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University of Kentucky, martmaureen@gmail.com

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Martha Monroe, Student

Dr. Kristin Ashford, Major Professor

Dr. Debra Moser, Director of Graduate Studies

ESTABLISHING EXCLUSIVE BREASTFEEDING AND THE
INFLUENCE OF HOSPITAL SUPPORT

DISSERTATION

A dissertation submitted in partial fulfillment of
the requirements for the degree of Doctor of
Philosophy in the College of Nursing at the
University of Kentucky

By
Martha Monroe

Lexington, Kentucky

Co-Directors: Dr. Kristin Ashford, Professor of Nursing and
Dr. Ana Maria Linares, Professor of Nursing

Lexington, Kentucky

2020

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ABSTRACT OF DISSERTATION

ESTABLISHING EXCLUSIVE BREASTFEEDING AND THE INFLUENCE OF HOSPITAL SUPPORT

Maternal-child health authorities recommend that infants breastfeed exclusively for the first six months of life. Currently, 25% of infants in the United States do so. Breastfeeding specific care that mothers receive from their postpartum nurses and lactation specialists is integral to successfully initiating exclusive breastfeeding. Due to the time sensitive nature of establishing milk supply, interrupting the process of lactogenesis with supplementation puts infants at high risk for early termination of breastfeeding. The purpose of this dissertation is to examine the relationship of breastfeeding care received during the postpartum hospital stay, defined as the first 48-72 hours of life, and breastfeeding exclusivity among term, healthy infants.

First, an integrated review of the literature was performed to identify aspects of the postpartum hospital experience and behavior of nurses that mothers perceive as helpful or not toward establishing exclusive breastfeeding. Mothers reported they perceived nurses were too busy to help with breastfeeding. When nurses did offer help, their advice was inconsistent between providers and not evidence based. Mothers also noted that providers were hesitant to offer encouragement for a mother's decision to breastfeed, for fear of causing guilt should the mother experience difficulty. Additionally, special consideration is needed for breastfeeding mothers after cesarean birth.

Next, a secondary analysis of data was performed to identify if maternal perception of the hospital experience is a predictor of exclusive breastfeeding during the postpartum hospital stay. Data was retrieved from the control group of a two-part randomized, controlled trial of a breastfeeding education intervention. Forty-five participants were included in this analysis. The outcome of interest was exclusive breastfeeding at hospital discharge and at four weeks after birth. The hospital experience was measured using a survey titled "Every Step Counts". This 16-question survey measured hospital adherence to the Ten Steps to Successful Breastfeeding, guidelines that promote breastfeeding exclusivity and duration. Rating the hospital experience with a score of 13 or greater was associated with an increased likelihood of breastfeeding exclusively at the time of discharge. The influence of the hospital experience on breastfeeding exclusivity did not remain at four weeks after birth.

Finally, a primary investigation was conducted to further examine the relationship between hospital care and exclusive breastfeeding. In this study, a different tool was used to measure breastfeeding care in the hospital. The “Questionnaire for the Breastfeeding Mother” from the hospital self-appraisal and monitoring guide developed by the Baby Friendly Hospital Initiative was distributed on the day of discharge. This study revealed that a higher score on the questionnaire was associated with an increased likelihood of breastfeeding exclusively at discharge. Whether or not a participant’s own mother breastfed was also a predictor of breastfeeding exclusivity at discharge.

In summary, quality breastfeeding specific care from nurses and lactation specialists is critical to helping women to establish breastfeeding exclusivity in the immediate postpartum period. Close adherence to the Ten Steps yields positive outcomes of breastfeeding exclusivity. Thus, hospitals could benefit from following the Ten Steps in order to continue the national trend of increasing breastfeeding exclusivity and duration.

KEYWORDS: Exclusive Breastfeeding, Hospital Support, Baby Friendly, Breastfeeding Initiation, Lactation

Martha Monroe

July 11, 2020

Date

ESTABLISHING EXCLUSIVE BREASTFEEDING AND THE
INFLUENCE OF HOSPITAL SUPPORT

By

Martha Monroe

Kristin Ashford, PhD

Co-Director of Dissertation

Ana Maria Linares, DNS

Co-Director of Dissertation

Debra Moser, PhD

Director of Graduate Studies

July 11, 2020

This dissertation is dedicated to my family who have given me unwavering love, support, and confidence as we navigate this journey of life together.

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Chapter One: Introduction

Feeding infants with artificial formula carries both health and economic risks to the infant and the mother. Formula fed infants have a higher risk of otitis media, respiratory infection, atopic dermatitis, and sudden infant death syndrome when compared to infants who are breastfed (American Academy of Pediatrics [AAP], 2012). Beyond infancy, children who were formula fed suffer a higher risk of developing leukemia, diabetes, and inflammatory bowel disease, and asthma (AAP, 2012). Mothers who breastfeed experience a reduction in the risk of hypertension, cardiovascular disease, diabetes, and breast and ovarian cancer (AAP, 2012). The common infant illnesses such as otitis media and respiratory infection that occur more frequently in formula fed infants translate into higher medical costs for families as well as more days of work missed for parents. The direct cost of formula feeding an infant for the first year of life is nearly \$2,000 (Bartick, 2011; Bureau of Labor Statistics, n.d.). Families who formula feed experience more missed days of work for children's illness, leading to decreased productivity which negatively impacts families, employers, and the greater economy (United States Department of Health and Human Services, 2008). The economic impact of formula feeding extends beyond the home to the nation as well. An analysis projecting the national economic impact of 90% compliance with the American Academy of Pediatrics' breastfeeding recommendations predicted a \$2.5 billion savings per year in direct pediatric health care cost (Bartick, 2011)

Preventing the need for formula feeding by establishing adequate milk supply is a time sensitive process stimulated by frequent infant suckling in the first days and weeks of life (Riordan & Wambach, 2010). Delivery of the placenta terminates release of

progesterone, which is a prolactin inhibitor. Prolactin is the primary hormone of lactation. Prolactin release is governed by nipple stimulation and prolactin levels are directly affected by frequency, intensity, and duration of nipple stimulation (Mannel et al., 2008). With these endocrine changes, the second phase of lactation begins, called lactogenesis II. This stage is when fluid milk replaces colostrum and the milk “comes in”, between 30 and 72 hours after birth. Prolactin receptor sites in the mammary gland are activated by frequent suckling in the early days of life (Mannel et al., 2008). Thus, frequent feeding in the early days of life is important for establishing adequate milk supply. Feeding on-demand, infants will have at least eight feedings per 24-hour period (Kellams, et al., 2017). Many of these feedings are clustered through the night. Around the clock feeding behavior is exhausting to new mothers, first time mothers especially, who are not accustomed to waking frequently through the night (Kellams, et al., 2017). By introducing formula in this critical time, a woman can share the burden of infant feeding with her partner or support person. However, as breastmilk production is governed by frequency of suckling, a woman will only make as much milk as her infant demands. Thus, giving a bottle interrupts the process of lactogenesis, especially in the early days of life (Kellams, et al., 2017). The environment fostered by following the Ten Steps to Successful Breastfeeding honors the biological needs of the mother and newborn as they establish their breastfeeding relationship. The Ten Steps to Successful Breastfeeding provide evidence-based guidelines for hospitals to administer optimal care of childbearing families for the purpose of promoting breastfeeding exclusivity (World Health Organization [WHO], 2018).

The decision for infant feeding method begins in the prenatal period but is a constantly evolving process influenced by decisions made in the early days of life. The decision to feed an infant with breastmilk or formula is influenced by personal belief, cultural norms, and structural environmental factors (Roll & Cheater, 2016). This important decision is made through a complicated cognitive process influenced by perceived benefits, barriers, cultural environment, and physical ease or difficulty. As decision making is a cognitive process, this dissertation is rooted in the cognitive-behavioral theory such as the Health Belief Model. The Health Belief Model is a cognitive-behavioral model that explains how perception, education, and cultural norms influence the likelihood of engaging in a health behavior. The Health Belief Model developed organically in the 1950s and was formally defined in 1974 by Irwin Rosenstock (Rosenstock, 1974). The Health Belief Model was developed by public health professionals as a way to explain the health behavior of accessing preventive health services. First applied to explain behavior and decisions of people seeking, or not seeking, tuberculosis screening, the model was later applied to other preventive services such as cervical cancer screening and dental maintenance. This model was innovative in that it focused on health prevention, targeting people not currently in a disease state but aimed to promote action toward disease avoidance. The design of the Health Belief Model is meant to explain how a perceived threat governs action. In this dissertation, the perceived threat is the health and economic risks of formula feeding.

The goal of breastfeeding promotion, as guided by the Health Belief Model is to influence mothers' belief that the benefits of breastfeeding, that is prevention of adverse events associated with formula, outweigh the barriers. Some of the barriers to

breastfeeding include pain, perceived insufficient milk supply, and convenience (Oniwon et al., 2016; Roll & Cheater, 2016). This dissertation primarily focuses on the construct of how the structural variable of the postpartum hospital experience influences the balance of perceived benefits and barriers to ultimately predict the likelihood of exclusive breastfeeding. The purpose of this dissertation is to examine the relationship of breastfeeding care received during the postpartum hospital stay, defined as the first 48-72 hours of life, and breastfeeding exclusivity among term, healthy infants.

Chapter Overviews

Overview of Chapter 2

In chapter two, a thorough search of the literature was conducted to identify aspects of the postpartum hospital experience and specific behavior of nurses that mothers perceive as helpful or not helpful toward successfully establishing exclusive breastfeeding before discharge. This integrated review examined literature from 1991, when the Baby Friendly Hospital Initiative began development, to present day. This review included four qualitative studies and four quantitative studies. Themes that emerged in reviewing the qualitative studies included inconsistent or poor breastfeeding advice from nurses to new mothers, the perception that nurses were too busy to assist with breastfeeding, and nurses were avoidant of offering encouragement to breastfeeding mothers out of fear of causing guilt. Additionally, mothers who experienced cesarean birth had additional concerns such as pain, immobility, safety concerns, and limited opportunity to experience Baby-Friendly practices such as skin-to-skin care immediately following birth. Additional constructs revealed in review of the quantitative studies

include anxiety as a barrier to breastfeeding success and the positive association of perceived feeding preference of hospital staff and breastfeeding duration.

