitative study</p>	<p>Small sample size, brief periods of observation (5 minutes).</p>	<p>Yes-even though level 6, accounted for difference in age by performing a correlation analysis which showed no significant difference related to postnatal age. This study would be useful to support the idea that bathing is considered a</p>

							stressor for newborns, even near term.
Boccolini, C.S., Lazaro de Carvalho, M., & Couto de Oliveira, M.I. (2015). Factors associated with exclusive breastfeeding in the first six months of life in Brazil: A systematic review. <i>Rev Saude Publica, 49</i> (91), 1-15. <a href="https://doi.org/10.1590/S0034-8910-2015049005971">https://doi.org/10.1590/S0034-8910-2015049005971</a>	Identify factors associated with breastfeeding exclusivity in the first 6 months of life.	Of 67 identified articles, reviewed a total of 27; 20 cross-sectional, 7 cohort. Data on a total of over 77,000 children.	Systematic Review of epidemiological studies in Brazil.	36 factors identified which impact EBF rates. Difficulty starting, degree of hospital support, BF in the first hour of life and EBF at discharge were among the factors	Level 5: Systematic Review.	May be impacted by cultural factors specific to Brazil	Yes. Supports the idea that in-hospital support and exclusive breastfeeding at discharge impact EBF rates at 6 months of life.
Caka, S.Y. & Gozen, D. (2018). Effects of swaddled and traditional tub bathing methods on crying and physiological responses of newborns. <i>Journal of Specialty Pediatric Nursing, 23</i> , 202-211. <a href="https://doi.org/10.1111/jspn/12202">https://doi.org/10.1111/jspn/12202</a> .	Study the impact of 2 different bathing methods on crying time and physiological changes in newborns.	80 infants admitted to NICU in a university hospital in a large city. Randomized into two groups.	Randomized infants into swaddled bathing and traditional tub bathing groups. Evaluated body temperature, heart rate and O2 sat before, immediately after and 10 minutes after bathing. Pre- and post-bath	Infants who were bathed using swaddled method experienced more stable temp, HR and O2 sats and less stress.	Level 2: Randomized controlled experimental trial	Relatively small sample size. Does not discuss effects related to breastfeeding, sleep, weight gain, or attachment.	Yes-level 2 and this study provides foundational research which supports the idea that traditional tub bathing causing stress in newborns. This would support the intervention of delayed bathing as stress impacts breastfeeding success.

			stress levels using NIPS pain scale.				
Cato, K., Sylven, S.M., Lindback, J., Skalkidou, A., & Rubertsson, C. (2017). Risk factors for exclusive breastfeeding lasting less than two months-identifying women in need of targeted breastfeeding support. <i>PLoS ONE</i> , 12(6), e0179402. <a href="https://doi.org/10.1371/journal.pone.0179402">https://doi.org/10.1371/journal.pone.0179402</a>	Examine factors associated with breastfeeding lasting less than 2 months.	679 women who delivered at a hospital in Sweden.	Population-based longitudinal study.	Factors for BF lasting less than two months included first time mother, pregnancy emotional distress, birth by c-section.	Level 4-Cohort study	Intention to BF not established, emotional distress question not validated.	Yes. Provides important factors that might impact EBF rates, some of which can be managed in the hospital.
Chamberlain, J., McCarty, S., Sorce, J., Leesman, B., Schmidt, S., Meyrick, E., Partier, S., Kennedy, L., Crowley, D., & Coultas, L. (2019). Impact on delayed newborn bathing on exclusive breastfeeding rates, glucose and temperature stability, and weight loss. <i>Journal of Neonatal Nursing</i> , 25, 74-77. <a href="https://doi.org/10.1016/j.jnn.2018.11.001">https://doi.org/10.1016/j.jnn.2018.11.001</a>	Examine impact of delayed bathing (24 hours) on breastfeeding, glucose and temperature stability, and weight loss.	330 chart reviews from a Midwestern health system with 3 hospitals.	Reviewed 330 charts selected by using randomizer calculator. (330 required sample size for 95% confidence and 5% margin of error)	Delayed bathing was found to impact temperature and glucose levels. This study did not find delayed bathing to impact breastfeeding (article notes that is opposite of what AWHONN has found).	Level 3: Quasi-experimental Pre-post retrospective chart review	Performed at one site so limits generalizability. May be some variation in nurses charting which could impact data. Authors note that lack of impact on breastfeeding could likely be from other variables such as nursing actions and mother's willingness.	Yes-Level 3 and while this study was not able to conclude that delayed bathing itself impacts BF, it does show a relationship between glucose and temperature stability which impact BF in that the infant is not removed from the mother for related

							interventions.
Dawson, A.A. & Sibbritt, D. (2016). What impact do essential newborn practices have on neonatal mortality in low and lower-middle income countries? Evidence from Bangladesh. <i>Journal of Perinatology</i> , 36, 225-230. <a href="https://doi.org/10.1038/jp.2015.181">https://doi.org/10.1038/jp.2015.181</a>	Examine impact of newborn practices on mortality	Review of survey data of 3190 infants born in Bangladesh	Cross-sectional study of survey data from 2011 Bangladesh health survey	Delayed bathing of 72 hours decreases newborn mortality.	Level 4- Cross-sectional study	Survey data relies on self-reporting. Small sample size, especially neonatal deaths.	Yes, supports delayed bathing as an intervention to improve newborn outcomes.
DiCioccio, H. C., Ady, C., Bena, J.F., & Albert, N.M. (2019). Initiative to improve exclusive breastfeeding by delaying the newborn bath. <i>JOGNN</i> , 48, 189-196. <a href="https://doi.org/10.1016/j.jogn.2018.12.2008">https://doi.org/10.1016/j.jogn.2018.12.2008</a>	Determine if delayed bathing increased EBF rates at discharge.	996 newborn/maternal couplets at a tertiary hospital.	Retrospective pre- and post intervention design	Delayed bathing of at least 12 hours resulted in increased EBF on discharge.	Level 6- single descriptive	Two separate time periods rather than one. Potential for variation in documentation by providers.	Yes. Directly demonstrates impact of delayed bathing on EBF. Large sample size.
Gozen, D., Caka, S.Y., Besirik, S.A., & Perk, Y. (2018). First bathing time of newborn infants after birth: A comparative analysis. <i>Journal of Specialty Pediatric Nursing</i> , 24, 239-248. <a href="https://doi.org/10.1111/jspn.12239">https://doi.org/10.1111/jspn.12239</a> .	Examine the effect of first bath on body temperature and skin moisture in a newborn.	73 newborns born at a medical facility in Istanbul.	Randomly divided into 2 groups (bath after 24 and bath after 48 hours). Body temperature and skin moisture measured before, right after, and 10 minutes after bathing.	Significant difference in body temperature of infants who had bathing delayed for 48 hours.	Level 2: Randomized controlled experimental trial	Data does not include temps beyond 10 minutes.	Yes, level 2 and provides data which supports delayed bathing. Infants with stable temps will be able to remain with mother, thereby reducing BF interference or delay.