Overview of Chapter 3

A secondary data analysis (N=39) was conducted to explore the association of maternal perception of the hospital experience and breastfeeding exclusivity during the postpartum hospital stay. This analysis sought to identify if maternal perception of the hospital experience is a predictor of exclusive breastfeeding during the postpartum hospital stay as well as examine the relationship between hospital experience and breastfeeding self-efficacy at four weeks of life. At discharge from the hospital, 47% (n=21) of participants were breastfeeding exclusively. Logistic regression analysis revealed that women who rated their hospital experience, as rated by a survey measuring how they experienced the Ten Steps to Successful Breastfeeding, with a score of 13 or greater (out of a maximum 17) were significantly more likely to breastfeed exclusively at hospital discharge, when controlling for age and mode of delivery (OR = 10.63, p=.0002). At four weeks after birth, the hospital experience was no longer a significant predictor of exclusive breastfeeding (OR = 3.5, p =.09). Total score on the Breastfeeding Self-Efficacy Scale was a predictor of exclusive breastfeeding at four weeks (OR = 1.11, p =.045). The findings of this secondary analysis, that hospital experience is a predictor of breastfeeding exclusivity during the hospital stay, served as the impetus to design the primary study of this dissertation, which is described in chapter four.

Overview of Chapter 4

In light of the findings of chapter three, that care received in the hospital is predictive of breastfeeding exclusivity during the hospital stay, a study was designed to

specifically explore this relationship further. In this study (N = 34), breastfeeding care in the hospital was again measured by adherence to the Ten Steps to Successful Breastfeeding, but this time using a different survey. On the day of discharge, 73% (n=25) of participants had breastfed exclusively throughout their hospital stay. Logistic regression analysis showed that quality breastfeeding care, as measured by adherence to the Ten Steps to Successful Breastfeeding, was a predictor of exclusive breastfeeding during the postpartum hospital stay, when controlling for mode of delivery (OR = 2.64, P = .042). Family history of breastfeeding, as measured by whether the mother was breastfed herself as an infant, was also a predictor of breastfeeding exclusivity (OR = .014, P = .02). Qualitative analysis of participant comments collected between two and four weeks after birth showed that participants had positive experiences with the lactation staff at the hospital as well as the outpatient breastfeeding clinic for after-discharge care.

Chapter Two: Integrated review of literature examining hospital and nursing care practices that facilitate or inhibit successfully establishing exclusive breastfeeding

Introduction

The American Academy of Pediatrics and the World Health Organization recommend that mothers breastfeed their infants exclusively for the first six months of life. (American Academy of Pediatrics [AAP], 2012; World Health Organization [WHO], 2020). Exclusive breastfeeding means an infant ingests no other food or fluid besides breast milk, with the exception of medication or fluids related to religious or cultural ceremony (WHO, 2020). Although breastfeeding is the biologically normative feeding method for human infants, it is not the culturally normative feeding method in the United States. While 83.2% of mothers in the United States initiate breastfeeding, only 24.9% breastfeed exclusively through six months of life (Center for Disease Control [CDC], 2018). The Center for Disease Control reports that nationally, 17.2% of breastfed infants receive formula before two days of age (2018). Mothers who initiate formula supplementation in the hospital are at higher risk for early termination of breastfeeding than women who exclusively breastfeed their infants during the postpartum hospital stay (Pounds & Shostrom, 2018). For healthy women who deliver term, healthy infants, the standard postpartum hospital stay lasts 48 hours after a vaginal birth and 72 hours after a cesarean birth. Thus, the first 2-3 days of life is a critical time period for establishing exclusive breastfeeding.

Established literature has demonstrated that adherence to the Ten Steps to Successful Breastfeeding is associated with improved breastfeeding outcomes (Munn et al., 2016). The Ten Steps to Successful Breastfeeding is a list of guidelines developed by the Baby Friendly Hospital Initiative that focus on breastfeeding-specific care and

provide evidence-based guidelines for hospitals to administer optimal care of childbearing families for the purpose of promoting breastfeeding exclusivity (WHO, 2018). However, current literature supports that among mothers who intended to exclusively breastfeed, about 50% give formula supplementation while in the hospital (Grassley et al., 2014; Nelson et al., 2016).

The support mothers receive from their postpartum nurses is integral to successfully initiating exclusive breastfeeding and therefore affects breastfeeding duration and exclusivity. In 2011 the Surgeon General identified deficits within the healthcare system that likely contribute to interruption of exclusive breastfeeding during the postpartum hospital stay (U.S. Department of Health and Human Services, 2011). These deficits include assigning breastfeeding support as a low priority care construct and giving formula supplementation to healthy, full term, breastfed newborns. Further, mothers consider clinician advice important in influencing their own breastfeeding decisions. Yet, clinicians, such as nurses, obstetricians, and pediatricians themselves underestimate their influence in this area.

Due to the time sensitive nature of establishing breastmilk supply, interrupting the process of lactogenesis, which occurs in the first three to five days after birth, with non-mother's milk supplementation such as formula or donor breastmilk, place mothers and infants at high risk for early termination of breastfeeding (Kellams et al., 2017). Care and support received in the hospital before, during, and after birth can positively or negatively influence the likelihood that a mother will meet her breastfeeding goals (Chantry et al., 2015; Services, 2011). The relationship between breastfeeding specific care during the hospital stay and exclusive breastfeeding likelihood at discharge has been established

(Chantry et al., 2014; Pounds & Shostrom, 2018). However, specific constructs of the postpartum hospital experience have not been clearly identified and synthesized into a single measure. The overall purpose of this manuscript is to critically review existing literature examining the relationship between the postpartum hospital experience and breastfeeding exclusivity. Two primary aims that guide this review are: 1) to identify hospital practices, such as nurse-patient ratios, that facilitate or inhibit exclusive breastfeeding initiation and 2) to describe specific behavior of nurses that mothers perceive as helpful or not helpful toward successfully establishing exclusive breastfeeding before postpartum hospital discharge.

Methods

This paper is an integrated review of literature; as this approach permits inclusion of research from a variety of methodologies (Whittemore & Knafl, 2005). A comprehensive search of the literature was conducted on February 20, 2020, according to the guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (Moher et al., 2009). Time parameters set for this search were 1991 through present day. In 1991, the World Health Organization and the United Nations International Children's Emergency Fund began working toward developing a standardized list of practices for hospitals to promote breastfeeding initiation, exclusivity, and duration (Munn et al., 2016). The end result of this work is the Baby Friendly Hospital Initiative. The launch of the Baby Friendly Hospital Initiative inspired a dramatic change in hospital practice regarding breastfeeding care. Therefore, this timeframe was chosen to reflect the relevant international shift in breastfeeding recommendations. Search engines used were the Cumulative Index to Nursing and Allied

Health Literature, PubMed, and Web of Science. Searches were conducted February 20, 2020 using the following search terms: “perception”, “hospital”, and “maternal”. To ensure that the search would only encompass breastfeeding and not other breast related diseases, I included the term “breastf*”. This search was limited to articles written in English. Inclusion criteria considered during review were articles written in English exploring 1) maternal perception of hospital experience, 2) focus on breastfeeding initiation, 3) low risk mothers, 4) term and healthy infants, and 5) a study population from a developed nation. Due to cultural and economic differences around the globe regarding the practice of breastfeeding, articles studying people of developing nations were excluded.

Data Collection and Analysis

All analysis was conducted by the primary investigator. The search of all databases yielded a total of 416 articles. After removal of duplicates, 303 articles remained for title screening. After article titles were screened for fit and after review, 71 remained for further screening. Please see figure 2.1 for a flow diagram of article extraction. Next, abstracts were reviewed for fit. Some of the reasons for exclusion after title and abstract review include articles which explored: 1) older infants and children, 2) breastfeeding duration, 3) breastfeeding education, 4) partner and family support, 5) anatomy and physiology of breastfeeding, 6) maternal medical complications, 7) preterm or other infant complications, 8) return to work, and 9) substance use. After abstract review, 26 articles remained for full-text evaluation. Reasons for exclusion at this stage included: 1) focus on duration of breastfeeding rather than initiation, 2) applies to a very specific population only, 3) review articles, and 4) evaluation of general quality

of postpartum care but not specific to breastfeeding. After full text evaluation, a final total of eight articles were included for full review.

A total of four quantitative studies and four qualitative studies were included for this integrated review of the literature. Each article chosen for inclusion in this review was assessed for quality and risk of bias using tools appropriate to the type of study conducted. As all four quantitative studies were observational, the “Strengthening the reporting of observational studies in epidemiology” checklist was used for assessing the strength and quality of each study (Vandenbroucke et al., 2007). This 22-item checklist offers guidance regarding concepts that should be reported in observational studies. Each of the four qualitative studies were reviewed using the National Institute for Health and Care Excellence checklist as a guide for evaluating quality and trustworthiness of each study (2012).

Results

Qualitative Review

The four qualitative articles included stated different specific purposes, yet common themes are present across all four studies. Please see table 2.1 for a summary of included qualitative studies. Two of the qualitative studies had a similar purpose: to describe the perception of mothers regarding breastfeeding support from their hospital nurse (Gill, 2001; Hong et al., 2003). The remaining two studies stated different purposes; investigating the meaning of latching difficulty, and the experience of breastfeeding after cesarean birth with regional anesthesia (Chaplin et al., 2016; Mauri et al., 2012). Only Chaplin, et al. explicitly state that their study was conducted in a facility that was not designated as Baby Friendly. The remaining articles did not address Baby

Friendly status of the facility at the time of data collection. Overall, mothers report negative perceptions of nursing support for breastfeeding during the postpartum hospital stay. Several common themes emerged.

Inconsistent or Poor Advice

Three of the four selected qualitative articles report that mothers complained of inconsistent or conflicting advice regarding breastfeeding among nurses (Chaplin et al., 2016; Hong et al., 2003; Mauri et al., 2012). Mothers perceived that nurses were offering anecdotal rather than evidence-based advice. This is likely a reflection of inadequate breastfeeding-specific education for postpartum nurses. For many women, receiving conflicting advice from multiple nurses led to anxiety, as they did not know which nurse's advice to follow (Chaplin et al., 2016; Mauri et al., 2012). Others chose one source, either a particular nurse or the lactation consultant, as the authority on breastfeeding and solely followed the advice of her own designated authority (Hong et al., 2003; Mauri et al., 2012).