<p>Kim, S.Y., Park, S., Oh, J., Kim, J., &amp; Ahn, S. (2018). Interventions promoting exclusive breastfeeding up to six months after birth: A systematic review and meta-analysis of randomized controlled trials. <i>International Journal of Nursing Studies</i>, 80, 94-105. <a href="https://doi.org/10.1016/j.ijnurstu.2018.01.004">https://doi.org/10.1016/j.ijnurstu.2018.01.004</a></p>	<p>Review how effective BF support measures are in achieving 6 months of EBF and to identify the best intervention strategies</p>	<p>Review of 27 RCTs, over 36,000 mothers.</p>	<p>Systematic review and meta-analysis</p>	<p>BF support interventions have a significant impact on EBF. Baby-friendly hospital initiative, provider led intervention, provider training programs, and pre-and post-natal interventions impact EBF. Multicomponent intervention is recommended</p>	<p>Level 1: Systematic review and meta-analysis of 27 RCTs</p>	<p>No subgroup analysis for mother or baby with health issues.</p>	<p>Yes. Strong level of evidence. Provides strong support for multicomponent intervention, of which delayed bathing would be one.</p>
<p>Kuller, J.M. (2014). Update on newborn bathing. <i>Newborn &amp; Infant Nursing Review</i>, 14, 166-170. <a href="https://doi.org/10.1053/j.nainr.2014.006">https://doi.org/10.1053/j.nainr.2014.006</a>.</p>	<p>Review of guidelines related to newborn bathing</p>	<p>References a variety of studies and guidelines of reputable organizations.</p>	<p>n/a</p>	<p>AWHONN recommends delaying bathing until 2-4 hours of age, when vitals are stable. WHO recommends delaying bathing until 6 hours of age to provide for early breastfeeding</p>	<p>Level 7: Report of opinion or recommendations of experts</p>	<p>Does not provide new research data specific to delayed bathing</p>	<p>Yes-can be used to access additional research related to impact of delayed bathing and recommended guidelines.</p>
<p>Lund, C. (2016). Bathing and beyond: Current bathing controversies for newborn infants. <i>Advances in Neonatal Care</i>, 16(5), 13-20.</p>	<p>Review of literature related to newborn bathing.</p>	<p>Review of studies including RCTs, cohort</p>	<p>Literature review.</p>	<p>There are numerous studies showing benefits of delayed</p>	<p>Level 5: systematic review of literature.</p>	<p>None.</p>	<p>Yes-provides foundational information to support</p>

<a href="https://doi.org/10.1097/ANC.000000000000336">https://doi.org/10.1097/ANC.000000000000336</a>		studies, observational studies, and 1 pre-post.		bathing, including improved breastfeeding			project and references other higher-level studies that can be reviewed.
Moore, E.R., Bergman, N., Anderson, G.C., & Medley, N. (2016). Early skin-to-skin contact for mothers and their healthy newborn infants. <i>Cochrane Database of Systematic Reviews</i> , 2016(11). <a href="https://doi.org/10.1002/14651858.CD003519.pub4">https://doi.org/10.1002/14651858.CD003519.pub4</a>	Determine impact of immediate or early skin-to-skin contact for healthy newborn.	38 randomized controlled trials, 3472 women and infants	Systematic review	Immediate or early SSC associated with increased duration of breastfeeding and newborn cardiorespiratory stability.	Level 1- Systematic review of RCTs	Many studies with small sample sizes	Yes. Strong evidence for practices that allow for SSC.
Nieuwoudt, S.J., Ngandu, C.B., Manderson, L., & Norris, S.A. (2018). Exclusive breastfeeding policy, practice, and influences in South Africa, 1980-2018: A mixed-methods systematic review. <i>PLoS ONE</i> , 14(10), e0224029. <a href="https://doi.org/10.1371/journal.pone.0224029">https://doi.org/10.1371/journal.pone.0224029</a>	Describe EBF practices in South Africa and examine factors for length of EBF.	Mixed methods review of 72 research articles	Literature review.	Integrated care for couplets, maternal confidence, and education for staff increase EBF rates. Separation of couplets undermine BF.	Level 5-mixed methods review	Review is specific to South Africa. Cultural considerations are absent. Variability in study quality.	Yes, though specific to South Africa, supports education and keeping couplets together to increase EBF rates.
Paramashanti, B. A., Hadi, H., & Gunawan, M.A. (2016). Timely initiation of breastfeeding is associated with the practice of exclusive breastfeeding in Indonesia. <i>Asia Pacific Journal of Clinical Nutrition</i> , 25(1), 52-56. <a href="https://doi.org/10.6133/apjcn.122013.s11">https://doi.org/10.6133/apjcn.122013.s11</a>	Evaluate relationship between timing of initiation of breastfeeding and EBF rates	7,667 Indonesian mothers of children 6-23 months.	Cross-sectional study using descriptive statistics.	Initiation of BF within one hour of birth and neonatal illness were found to impact EBF rates	Level 6: Single descriptive study.	Potential for recall bias. Cross-sectional design does not provide information regarding cause-effect relationship	Yes. Does support that BF be initiated in the first hour, which would further support delaying the first bath until the newborn

							has successfully breastfed
Quigley, M.A., Sacker, C.C., & Kelly, Y. (2016). Exclusive breastfeeding duration and infant infection. <i>European Journal of Clinical Nutrition</i> , 70, 1420-1427. <a href="https://doi.org/10.1038/ejcn.2016.135">https://doi.org/10.1038/ejcn.2016.135</a>	To evaluate the risk of infection association with duration of EBF.	15,809 term infants from the UK Millennium Cohort study, a nationally representative longitudinal study.	Analyzed data from Cohort study	EBF <4 mo. significantly associated with increased risk for chest infection and diarrhea.	Level 4-Cohort study.	Data obtained through maternal recall	Yes. Large sample size and detailed data. Provides support for interventions which increase likelihood of EBF for 6 months.
Sinha, B., Chowdhury, R., Sankar, M.J., Martines, J., Taneja, S., Mazumder, S., Rollins, N., Bahl, R., & Bhandari, N. (2015). Interventions to improve breastfeeding outcomes: A systematic review and meta-analysis. <i>Acta Paediatrica</i> , 104(S467), 114-135. <a href="https://doi.org/10.1111/apa.13127">https://doi.org/10.1111/apa.13127</a>	Provide evidence for interventions to impact breastfeeding outcomes	195 articles	Systematic review and meta-analysis	Breastfeeding support in a combination of settings improve BF rates and duration.	Level 5-systematic review-RCTs, cluster randomized, quasi-exp, observational	Some categories missing from review, including work environment	Yes. Supports in-hospital education and interventions to increase BF rates.
Smith, E. & Shell, T. (2017). <i>ICEA Position paper: Delayed bathing</i> . International Childbirth Education Association. <a href="https://icea.org/wp-content/uploads/2018/02/ICEA-Position-Paper-Delayed-Bathing.pdf">https://icea.org/wp-content/uploads/2018/02/ICEA-Position-Paper-Delayed-Bathing.pdf</a>	Share current best practice related to delayed bathing.	Review of current practice related to newborn care.	Expert opinion	Bathing should be delayed for 6-8 hours minimally	Level 7-expert opinion	Review of recommendations	Yes. Provides overview of recommendations by AWHONN, WHO, Save the Children
Stough, C.O., Khalsa, A.S., Nabors, L.A., Merianos, A.L., & Peugh, J. (2018). Predictors of exclusive breastfeeding for 6 months in a national sample of US children. <i>American Journal of Health Promotion</i> , 33(1), 48-56.	Explore predictors of exclusive breastfeeding	Nationally representative sample of 26,552 caregivers with children	Secondary data analysis of National Survey of Children's	Exclusive BF rates at 6 mo. remain low in US. Child's race/ethnicity, birth weight, tobacco	Level 6: Single descriptive study	Use of caregiver report, sometimes several years removed. Questions	Yes. Large sample size and provides additional support for intervention