In addition to offering conflicting advice, mothers reported nurses offering poor quality, anecdotal advice, often drawn from the nurse's own mothering experience rather than evidence based research (Gill, 2001; Hong et al., 2003). Mothers perceived nurses as having limited knowledge regarding breastfeeding support (Hong et al., 2003). Often, nurses simply distributed informational literature written for patient education and expected patients to learn about breastfeeding from these booklets, rather than offering hands on support (Gill, 2001). Mothers did not feel that they had time to read and understand literature about breastfeeding while they were recovering from birth and

simultaneously caring for a newborn. Instead, mothers reported desiring hands on, interpersonal support.

Busy Nurses

Not only did patients perceive nurses as having limited evidence-based knowledge of breastfeeding, women also perceived that nurses were too busy to take the time mothers felt they needed to assist with establishing breastfeeding (Chaplin et al., 2016; Gill, 2001; Hong et al., 2003). Some mothers even reported that they perceived that nurses did not care if a mother who strongly desired to exclusively breastfeed was successful (Gill, 2001). Others reported feeling rushed when the nurse was assisting or observing a breastfeeding session (Chaplin et al., 2016; Gill, 2001; Hong et al., 2003). In some instances, mothers perceived the nurse was busy because she would appear rushed, in other instances the nurse explicitly told mothers she was too busy to spend time helping with breastfeeding (Chaplin et al., 2016). Mothers consistently told researchers that they wished for uninterrupted physical presence from their nurse during early breastfeeding sessions (Chaplin et al., 2016; Gill, 2001).

Encouragement and guilt

Although mothers desired encouragement from their nurses for their breastfeeding effort, they report that nurses were hesitant to offer such encouragement for fear of causing guilt if the mother perceived her attempt to breastfeed as unsuccessful (Gill, 2001; Hong et al., 2003). Among the supportive behaviors demonstrated by nurses, offering encouragement was recognized by mothers as important (Hong et al., 2003). Mothers perceived that even the smallest gesture or word of encouragement was

immensely helpful during the vulnerable time of postpartum recovery and breastfeeding initiation (Gill, 2001; Hong et al., 2003).

Considerations for cesarean birth

One study, by Chaplin et al., included only the experience of mothers breastfeeding after cesarean birth with regional anesthesia (Chaplin et al., 2016). Recovery from cesarean birth requires special nursing considerations when offering breastfeeding support. Mothers consistently report struggling with pain, immobility, and nausea in the first 24 hours after birth. Each of these experiences present an obstacle to successful breastfeeding initiation when considered individually. Combined, they present a likely insurmountable obstacle to breastfeeding initiation. Mothers felt unsafe with their infants while immobile after anesthesia and while medicated with opiates for pain. Mothers were unable to reach their infants in the bassinet from the confinement of the hospital bed, a situation that requires a mother to have her own support person with her at all times. Mothers also report that they lacked the opportunity for skin to skin contact, which is well established as beneficial to promoting successful breastfeeding initiation (Little et al., 2018). Of interest, there was conflict between the medical chart documentation and maternal report of skin to skin contact. Mothers report that holding the infant in a full swaddle was recorded as skin to skin time. Due to the aforementioned pain, nausea, and immobility, mothers struggled to perform basic newborn care and needed more support from nursing staff to accomplish activities that facilitate successful breastfeeding initiation such as placing an infant skin to skin.

Quantitative Review

An additional four quantitative articles were selected for inclusion in this review. Please see table 2.2 for a summary of quantitative studies reviewed. One study was a secondary data analysis of the Infant Feeding Practices survey of 1993-94 (DiGirolamo et al., 2003). The remaining three studies collected primary data. One research team developed their own tool for assessing mothers' perception of support by healthcare staff (nurses, lactation specialists, pediatricians, and obstetricians) during the postpartum hospital stay (Kuan et al., 1999). While the tool was not included in the publication, the author was contacted to obtain a copy of this tool. She responded that she no longer maintained a record of the tool used. Another research team employed a survey included in the tools for hospital self-assessment created by the Baby Friendly Hospital Initiative (Hadjiona et al., 2016). Of the four quantitative studies included for review, three studies included inferential statistical analysis, thus providing potentially generalizable evidence (DiGirolamo et al., 2003; Kiełbratowska et al., 2018; Kuan et al., 1999). One study included descriptive data analysis only, limiting the results as applicable only to the study population and not generalizable to a greater population of new mothers (Hadjiona et al., 2016). Between the two rigorous studies, only one conducted inferential analysis relevant to the purpose of this review (DiGirolamo et al., 2003).

Among the quantitative studies, findings emerged that mirror the themes of the qualitative literature. DiGirolamo et al. in their analysis of perceived attitudes of obstetricians, midwives, and hospital nurses, and mothers breastfeeding decisions posited that these providers might refrain from offering encouragement for breastfeeding for fear of causing guilt in the mother who is ambivalent toward breastfeeding or perceives her

breastfeeding experience as unsuccessful (DiGirolamo et al., 2003). Additionally, anxiety related to breastfeeding was noted among postpartum mothers (Kiełbratowska et al., 2018). This study found that Polish mothers who experienced unmedicated, physiological birth in a Baby Friendly designated hospital expressed the lowest level of state anxiety. State anxiety is anxiety felt within the parameters of a specific situation, in this study defined as the postpartum hospital experience. Mothers with higher anxiety scores demonstrated a shorter duration of any breastfeeding.

One study among the quantitative literature reviewed included inferential analysis comparing breastfeeding outcomes to perception of obstetricians, midwives, and hospital nurses' preference for breastfeeding (DiGirolamo et al., 2003). Breastfeeding success was defined as breastfeeding exclusively according to the prenatal intention of each mother. After controlling for age, race, education, income, parity, employment status, father's preference for feeding method, and comfort level of breastfeeding in public, the perceived preference of hospital nurses for breastfeeding remained a significant predictor for reaching intended breastfeeding duration (OR 1.77, 95% CI 1.31-2.41).

Much of the findings of the quantitative studies were limited to descriptive analysis. Although Hadjiona et al. collected quantitative data measuring maternal perception of hospital breastfeeding support as well as data regarding the status of breastfeeding exclusivity in the hospital, the research team did not employ an inferential statistical model to compare association of breastfeeding support with breastfeeding outcomes (2016). Rather, frequency of perceived adherence to the Ten Steps to Successful Breastfeeding and compliance with the International Code for Marketing of

Breastmilk Substitutes was provided. Without inferential analysis, the frequency of perceived adherence is only useful to the specific facility where data was collected.

Discussion

The articles included in this synthesis range in date from 1999-2018. Half of the studies reviewed are greater than ten years old. Although the overall prevalence of breastfeeding in the United States has risen since the time most of these articles were published, there is still need for improvement. While it is well established that the hospital experience and breastfeeding success are linked, simply knowing the link exists is not enough to enact effective practice improvement. Further research is needed to identify specific constructs of the hospital experience that need improvement.

One construct that appeared as a recurring theme in the qualitative literature was inconsistent and poor-quality advice and support for breastfeeding (Chaplin et al., 2016; Hong et al., 2003; Mauri et al., 2012). Chapin et al. identified conflicting breastfeeding advice as a source of maternal anxiety. Likewise, Kielbratowska et al. found in their quantitative analysis that maternal anxiety level is associated with Baby Friendly designation status (2018). These could be identified as similar findings, as perhaps nurses in Baby Friendly hospitals are better educated regarding evidence based breastfeeding support and therefore more likely to offer consistent advice. Kielbratowska also found that higher state anxiety was associated with shorter duration of breastfeeding. Thus, anxiety related to poor and inconsistent advice in the hospital might lead to early termination of breastfeeding. This pattern of behavior is identified in the health behavior theory known as the Health Belief Model (Rosenstock, 1974). If a person is too overwhelmed by the internal conflict of action required to implement a health behavior

and the perceived obstacles to performing such action, they might reach a level of anxiety that causes them to shut down all effort to engage in health promoting behavior. Thus, if maternal anxiety related to infant feeding presents an insurmountable barrier to success and this barrier reinforced by inconsistent advice from postpartum nurses, then that mother is at risk for early termination of breastfeeding.

Perhaps more destructive than inconsistent support is the perception that nurses give inadequate support and lack concern regarding breastfeeding success. Mothers consistently reported that they desired greater physical presence for breastfeeding support than what they received from their postpartum nurses. Analysis of a staffing survey conducted in 2010 by the Association for Women's Health, Obstetric, and Neonatal Nurses confirmed nurse agreement with these patient perceptions (Simpson et al., 2016). Like mothers, nurses feel that due to high patient acuity as well as high nurse-patient ratios, they are not able to give adequate time to each mother and baby. This is especially difficult when considering breastfeeding support, generally a non-emergent care process. For example, if a nurse is simultaneously caring for a mother newly released from surgery who requires frequent vital sign monitoring and pain control, and a mother who is nearing her discharge time but needing support with breastfeeding, the nurse must prioritize the surgical patient. Managing staffing ratios within the confines of the hospital budget is a difficult task. However, breastfeeding support and helping mothers to establish breastfeeding exclusivity prior to discharge should be a high priority goal in staffing and budget considerations.

While breastfeeding support should be a priority for caregivers, staff must navigate the quagmire of respecting a mothers' infant feeding decision. The debate over

infant feeding methods ignites passionate responses from both those promoting exclusive breastfeeding for all infants and those who view formula feeding as equally beneficial (Woollard, 2018). The theme of fear of causing guilt among new mothers emerged in this review as a barrier to staff encouragement of breastfeeding. Diane Weissinger, posits that the constructs of maternal guilt and shame that typically dominate feelings associated with not breastfeeding ought to be replaced with feelings of anger and betrayal by the medical community (Wiessinger, 1996). Thus rather than refraining from promoting breastfeeding for fear of causing guilt, nurses caring for these mothers should change the narrative and offer evidence based, high quality breastfeeding support to all mothers, especially those struggling, for fear of betraying mother's trust in their position as advocates for optimal health of both her and her child.