<a href="https://doi.org/10.1177/0890117118774208">https://doi.org/10.1177/0890117118774208</a>		from 6mo-6 yr.	Health 2011-2012.	exposure, maternal education, family income and composition predict BF rates		may not allow to assess for complexities related to variables. Did not assess maternal barriers.	s to increase EBF rates, particularly among lower birth weight infants, those of certain ethnicity, income levels, family composition .
Susiloretni, K.A., Hadi, H., Blakstad, M.M., & Smith, E.R. (2019). Does exclusive breastfeeding relate to the longer duration of breastfeeding? A prospective cohort study. <i>Midwifery</i> , 69, 163-171. <a href="https://doi.org/10.1016/j.midw.2018.11.008">https://doi.org/10.1016/j.midw.2018.11.008</a>	Determine if reports of EBF at 6 months are associated with longer duration of BF in the first two years. Identify determinants of BF duration	147 families from Demak District in Indonesia	Prospective cohort study, non-randomized pretest/posttest group	Longer EBF not associated with prolonged BF duration. Limited exposure to BF promotion was associated with shortened BF duration.	Level 4: Cohort study	Non-randomized study. Small sample size	Yes. Supports interventions related to BF promotion which is part of the project.
Vehling, L., Chan, D., McGavock, J., Becker, A.B., Subbarao, P.S., Moraes, Mandhane, P.J., Turvey, S.E., Lefebvre, D.L., Sears, R., & Azad, M.B. (2018). Exclusive breastfeeding in hospital predicts longer breastfeeding duration in Canada: Implications for health equity. <i>Birth</i> , 45, 440-449. <a href="https://doi.org/10.1111/birt.12345">https://doi.org/10.1111/birt.12345</a>	Examine association between in-hospital feeding and BF duration.	3195 Canadian mother-infant dyads	Retrospective study of a longitudinal child development study	EBF in the hospital is associated with longer EBF duration.	Level 6- Single descriptive study	Findings may be limited in ability to generalize given higher than average BF initiation rates.	Yes-interventions to support early initiation of BF in the hospital impact EBF duration.
Waits, A., Guo, C., & Chien, L. (2018). Evaluation of factors contributing to the decline in exclusive breastfeeding at 6	Identify factors contributing to breastfeeding rates.	69,159 postpartum women in Taiwan	Cross-sectional survey	In Taiwan, partial BF rates at 6 months increased, EBF	Level 4: Cross sectional	Cross-sectional design does not allow	Yes. Supports education to impact

<p>months postpartum: The 2011-2016 National surveys in Taiwan. <i>Birth</i>, 45, 184-192. <a href="https://doi.org/10.1111/birt.12340">https://doi.org/10.1111/birt.12340</a>.</p>			<p>rates at 6 months decreased. Prenatal intention most strongly associated with BF rates, Skin-to-skin and rooming-in was decreased from 2011 to 2016.</p>	<p>inference of causal relationships. Does not include other important factors that might impact BF rates. Potential for recall bias.</p>	<p>prenatal intention</p>
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## Appendix B

# LIBERTY UNIVERSITY

INSTITUTIONAL REVIEW BOARD

April 3, 2020

Tennille O'Connor  
Mary Highton

Re: IRB Application - IRB-FY19-20-251 Impacting newborn outcomes by improving the practice of delayed bathing of the newborn through education of staff and parents.

Dear Tennille O'Connor, Mary Highton:

The Liberty University Institutional Review Board (IRB) has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study does not classify as human subjects research. This means you may begin your research with the data safeguarding methods mentioned in your IRB application.

Decision: No Human Subjects Research

Explanation: Your study does not classify as human subjects research because:

(2) evidence-based practice projects are considered quality improvement activities, which are not considered "research" according to 45 CFR 46.102(d).

Please note that this decision only applies to your current research application, and any modifications to your protocol must be reported to the Liberty University IRB for verification of continued non-human subjects research status. You may report these changes by completing a modification submission through your Cayuse IRB account.

If you have any questions about this determination or need assistance in determining whether possible modifications to your protocol would change your application's status, please email us at [irb@liberty.edu](mailto:irb@liberty.edu).

Sincerely,

**G. Michele Baker, MA, CIP**  
*Administrative Chair of Institutional Research*  
**Research Ethics Office**

## Appendix C



Completion Date 03-Nov-2019  
Expiration Date 02-Nov-2022  
Record ID 33997989

This is to certify that:

**Tennille OConnor**

Has completed the following CITI Program course:

**Biomedical Research - Basic/Refresher** (Curriculum Group)  
**Biomedical & Health Science Researchers** (Course Learner Group)  
**1 - Basic Course** (Stage)

Under requirements set by:

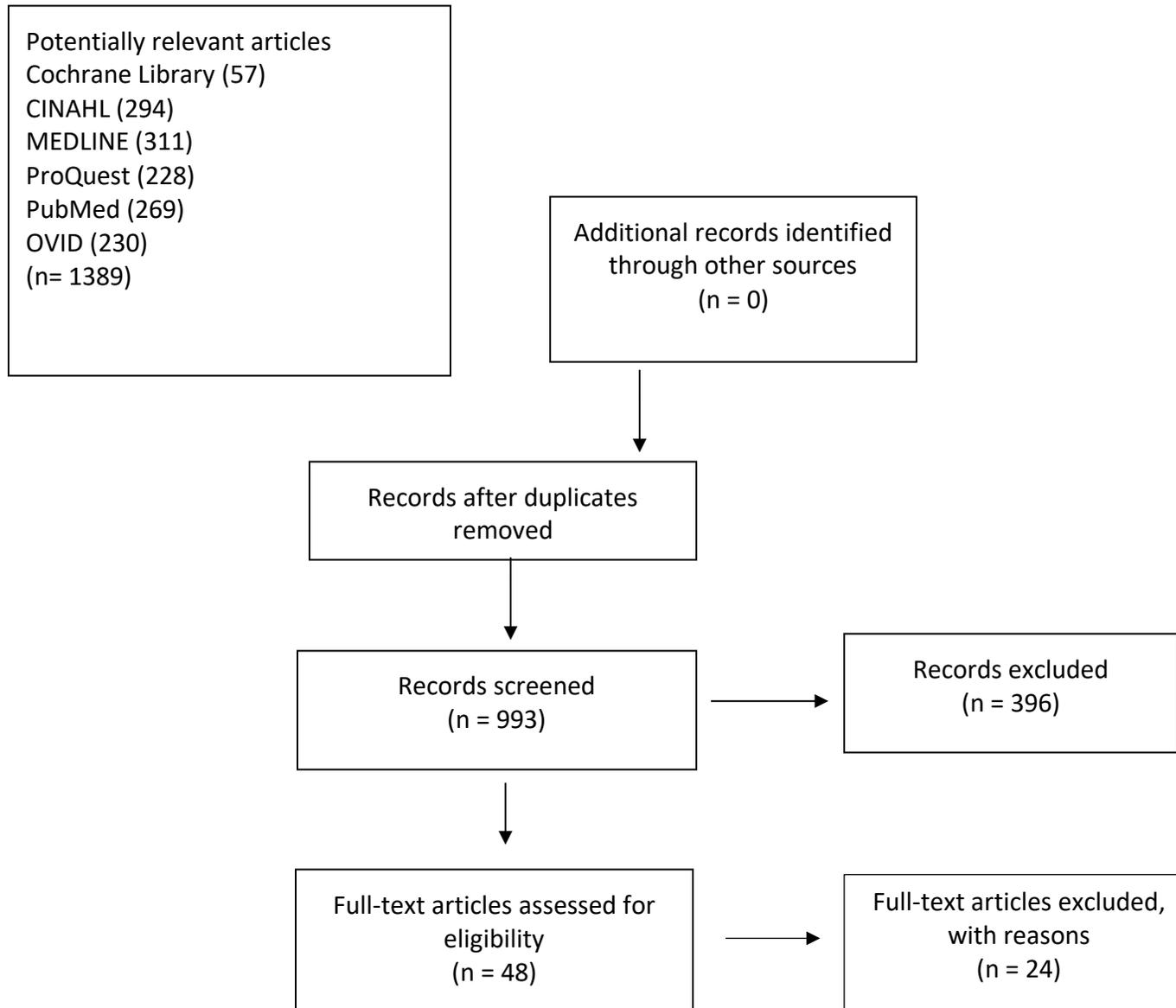
**Liberty University**



Verify at [www.citiprogram.org/verify/?w8cb8a787-fc70-4311-aa60-c19cf77448f1-33997989](http://www.citiprogram.org/verify/?w8cb8a787-fc70-4311-aa60-c19cf77448f1-33997989)

## Appendix D

## PRISMA Flow Diagram



## Appendix E

## Wait the Eight

### Delaying baby's first bath

Improves breastfeeding success



- Skin-to-skin time can take place in the first hours after birth. Skin-to-skin time increases breastfeeding success and allows for uninterrupted bonding.