This literature review revealed that mothers recovering from cesarean birth experience additional barriers to breastfeeding such as pain, nausea, and immobility, and safety concerns related to infant care after surgery. High quality breastfeeding support is especially important in the presence of known barriers to successful breastfeeding such as cesarean birth. Although the World Health organization recommends that cesarean birth comprise 15% or less of all births, the United States has an overall cesarean birth rate of 32% (Martin et al., 2018). While lowering the cesarean birth rate is a public health priority, the special needs of mothers managing breastfeeding initiation during surgical recovery cannot be ignored. Women identified pain, nausea, sleepiness, and immobility as primary obstacles to breastfeeding initiation after cesarean birth (Chaplin et al., 2016). Cesarean birth is also associated with delayed lactogenesis phase two (Nommsen-Rivers et al., 2010). Although surgical patients require intensive nursing care, the first days of

life are still critical for establishing successful breastfeeding. Therefore, developing breastfeeding support protocols specifically for women who experienced cesarean birth is necessary to ensure successful initiation of exclusive breastfeeding.

Strengths Limitations

By reviewing both qualitative and quantitative literature for this review, I was able to survey all available literature on this topic of mothers' perception of hospital breastfeeding support. This review was further strengthened by using established assessment criteria, Strengthening the Reporting of Observational Studies in Epidemiology checklist for quantitative literature and National Institute for Health and Care Excellence checklist for qualitative literature, to critically evaluate the quality of available literature. This review was limited by the lack of rigorous quantitative studies found. Specifically, only one study included inferential data analysis examining the relationship of perceived hospital breastfeeding support and breastfeeding outcomes.

The paucity of high-quality quantitative literature studying mothers' perception of nursing support and breastfeeding success could be a contributing factor to the current absence of a standard quantitative assessment instrument that synthesizes established predictors of exclusive breastfeeding. By developing an instrument that comprehensively measures essential constructs of breastfeeding specific care, results from administration of this tool could inform improvement of practice guidelines that could in turn positively impact the number of mothers who successfully establish exclusive breastfeeding while in the hospital.

Conclusion

This review aimed to identify specific aspects of the postpartum hospital experience and specific behavior of postpartum nursing staff that mothers perceive as helpful or not helpful toward successfully establishing exclusive breastfeeding before postpartum hospital discharge. Behaviors that are helpful include offering evidence-based advice that is consistent from caregiver to caregiver, being physically present with the breastfeeding mother, and offering encouragement. Unhelpful behaviors include offering anecdotal advice, not assigning breastfeeding care as a priority, and not considering the special needs of the mother breastfeeding while recovering from surgical birth.

The association between hospital experience and perceived breastfeeding support during the postpartum hospital stay and successful initiation of exclusive breastfeeding is established. All constructs of the hospital experience or behavior of postpartum nursing staff that influence breastfeeding initiation have not been thoroughly identified in literature. High quality, rigorous research examining the details of the relationship between hospital experience and breastfeeding initiation are lacking. Among the available literature, mothers identify inconsistent and low-quality advice, understaffing, lack of encouragement, and physical limitations related to cesarean birth as obstacles to breastfeeding initiation during the postpartum hospital stay. Further research is needed to identify the presence of additional common themes toward the goal of developing a comprehensive survey instrument for measuring maternal perception of postpartum breastfeeding support.

Table 2.1: Qualitative Studies Reviewed

Authors / Location	Purpose / Method	Sample Size	Themes Emerged
Mauri, 2011 Italy	To investigate the meaning of latching difficulty among Italian mothers Phenomenology	15	<ul style="list-style-type: none"> • Mothers reported receiving conflicting advice from healthcare providers • Mothers appreciated peer support found in the lactation lounge housed within the postpartum unit • Mothers identified that “integrated healthcare support and education is fundamental to overcome early breastfeeding problems
Hong, Callister, Schwartz, 2003 United States	To gain insights into the perceptions of first-time mothers regarding nurses’ support of breastfeeding within the first 48 hours after birth Phenomenology	20	<ul style="list-style-type: none"> • Mothers desired emotional support from nursing staff, specifically: encouragement, reassurance, showing concern, physical presence throughout breastfeeding, offering proactive help, having a positive affect, professionalism, respecting mothers feeding decisions • Mothers desired informational support, specifically: answering direct questions, hands-on support such as positioning and technique demonstration • Mothers desired tangible support, specifically: offering breastfeeding aids, literature, videos, support phone numbers • Non-supportive behavior identified: ignoring breastfeeding altogether, spending minimal time at the bedside, feeling rushed, intimidation, failure to follow up, not assessing breastfeeding, perceived limited knowledge, conflicting advice, lack of concern, lack of anticipatory guidance

Table 2.1 (Continued): Qualitative Studies Reviewed

Authors / Location	Purpose / Method	Sample Size	Themes Emerged
Chaplin, Kelly, Kildea, 2016 Australia	To explore the experience of women with breastfeeding problems following a cesarean section under regional anesthesia using interpretive phenomenology Interpretive phenomenology	8	<ul style="list-style-type: none"> • Perceptions of caesarean specific obstacles with breastfeeding: • Perceived birth as “unnatural” • Mother felt “dopey”, anxious, and nauseated • Desired skin to skin contact but was presented with infant in full swaddle • Unable to reach infant due to immobility • Infants’ natural instincts were compromised due to medication from surgery • Received conflicting information from nursing staff • Nurses were too busy to spend time assisting with breastfeeding • Sabotage and defeat – mothers perceived milk supply was low, and nurses were eager to give formula • Disappointment, frustration, failure with birth experience
Gill, 2001 United States	To describe how maternal-child nurses facilitate breastfeeding efforts by mothers during the postpartum hospital stay and how the mothers perceive the support received from these nurses Ethnography	12 Nurses, 8 Mothers	<ul style="list-style-type: none"> • Mothers desired hands on support from nurses and more time spent at the bedside assisting with feeding • Mothers desired more encouragement, but nurses were hesitant to give encouragement for fear of seeming “pushy” • Nurses remained with mothers an average of 3 minutes per feeding • Nurses only responded to direct questions, but did not offer support unless directly asked • Nurses gave anecdotal advice, from personal experience • Nurses perceived that giving written literature was adequate, but mothers desired more interpersonal help • Mothers perceived nurses as being too busy to help with breastfeeding

Table 2.2: Quantitative Studies Reviewed

Study	Purpose	Sample Size	Measures Used	Outcome Measures	Relevant Findings
Kielbratowska et al., 2018 Poland	To assess the association between female perception of support given by medical personnel during the perinatal period, length of breastfeeding, including the time of exclusive breastfeeding, and anxiety experienced by the hospitalized women.	858 completed support perception survey, 317 completed STAI	BFHI Self-Assessment tool STAI	Relationship between level of anxiety in the perinatal period and duration of breastfeeding	<ul style="list-style-type: none"> • Cross-sectional, observational study • Higher level anxiety related to shorter duration of breastfeeding • Lower anxiety level associated with birth in a Baby Friendly hospital • Smallest hospital showed significant relationship between higher perceived support and duration of breastfeeding.
Digirolamo and Grummer-Strawn, 2003 United States	To assess the impact of perceived medical caregiver attitudes about infant feeding practices on actual breastfeeding behavior.	1585	Infant Feeding Practices Survey, 1993-1994	Breastfeeding status at 6 weeks postpartum	<ul style="list-style-type: none"> • Secondary data analysis • 41% of mothers were not breastfeeding at 6 weeks • After adjusting for age, race, education, child gender, income. Parity, prenatal breastfeeding intention; mothers who perceived the staff had no feeding preference were significantly less likely to breastfeed at 6 weeks.

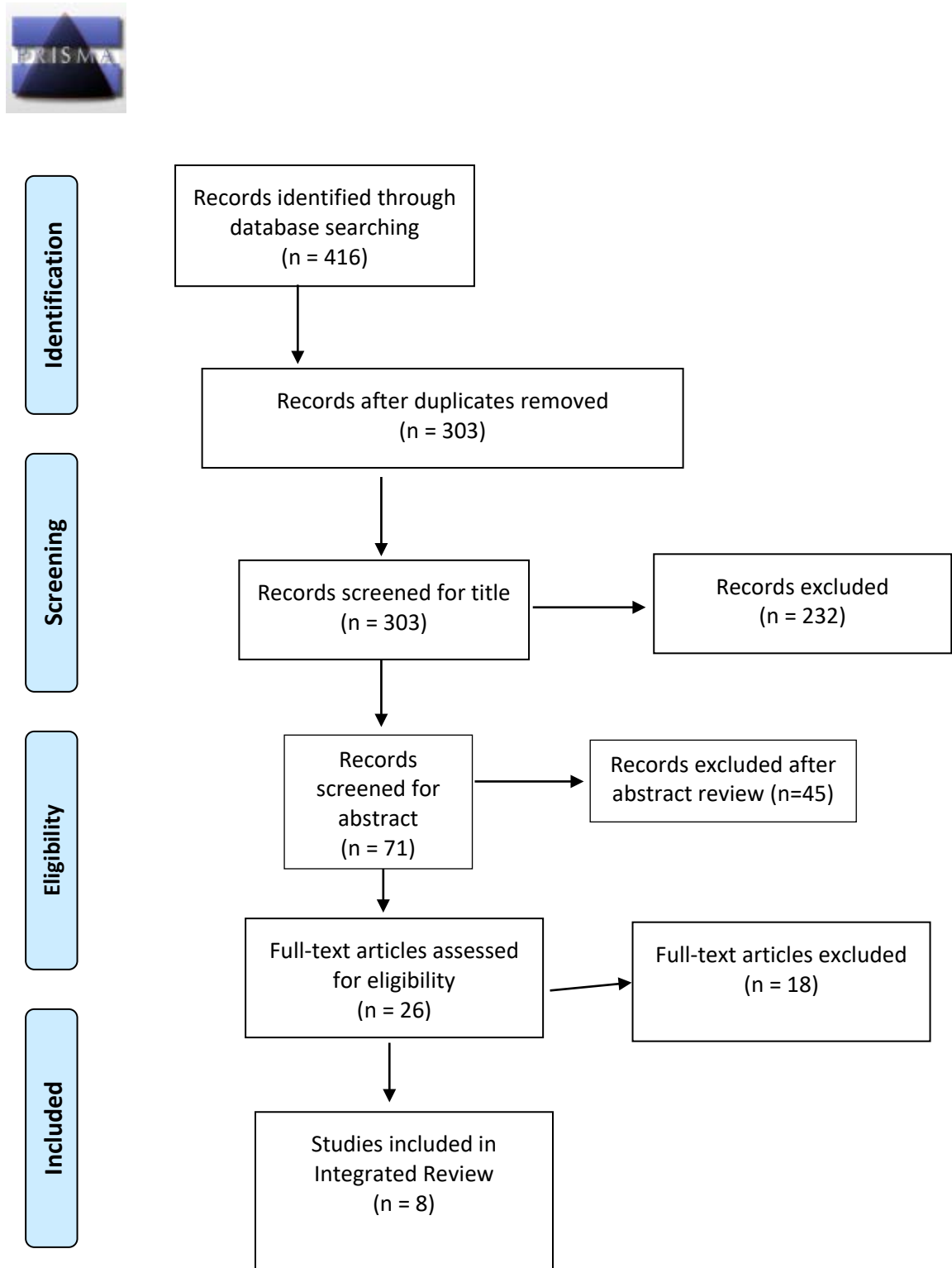
Table 2.2 (Continued): Quantitative Studies Reviewed

Study	Purpose	Sample Size	Measures Used	Outcome Measures	Relevant Findings
Kuan et al., 1999 United States	To identify and characterize sources of information and support that contribute to successful breastfeeding in the early postpartum period	522	Self-developed instrument	Breastfeeding success, defined as reaching mothers' own prenatal intended goal	<ul style="list-style-type: none"> • Nonrandomized, prospective cohort study • 76.4% of mothers achieved their personal breastfeeding goal • Mothers who successfully achieved their goals were more likely to be older, married, college educated, have a supportive partner, and have a hospital experience rated as "good" or "very good" • Controlling for all variables, education, age, and hospital experience were predictive of breastfeeding success • Description of how exactly hospital experience was measured is not described

Table 2.2 (Continued): Quantitative Studies Reviewed

Study	Purpose	Sample Size	Measures Used	Outcome Measures	Relevant Findings
Hadjiona et al., 2016 Cyprus	To assess the degree of implementation of each of the 10 steps and the ICMBS in maternity units of Nicosia based on mothers' perceptions.	216	Self-assessment and monitoring of Baby Friendly Hospitals, BFHI package, section 4 Breastfeeding Self-Efficacy Scale	Descriptive statistics only, compared adherence to 10 Steps between public and private hospitals	<ul style="list-style-type: none"> • Cross-sectional study • Descriptive statistics only reported • Caesarean rate much lower in private hospital • No inferential results reported • Descriptive report of adherence to 10 Steps is not generalizable

Figure 2.1: PRISMA 2009 Flow Diagram



Chapter Three: Examining the Influence of Postpartum Hospital Care on Exclusive Breastfeeding Outcomes: A Secondary Data Analysis

Introduction

Breastfeeding is the innate, biological method of feeding human infants. Leading authorities in maternal-child health recommend that infants breastfeed exclusively for the first six months of life, and continue to breastfeed with complimentary food for twelve months or beyond (American Academy of Pediatrics [AAP], 2012a; Center for Disease Control [CDC], 2018; Chantry et al., 2015; Crowe & Hanley, 2018; World Health Organization [WHO], 2017). Exclusive breastfeeding is defined as infants taking in no other food or fluid besides breastmilk, with the exception of medication or fluid related to religious or cultural ceremony (Kellams et al., 2017). Currently, one quarter of infants in the United States breastfeed exclusively through the first six months of life (CDC, 2018).

Although prevalence of exclusive breastfeeding is low, the number of infants in the United States who initiate and continue breastfeeding has been steadily on the rise since 2000 (Oliveira et al., 2019). Of infants of infants born in the United States in 2015, 83.2% initiated breastfeeding, and 64.7% of infants were exclusively breastfeeding at seven days old (Oliveira et al., 2019). The prevalence of mothers in the United States who breastfeed at all is lowest in the Southeast (CDC, 2018). In Kentucky, between April 2017 and March 2018, 73% of new mothers initiated breastfeeding at birth. Upon discharge from the postpartum hospital stay, or 48-72 hours after birth, 41% of these newborn infants were breastfeeding exclusively (The Joint Commission, 2018).

Although the rate of any breastfeeding as well as exclusive breastfeeding has been rising since the beginning of the century, infants born to ethnic minority, low-income households, and infants born to mothers with less than a college education are less likely

to breastfeed (Jones et al., 2015; Whipps, 2017). That is, the likelihood of breastfeeding initiation, exclusivity, and duration is influenced by social determinants of health (Oliveira et al., 2019). While the overall prevalence of exclusive breastfeeding at six months was about one quarter of all infants, when controlling for eligibility for the Women, Infants, and Children Supplemental Nutrition Assistance Program (WIC), the social determinant divide is clear. Among families who met the low-income requirements for WIC participation, 17.8% were breastfeeding exclusively at six months. Comparatively, 33.1% of infants born to families of higher income, and thus ineligible for WIC were exclusively breastfeeding at six months (Oliveira et al., 2019). If 90% of families enrolled in WIC practiced exclusive breastfeeding for six months and continued breastfeeding until 12 months, with complementary food, but not formula, the United States would see an estimated health care savings of \$9.1 billion (Oliveira et al., 2019).

The benefits of breastfeeding have clear economic and health implications for both mothers and infants. Direct health benefits to the mother include lower risk of breast and uterine cancers, lower risk of cardiovascular disease, and, decreased risk of postpartum hemorrhage (AAP, 2012a). Infants who are exclusively breastfed experience a lower risk of otitis media, respiratory infections, gastrointestinal infections, death from sudden unexplained infant death, and childhood obesity (Oliveira et al., 2019). Infants born to low-income and ethnic minority families have the highest risk of morbidity and mortality from these causes (CDC, 2019).

Literature Review

Breastfeeding specific care that mothers receive from their postpartum nurses and lactation specialists is integral to successfully initiating exclusive breastfeeding.

However, specific elements of in-hospital postpartum care that facilitate breastfeeding initiation have not been well studied. For this manuscript, breastfeeding specific care is defined as support offered by nurses and lactation specialists specifically for the purpose of breastfeeding promotion or troubleshooting from conception through weaning. As successful initiation is necessary for continuation, breastfeeding specific care in the early days of life affects breastfeeding success throughout infancy of the child (Chantry et al., 2014; Pounds & Shostrom, 2018). In 2011 the Surgeon General identified deficits within the healthcare system that likely contribute to interruption of exclusive breastfeeding during the postpartum hospital stay (U.S. Department of Health and Human Services, 2011). One identified deficit is the practice of assigning breastfeeding support as a low priority care construct. Mothers consider clinician advice important in influencing their own breastfeeding decisions. However, clinicians themselves underestimate their influence in breastfeeding continuation.

Another deficit of current healthcare practice, as identified by the Surgeon General's report of 2011, is providing formula supplementation to healthy, full term breastfed newborns (U.S. Department of Health and Human Services, 2011). Breastfed infants who are supplemented with formula in the hospital are less likely to exclusively breastfeed at six months than infants who were not supplemented (Dabritz et al., 2010). Though the Center for Disease Control reports that 17.2% of new mothers initiate formula supplementation in the hospital, current literature supports that nearly half of mothers who intend to exclusively breastfeed initiate formula supplementation during the postpartum hospital stay (CDC, 2018; Chantry et al., 2014; Nguyen et al., 2017; Pierro et al., 2016). Due to the time sensitive nature of establishing breastmilk supply, interrupting

the process of lactogenesis with non-mother's milk supplementation puts mothers and babies at high risk for early termination of breastfeeding (Kellams et al., 2017). The overall purpose of this manuscript is to determine factors that influence successfully establishing exclusive breastfeeding. The first aim of this paper is to identify how maternal perception of the hospital experience predicts exclusive breastfeeding during the postpartum hospital stay. The second aim of this study is to examine how the perceived quality of the hospital experience and breastfeeding self-efficacy predict exclusive breastfeeding at four weeks of life.

Methods

Design

In this secondary analysis, data from a two-sample, randomized, controlled trial of a peer-counselor-delivered breastfeeding education intervention were analyzed (Linares, 2015; Linares et al., 2019). The parent study was approved by the University of Kentucky Institutional Review Board. The primary objective of the trial was to test a community-based intervention to increase breastfeeding initiation, duration, and exclusivity in low-income infant-mother dyads in Kentucky.

The parent study was a randomized, controlled trial consisting of two groups, one with only Hispanic participants (n=39), with the other group (n=63) consisting of participants who were Caucasian, African American, Hispanic, and mixed race or ethnicity. Participants were recruited near the thirtieth week of pregnancy and followed through four months after birth. Women were recruited from a university prenatal clinic serving primarily a low-income population in the Southeastern United States. In 2015, all participants delivered at the university-affiliated Baby Friendly Hospital. Inclusion

criteria consisted of 1) prenatal intention to breastfeed and 2) the intention to remain in the area for six months after birth. Exclusion criteria consisted of: 1) prior or current participation in any study to enhance breastfeeding, 2) twin or multiple pregnancy, 3) a history of breast surgery, 4) any contraindication to breastfeeding (e.g. HIV-positive status, chronic therapy with medications incompatible with breastfeeding), and 5) presumed or known congenital fetal defects. Data was collected at six time points, two prenatally (at 30 and 37-weeks' gestation), once at birth, and three times after birth (at 1 month, four months, and six months).

For this analysis, participants from the control group of each arm of the parent study are included. A total of 45 mothers were included in this analysis, 17 participants from the Hispanic-only group and 28 participants from the multi-ethnic group. Participants included in this analysis must have provided data four-weeks after birth, when the Hospital Experience survey was administered.