Baby stays nice and warm



- Delayed bathing helps babies maintain their temperature. Warm babies do a better job of keeping their blood sugar levels stable.

Parents can be actively involved



- Bath time is meant to be a fun experience that parents can share with their baby. Parents feel more confident and comfortable bathing baby when they go home.



### "Won't my baby be dirty?"

Blood or other substances can be wiped off the baby before they have their first bath.



### "What about the white, cheesy stuff?"

Vernix is a substance that is protective for baby. It is a natural moisturizer, skin protectant, and helps to protect baby from infections.



### "When should baby have their first bath?"

We recommend that babies wait until they breastfeeding well, their temperature is stable, and they are at least 8 hours old.

After that, babies only need a bath 2-3 times a week.

## Important tips for bathing baby



Make sure baby is on a sturdy surface in a draft-free area. Gather all needed supplies and keep them within reach so baby is not left unattended.



Water should be between 100-103.9 degrees Fahrenheit-it should feel comfortable on your inner arm.



Clean baby's face first with a wet cloth. Clean the rest of the body with soap, saving the diaper area for last.



Using clean water, shampoo baby's head last. Dry the head well to keep baby from getting cold.

## Ways to bathe baby



**PREFERRED METHOD**-Tub bathing-Prepare the baby tub with warm water. Place swaddled baby in the tub up to their shoulders. Uncover one area at a time-wash, rinse, and re-cover the area. Shampoo baby's hair last. Remove baby from the tub. Wrap baby in a dry, clean towel.



**Sponge bathing**-Lay your baby on a dry towel and cover them with a blanket or towel. Uncover one area at a time. Wash, rinse, dry, and re-cover each area. Shampoo baby's hair last and make sure to dry the baby's head well. Wrap baby in a dry, clean towel.

You do not need to wait for the umbilical cord to fall off to bathe your baby. Babies that have been circumcised can also be bathed. For the first 3-4 days following circumcision, the circumcision area should only be cleansed with water to prevent irritation.

## **Appendix F**

### **Women and Infants' Department staff delayed bathing education**

#### ***“Why Wait: Delayed Bathing of the Newborn”***

Voice-over PowerPoint presentation covering the following topics:

- Current recommendations
- Benefits of delayed bathing
- Function and benefits of vernix
- Current standards and rates for exclusive breastfeeding
- Best practices for bathing

## Appendix G

### Delayed Bathing

[EDIT](#)

#### HSHS Delayed bathing

1. Which of the following are functions of vernix? 

- Protectant
- Skin moisturizer
- Antioxidant properties
- Antimicrobial properties

\* 2. Which of following have been found to be benefits of delayed bathing? 

- Improved maternal/newborn bonding
- Decreased newborn temperatures
- Stable blood glucose levels
- Increased risk of infection in the newborn
- Increased breastfeeding rates

\* 3. What is the The Joint Commission's target for exclusive breastfeeding at discharge? 

- 100%
- 50%
- 25%
- 70%

\* 4. What percentage of infants are exclusively breastfed in WI at 6 months of age? [🔗](#)

- 35%
- 28%
- 56%
- 70%

\* 5. The World Health Organization recommends delaying bathing for how long after birth? [🔗](#)

- 12 hours
- 4 hours
- 24 hours
- 8 hours

6. Which of the following are benefits of swaddled immersion bathing over traditional sponge or tub baths? [🔗](#)

- Less infant crying
- Stable temperature
- Less parental participation
- Increased bonding

\* 7. The American Academy of Pediatrics recommends exclusive breastfeeding until what age? [🔗](#)

- 12 months
- 3 months
- 6 months
- 9 months

8. HSHS Women and Infants' Departments will delay bathing in the newborn until how many hours of age? 

- 8 hours
- 12 hours
- 24 hours
- 4 hours

9. In which of the following newborns would delayed bathing be contraindicated? 

- Mother is HIV positive
- Mother is Rh negative
- Mother has hepatitis
- Infant is formula feeding

 NEW QUESTION 

or [Copy and paste questions](#)

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