Measurement of Variables

The dependent variable of interest, exclusive breastfeeding at hospital discharge, was collected by self-report. Infant feeding patterns in the hospital were also collected by hospital chart review. There was no disagreement between self-reported results and medical chart review regarding in-hospital infant feeding. Ethnicity, age, and education level, defined as high school equivalent or less and post-secondary education were identified by self-report and were collected at the time of enrollment, approximately 30-weeks' gestation. Parity, defined as whether or not each participant had previously given birth, was collected by self-report. Mode of delivery, defined as vaginal or cesarean birth, was collected by medical chart review.

Perception of breastfeeding specific care in the hospital was measured by a survey administered at four weeks after birth and based on the Ten Steps to Successful Breastfeeding (World Alliance for Breastfeeding Action, 1991). This survey, titled “Every Step Counts!” was originally developed in 1991 by the World Alliance for Breastfeeding Action. The purpose of this survey was to measure patients’ perception of how well a hospital adheres to the Ten Steps to Successful Breastfeeding. The Ten Steps to Successful Breastfeeding is a list of criteria, developed by the Baby Friendly Hospital Initiative, designed to promote breastfeeding exclusivity and duration (WHO, 2018). Hospital adherence to the Ten Steps to Successful Breastfeeding should provide mothers with optimal support to promote breastfeeding exclusivity during the initial postpartum period. For this analysis, the “Every Step Counts!” survey will be described as the “hospital experience” survey. According to the authors of the survey, a score of 0-12 indicates very low adherence to the Ten Steps to Successful Breastfeeding. This sixteen-item survey has a maximum possible score of seventeen. Most items called for a dichotomous “yes” or “no” response. For these items, each positive response, or “yes”, was scored with one point and each negative or “no” response was scored with zero points. One item measured time from birth to first breastfeed. Mothers who report more than one hour to breastfeeding were scored as “0” for this item, 30 minutes to one hour were scored as “1”, and 0-30 minutes scored as “2”. Higher score on this survey indicates that a mother perceived her hospital experience as more adherent to the Ten Steps to Successful Breastfeeding. A search for evidence of reliability analysis of this tool yielded no results. Reliability analysis of the Hospital Experience Survey in this sample yielded at Kuder-Richardson 20 coefficient of 0.735. Maternal perception of

breastfeeding care in the hospital was collected four weeks after birth during a home visit with a research assistant. This survey was administered on paper and either completed by the participant herself or with the assistance of the research assistant.

The breastfeeding self-efficacy scale-short (BSES) form was administered at four weeks after birth (Dennis, 2003). This 14-item scale, developed in 2002, measures breastfeeding confidence. Scores on this scale range from 14 to 70, with higher scores demonstrating higher self-efficacy in breastfeeding. The BSES is grounded in Bandura's theory of self-efficacy and measures a mother's level of commitment to breastfeeding, confidence in breastfeeding and emotional response to breastfeeding challenges using a five-point Likert scale. The BSES has an established Cronbach's alpha coefficient of 0.97.

Data Analysis

Data analysis was performed using SPSS version 26. Data was analyzed at two time points: hospital discharge and four weeks after birth. Demographic characteristics are reported as number and frequency for categorical variables and as mean with standard deviation for continuous variables. Differences in the characteristics of ethnicity, education, dichotomized hospital experience score, mode of delivery, and parity were examined using chi-square test of significance between mothers who breastfed exclusively in the hospital and those who did not. Age differences between mothers who breastfed exclusively and those who did not was examined using independent sample t-test analysis. The hospital experience score was analyzed as a binary outcome of a total score of 3-12 and 13-17. To explore adjusted associations between exclusive

breastfeeding at discharge and the hospital experience, binary logistic regression was used including the independent variables of mode of delivery and level of education.

Analysis of data at four weeks after birth included total score on the breastfeeding self-efficacy scale as completed at four-weeks postpartum. The total number of respondents for this time point was n=41, as four participants did not provide a response to infant feeding method practiced at four weeks. To examine the association between the hospital experience and exclusive breastfeeding at four weeks, binary logistic regression was used again, this time including the independent variable of Breastfeeding Self-Efficacy score. Significance for testing the hypothesis, that women who perceive a more supportive breastfeeding experience in the hospital are more likely to breastfeed exclusively than women who perceive lower breastfeeding support, of this study was set at an alpha level of 0.05.

Results

A total of 45 women were included in the first analysis, which examined variables associated with exclusive breastfeeding at discharge. Of the 45 participants, 47% (n=21) were breastfeeding exclusively at hospital discharge. Mothers ranged in age from 14 to 38 with a mean age of 28 (SD \pm 6). Ethnicities represented in this analysis were Hispanic or Latina 71% (n=32), Caucasian 24% (n=11), and African American or “other” 4% (n=2). Scores on the hospital experience survey ranged from 3-17. The overall median score of the hospital experience survey was 13, which serves as the cut-point for this analysis. This is in agreement with the authors’ scoring guide that states a score of 0-12 indicates poor adherence to the Ten Steps to Successful Breastfeeding.

Within the full group, 47% (n=21) of mothers evaluated their hospital experience with a total score of less than 13 (Table 2.1). The chi-square test of association was nonsignificant in examining group differences between variables commonly associated with exclusive breastfeeding including parity, education, age, and mode of delivery. Though a statistically significant group difference was demonstrated between ethnic groups, there were not enough non-Hispanic women included in this study to draw a meaningful conclusion from this finding.

Predictors of Exclusive Breastfeeding at Hospital Discharge

Indicator variables included in the logistic regression model were hospital experience score of 13 or greater, educational attainment of some college or greater, and vaginal birth (Table 2.2). The overall model was significant with a chi-square value of 16.35 (p=0.001). The Hosmer-Lemeshow Goodness of Fit test was not significant with a chi-square value of 1.645 (p=0.41). This demonstrates evidence that the chosen variables are an adequate fit for logistic regression. As a whole, the model explained between 30% (Cox and Snell R square) and 41% (Naegekerke R squared) of the variance in exclusive breastfeeding status, correctly identifying 53% of cases. Binary logistic regression analysis indicated that rating the perceived hospital experience with a score of 13 or greater (OR 10.633, p=0.002) was positively associated with likelihood of exclusively breastfeeding at the time of hospital discharge. When controlling for education and mode of delivery, scoring greater than 13 on the hospital experience survey was a predictor of exclusive breastfeeding at hospital discharge.

Predictors of Exclusive Breastfeeding at 4 Weeks

A second analysis was performed to examine if the hospital experience evaluation remained a predictor of exclusive breastfeeding at four weeks after birth. For this second analysis, 41 women were included. Of the 41 women who responded, 39% (n=16) were breastfeeding exclusively. At this time, participants were asked to complete the BSES. Scores on this scale ranged from 17 to 70 with a mean of 60.6 (SD 12.1). T-test analysis demonstrated that women who were breastfeeding exclusively at four weeks scored significantly higher on the BSES ($p=0.03$) than women who were not breastfeeding exclusively.

Indicator variables included in the logistic regression model examining associations of breastfeeding exclusivity at 4 weeks included hospital experience, rated as score of 12 or less and 13 or greater, and total score on the breastfeeding self-efficacy scale. The overall model was significant with a chi-square value of 9.4 ($p=0.025$). The Hosmer-Lemeshow Goodness of Fit test was not significant with a chi-square value of 7.132 ($p=0.52$). This demonstrates evidence that the chosen variables are an adequate fit for logistic regression. As a whole, the model explained between 20% (Cox and Snell R square) and 28% (Naegelekerke R squared) of the variance in exclusive breastfeeding status, correctly identifying 61% of cases. At four weeks after birth, rating the hospital experience with a score of 13 or greater was no longer a significant predictor of exclusive breastfeeding status (OR 3.5, $p=0.09$) (Table 3.3). Total score on the breastfeeding self-efficacy scale was a predictor of exclusive breastfeeding status at four weeks (OR 1.11, $p=0.045$). The effect of score on the BSES as a moderator between Hospital Experience

score and breastfeeding exclusivity at four weeks was examined. No significant moderation effect was detected ($p=.32$)

Discussion

This secondary data analysis demonstrated that women who rated their hospital experience with a score of 13 or greater for breastfeeding-specific care were more likely to exclusively breastfeed at discharge when compared to women who rated their experience with a score of 12 or less. Though the relationship between the postpartum hospital experience and successful initiation of exclusive breastfeeding has not been widely studied, results of this analysis converge with current literature in the finding that the breastfeeding specific hospital experience is a strongly associated with exclusive breastfeeding during the hospital stay (Schliep et al., 2019).

In this analysis, at four weeks after birth, the hospital experience evaluation was no longer a significant predictor of breastfeeding exclusivity. The disappearance of this relationship at four weeks could be explained by a lack of professional breastfeeding support after discharge. In the United States, women usually go home forty-eight hours after a vaginal birth and seventy-two hours after a cesarean birth. After discharge, access to professional lactation care is limited. While frequent follow-up visits with a lactation professional after discharge would be ideal, this is not part of routine care in the United States. However, it is important that women not only receive high quality lactation support during the hospital stay, but also continue to receive high quality lactation support after discharge. Continued support could improve the likelihood that a woman will reach her intended breastfeeding exclusivity and duration goal. Current means of lactation support after discharge include breastfeeding clinics, provided as a service of

some birthing hospitals, staffed by lactation consultants. La Leche League International can provide support from lay leaders to women who may not have convenient access to a birthing center. Finally, many lactation consultants offer private, in-home consultations and support, though the fees associated with this service are not covered by insurance or Medicaid and are prohibitive to many women.

Breastfeeding care in the hospital maybe have been affected in this study by the acuity level of the hospital where all participants gave birth. All participants in this study gave birth in a hospital that has one of two level IV neonatal intensive care units in the state. A level IV neonatal intensive care unit is the highest acuity level, equipped to provide care to neonates with the most critical needs (AAP, 2012b). A study analyzing data from 138 maternity hospitals in New York State found that patients birthing in hospitals providing care to lower acuity patients were more likely to exclusively breastfeed at hospital discharge when compared to regional medical centers equipped to provide care to very high acuity patients (Kacica et al., 2012). One reason the authors proposed for explaining this difference is normative attitude toward breastfeeding of the care providers. In lower acuity, community hospitals, uncomplicated birth of term infants is the norm. Caring for patients with medical barriers to breastfeeding such as preterm birth, infant admission to the neonatal intensive care unit, or serious illness of the mother, is not part of routine practice for providers at low-acuity hospitals. If uncomplicated birth is the norm of the hospital, then uncomplicated breastfeeding is presumed and therefore encouraged. Conversely, nurses at high acuity hospitals routinely care for patients experiencing complicated pregnancy, birth, and postpartum recovery. Regularly caring for patients with major barriers to breastfeeding may

influence providers' belief toward breastfeeding and thus influence their practice in encouraging or discouraging exclusive breastfeeding. In this analysis, all of the women gave birth at a high acuity regional medical center. Thus, the patient population may have influenced the attitudes of staff and providers in a way that negatively impacts promotion of exclusive breastfeeding.

Several findings from this analysis diverge from current literature. First, mode of delivery is associated with exclusive breastfeeding in established literature, though a significant association was not found in this analysis (Beake et al., 2017; Chen et al., 2018). There are many influences likely contributing to this association. First, mothers who give birth vaginally are more likely to initiate breastfeeding within the first hour after birth (Chen et al., 2018). Early initiation leads to higher likelihood of breastfeeding exclusivity and duration (Chen et al., 2018). Second, recovery from cesarean birth is more difficult than uncomplicated vaginal birth. As cesarean birth is major abdominal surgery, post-surgical pain can present a barrier to breastfeeding. Due to the physiology of breastfeeding, in which oxytocin released by the anterior pituitary in response to nipple stimulation by the suckling infant causes uterine contractions, the act of breastfeeding can cause significant pain for mothers recovering from cesarean birth (Riordan & Wambach, 2010). Pain associated with breastfeeding likely contributes to the phenomenon that infants who are born via cesarean section are more likely than infants born vaginally to receive formula supplementation. (Chen et al., 2018).

Like vaginal delivery, women who attain a higher level of education are more likely to breastfeed exclusively for a longer duration (Mangrio et al., 2018). Though an association was not found with exclusive breastfeeding and education in this analysis, the

link is evident in literature. Established literature has proposed that the association of maternal education and breastfeeding could be confounded by maternal age (Biro et al., 2014; Whipps, 2017). Women who give birth at a younger age, especially in her teenage years or early twenties, have not had the opportunity to complete a higher level of education than what is normal for her age. The disadvantage of the young mother is compounded as after birth the young mother must arrange for child-care in order to finish her education. While there is not a definitive cut point of the age when mothers are more likely to have a longer breastfeeding duration, a study examining the relationship between maternal age and breastfeeding found mothers who are at least 25 years old have better breastfeeding outcomes of exclusivity and duration (Biro et al., 2014).

Race and ethnicity are also well-known predictors of likelihood of breastfeeding initiation and exclusivity. Results of this analysis demonstrated significant differences in breastfeeding exclusivity by race and ethnicity, but the sample size was not adequate for this result to be meaningful. Other studies have demonstrated that African American mothers are less likely to initiate breastfeeding when compared to white and Hispanic mothers (Anstey et al., 2017; McKinney et al., 2016). Although Hispanic mothers have a high rate of breastfeeding initiation, they are more likely to feed infants with a combination of breastmilk and formula (Linares et al., 2019).

Strengths and Limitations

A strength of this study is that the dependent variable of interest, exclusive breastfeeding at hospital discharge, was verified in two different ways. Both hospital chart review and self-report were used to collect this data point. No disagreement was

found for any of the participants providing data between chart review and maternal report.

Participants included in this study were not ethnically representative of the general population of the area of recruitment. The general population of the area is comprised of about 7% Hispanic people. The population of this study was comprised of 71% Hispanic women. As breastfeeding is a culturally sensitive behavior and Hispanic women are more likely to feed both breastmilk and formula, this cultural norm could have influenced the results of this study (Linares et al., 2015). Also influencing results of the study could be a language barrier between staff and patient. Although the research team interacting with patients in this study were fluent in Spanish and all written and verbal communication with Spanish speaking participants was conducted in Spanish, hospital staff who delivered postpartum care were not necessarily fluent in Spanish. Perception of quality of care may have been affected by difficulty related to communication due to language the barrier.

A further limitation of this analysis relates to the Hospital Experience survey used to evaluate perception of breastfeeding-specific care. First, there is the potential for recall bias as women were asked to reflect back to their hospital experience four weeks after birth. Second, the Hospital Experience survey only called for dichotomous responses. Using a survey with a Likert-type scaled response might better capture the perceived quality of care.

Conclusion

This secondary data analysis proposed to identify if the hospital experience is predictive of exclusive breastfeeding status at the time of postpartum hospital discharge.

Results demonstrated that a score of greater than 13 on a hospital experience survey was a significant predictor of exclusive breastfeeding status at hospital discharge. At four weeks after birth, the hospital experience was no longer predictive of breastfeeding exclusivity. The hospital experience tool used in this analysis has not been formally psychometrically tested. Currently, there is not a standardized tool for evaluating the breastfeeding specific care during the hospital stay. Development of a standardized tool is necessary to fully understand how the hospital experience shapes breastfeeding. A better understanding of the specific ways the hospital experience can improve will lead to better patient care and ultimately more mothers and infants getting their best start with exclusive breastfeeding for six months of life.

Table 3.1: Comparison of participant characteristics based on status of exclusive breastfeeding at hospital discharge N=45

	EBF n (%)	Not EBF n (%)	<i>p</i>
Total Group	21 (47)	24 (53)	
Ethnicity			
Caucasian	9 (43)	2 (8)	
African American/Other	0	2 (8)	
Hispanic	12 (57)	20 (84)	0.013
Age	29 (±) 5.5	27 (±) 6.2	0.34
Education			
High School or less	14 (67)	21 (88)	
Some College or more	7 (33)	3 (12)	0.15
Hospital Experience Score			
3-12	4 (19)	18 (75)	
13-17	17 (81)	6 (25)	0.001
Mode of Delivery			
Vaginal birth	17 (81)	16 (67)	
Cesarean birth	4 (19)	8 (33)	0.45
Parity			
Multiparous	15 (71)	20 (83)	
Primiparous	6 (29)	4 (17)	0.48

Table 3.2: Logistic Regression Analysis: Associations of Exclusive Breastfeeding at Hospital Discharge N=45

Predictor	Odds Ratio	95% CI	<i>p</i>
Hospital Experience 13 or greater	10.63	2.43 – 46.57	0.002
Some College or More	2.26	0.37 – 13.8	0.377
Vaginal Birth	2.5	0.4 – 15.5	0.326

Table 3.3: Logistic Regression Analysis: Associations of Exclusive Breastfeeding at 4 weeks postpartum N=41

Predictor	Odds Ratio	95% CI	<i>p</i>
Hospital Experience Score 13 or greater	3.5	0.82 – 15	0.092
Total Score BSES	1.11	1 – 1.22	0.045

Chapter Four: Feeding infants with support from the hospital and the influence of the Ten Steps to Successful Breastfeeding

Introduction

In 1991, the World Health Organization and the United Nations International Children's Emergency Fund began working toward developing a standardized list of practices for hospitals to promote breastfeeding initiation, exclusivity, and duration (Munn et al., 2016). The end result of this work is the Baby Friendly Hospital Initiative (BFHI), which launched in 2001. As of 2018, there are more than 500 Baby Friendly designated hospitals in the United States and more than 20,000 world-wide (Baby Friendly USA, 2018). In the United States, the BFHI is a designation granted by Baby-friendly USA to hospitals that demonstrate compliance with the World Health Organization's International Code for Marketing of Breast-Milk Substitutes as well as adherence to the Ten Steps for Successful Breastfeeding (World Health Organization [WHO] 1981, WHO & United Nations Children's Fund [UNICEF], 2018).

The International Code for Marketing of Breast-Milk Substitutes was drafted in 1981 and provides guidelines for proper marketing and promotion of infant formula. Examples of guidelines include that health care systems and health care workers should not distribute samples of artificial formula for free to pregnant women or mothers of young infants and that administration of infant formula while in the hospital should be given only to infants who require formula feeding, after staff inform mothers of the hazards of formula use (WHO, 1981). Adherence to this Code is voluntary for general operation of a hospital birthing center but required for Baby-Friendly designation.

The Ten Steps to Successful Breastfeeding (Ten Steps) focus on breastfeeding-specific care and provide evidence-based guidelines for hospitals to administer optimal care of childbearing families for the purpose of promoting breastfeeding exclusivity. See Table 4.1 for the Ten Steps. Exclusive breastfeeding for the first six months of life with continued breastfeeding supplemented with complementary foods through twelve months or as long as mutually desired, is recommended by the American Academy of Pediatrics and the World Health Organization (American Academy of Pediatrics [AAP], 2012; WHO, 2017). Exclusive breastfeeding is defined as consuming no other food or fluid besides breast milk, with the exception of medication or fluids related to religious or cultural ceremony (WHO, 2017). The Ten Steps include guidelines such as infants will room-in with their mother 24 hours per day, breastfed infants will not be given a pacifier, and mothers will be assisted to initiate breastfeeding within 30 minutes of birth (WHO, 2018). Although the “baby friendly” name suggests that practices are directed with only consideration of the infant, the Baby Friendly Hospital Initiative is distinctly “mother-friendly” as well (WHO & UNICEF, 2009). Mother friendly practices of the BFHI include encouraging laboring mothers to walk and move as desired, to have a support person of her choice with her at all times, and to eat and drink light food if desired (WHO & UNICEF, 2009). Since the implementation of the Ten Steps and the Baby Friendly Hospital Initiative, the proportion of infants who were ever breastfed in the United States has risen from 50% in the 1990s to over 80% in 2015.

The Ten Steps and the BFHI are currently the standard of care for promoting the best hospital experience regarding breastfeeding (Gomez-Pomar & Blubaugh, 2018). Establishing an adequate milk supply is a time sensitive process, stimulated by frequent

suckling at the breast by the infant (Riordan & Wambach, 2010). Compliance with BFHI guidelines should provide new mothers with an optimized breastfeeding-related hospital experience (Munn et al., 2016). Therefore, mothers delivering in a Baby-Friendly hospital should report both positive breastfeeding-related care in the hospital as well as a high rate of exclusive breastfeeding during the hospital stay. Though adherence to the Ten Steps has been shown to improve breastfeeding exclusivity during the hospital stay, this has not been well researched in the Southeastern United States, a region where breastfeeding initiation, duration, and exclusivity is low (Center for Disease Control [CDC], 2018; Munn et al., 2016). Despite evidence that quality breastfeeding-specific care yields greater breastfeeding exclusivity and duration outcomes, a thorough search of the literature did not find evidence of a standard assessment tool for measuring quality of breastfeeding-specific care during the postpartum hospital stay. As the Ten Steps are currently the standard of care for optimizing breastfeeding initiation, measuring adherence to this guideline can be used as a proxy for measuring quality of breastfeeding-specific care. The purpose of this study was to investigate the relationship between breastfeeding specific care and breastfeeding exclusivity during the postpartum hospital stay in a hospital in the Southeastern United States. Additionally, this study aimed to obtain a descriptive account of mothers' experience of breastfeeding care in the hospital.

Methods

Design and Setting

This was a longitudinal, observational, mixed-methods study using surveys for data collection. Participants were recruited on the day of discharge from their postpartum recovery stay at a Baby-Friendly designated, university hospital in the Southeastern

United States. The initial survey was completed at the bedside. Follow up surveys were sent to participants via email at two weeks after birth and completed from home. Approval for this study was granted by the Institutional Review Board of the University of Kentucky.

Participants

For inclusion in this study women must have been eighteen years or older, have given birth to a term (≥ 37 weeks), singleton infant and have had a desire to breastfeed exclusively. Exclusion criteria included: history of breast surgery or breast cancer, having an infant who required care in the neonatal intensive care unit, and women or infants with a medical contraindication to breastfeeding. Women who could not comfortably communicate in English were excluded from this study. A priori power analysis determined that desirably, a total of 56 women should be included in this study. Data collection took place from January to March of 2020. Participants were given a gift card at the conclusion of the initial survey. Due to unprecedented changes in healthcare, university operations, and government orders for social distancing as a result of the COVID-19 pandemic, recruitment for this study was terminated prior to reaching the participant target.

Measures

For the purpose of this study, breastfeeding specific care is defined as support offered by nurses specifically for the purpose of breastfeeding promotion or troubleshooting from conception through weaning. “Hospital stay” captures the time period from admission to the perinatal unit through discharge, usually forty-eight hours after a vaginal birth and seventy-two hours after cesarean birth. The initial survey

included demographic questions as well as the “Questionnaire for the Breastfeeding Mother”, a survey from the hospital self-appraisal and monitoring document created by the Baby Friendly Hospital Initiative (WHO & UNICEF, 2009). Demographic data collected included participant age, gestation at birth, mode of delivery, maternal education, parity, and family history of breastfeeding. Personal experience with breastfeeding older children for multiparous women was also assessed. The “Questionnaire for the Breastfeeding Mother” was used with permission from the World Health Organization, who published the document. This survey, intended for self-monitoring use by hospitals that have already received Baby-Friendly designation, asks about adherence to steps three through ten of the Ten Steps. Steps one and two apply to staff training and hospital policy and are therefore not obviously experienced by each patient. The purpose of this questionnaire in this study was to measure how closely a participant’s breastfeeding and postpartum care adhered to the Ten Steps. Seventeen questions are included in this survey. The scoring method for this tool was developed by this research team, as the authors of the tool did not provide information for calculating a total score of this survey. Possible scores ranged from 0-17. See table 4.2 for survey items.

A follow up survey was sent to participants electronically, two weeks after the initial survey was complete. This follow up survey was completed at the participant’s convenience from their personal electronic device. The follow up survey asked participants to indicate feeding method at two to four weeks after birth. This survey also included open ended questions regarding perceived facilitators and barriers to successful breastfeeding initiation that the patient experienced while in the hospital.

Procedure

The primary investigator personally conducted all recruitment activity and survey administration. On each visit, the primary investigator would consult with either the lactation nurse, the discharge nurse, or individual patient care nurses to identify potential participants. After confirming eligibility with a member of the direct care team, potential participants were approached to determine desire to participate. If they agreed to participate, the primary investigator obtained informed consent from each participant. After granting consent, participants completed the first survey electronically, using an iPad provided by the primary investigator. To reduce literacy bias, participants had the option of either completing the survey herself or having the questions read aloud to her by the primary investigator. At two weeks after birth, a link to the follow up survey was sent to each participant via email. If she did not complete the follow up survey within seven days of receiving this email, a second email was sent. A third email was sent seven days later if she had not yet completed the survey. If a participant did not respond after the third request was sent, she was considered to no longer desire to participate in the study. Initial survey data for women who did not complete the follow up survey was retained and used for analysis.

Data Analysis

Data analysis was conducted using SPSS version 26. Group differences were examined using chi square analysis for categorical variables and independent t-test for continuous variables. Participants were divided into those who were breastfeeding exclusively at discharge and those who were supplementing for comparison. To explore associations between exclusive breastfeeding at discharge with score on the BFHI self-

assessment and family history of breastfeeding, logistic regression was used. Significance testing for the hypothesis, that women who rated the BHFI self-assessment with higher score are more likely to breastfeed exclusively than women with lower scores and a negative family history, was set at an alpha level of 0.05.

Results

A total of 34 women were included in this study. Of these, 25 (74%) breastfed exclusively during their postpartum hospital stay. See table 4.3 for descriptive characteristics of the sample. The remaining 9 (26%) supplemented with formula and none of the women in this study were exclusively formula feeding on the day of discharge. Women ranged in age from 20 to 42 with a mean age of 29. In this sample, 25 (73%) of participants were white, three (9%) were black, three (9%) were Asian, and three (9%) were Hispanic. Total scores on the BFHI self-assessment survey ranged from 11 to 17 with a mean of 14 (SD = 1.77). Half of the participants (n=17) were first-time mothers. In response to family history of breastfeeding, 21 (62%) participants indicated that their own mother breastfed them, 11 (32%) indicated their mother did not breastfeed, and two (6%) did not know. No significant difference was found in comparing those mothers who breastfed exclusively during their hospital stay with those who supplemented in the category of age, educational attainment, and race. Significant group differences were found in the category of family history of breastfeeding ($p=0.025$) and total score on the BFHI self-assessment ($p=.049$).

Exclusive Breastfeeding at Discharge

The dependent variable in this analysis was exclusive breastfeeding at discharge. That is, whether an infant was given any supplementation from birth through the day of discharge. For logistic regression analysis, the dependent variable was dummy coded as “0” for participants who supplemented during the hospital stay and “1” for participants who breastfed exclusively. Indicator variables included in the logistic regression were positive family history of breastfeeding (a participant’s own mother breastfed her), and vaginal birth. Also included in the logistic regression model was the continuous variable of score on the BFHI self-assessment survey. See table 4.4 for logistic regression results. The overall regression model was significant with a chi-square value of 14.59 ($p=.002$). The Hosmer-Lemeshow Goodness of Fit test was not significant with a chi-square value of 6.425 ($p=.6$). This demonstrates that the chosen variables were an adequate fit for logistic regression. As a whole, the model explained between 37% (Cox and Snell R square) and 53% (Nagelkerke R squared) of the variance in exclusive breastfeeding status, correctly identifying 84% of cases. Binary logistic regression analysis indicated a strong association between breastfeeding exclusivity and family history of breastfeeding (OR = 75.64, $p=.02$). Even when controlling for this strong association, greater score on the perceived Baby-Friendly Self-assessment tool for breastfeeding mothers was associated with an increased likelihood of exclusive breastfeeding at the time of discharge (OR = 2.66, $p = .039$).

Qualitative Analysis

At two weeks after birth, mothers were contacted via email for the follow up survey, which they completed from home. Mothers were given two weeks to respond to

this survey, thus data from this follow-up reflected feeding practice between two and four weeks after birth. This survey also included open ended questions asking about hospital care that participants perceived as facilitators or barriers in breastfeeding initiation. Twelve women responded to this survey, ten of whom were breastfeeding exclusively at home.

When asked about facilitators to breastfeeding in the hospital, all of the respondents offered praise to the lactation consultants of the unit. One participant responded: “Having a lactation consultant on staff and available on an as needed basis was priceless. We used her multiple times to help with feeding concerns and to help us build confidence in our breastfeeding journey.” When asked about barriers to breastfeeding initiation in the hospital, only one respondent indicated an area of dissatisfaction saying, “Not having a lactation consultant available during the night was hard for us -- we had questions overnight and didn't have a resource to really provide one-on-one support during those hours.”

Additionally, several participants noted that access to lactation consultants after discharge was a valuable resource. This Baby Friendly facility offers a “Mommy and Me” clinic, available to any breastfeeding mother, no matter where she gave birth to her baby. One participant describes her experience with the Mommy and Me clinic: “I went to the mommy and me clinic where she showed me how to really get a good latch. My baby was not latching on well which contributed to the severe pain. The mommy and me clinic was very beneficial to us because it was one on one care and my nurse was very patient and attentive.”

Discussion

The BFHI self-appraisal survey for breastfeeding mothers used in this study measured a mother's perception of how the Ten Steps to Successful Breastfeeding were implemented during her postpartum hospital stay. Our findings support that mothers who rate their experience with a higher score on this survey, reflective of better adherence to the Ten Steps, are 2.6 times more likely to be exclusively breastfeeding at hospital discharge compared with those that rate their experience with a lower score. Similar outcomes have been shown in other studies examining adherence to the Ten Steps. For example, an analysis of the Infant Feeding Practices Study II found that women who experienced five or more of the Ten Steps during their hospital stay were 2.1 times more likely to meet their personal breastfeeding goal than women who experienced one step or no steps (Perrine et al., 2012). The positive effect of Baby Friendly practice is also demonstrated when comparing breastfeeding outcomes for women who give birth at facilities with and without Baby Friendly designation. Among these, mothers who experience two or more Baby Friendly practices demonstrate a longer duration of breastfeeding (Jung et al., 2019). Further, the American College of Obstetricians and Gynecologists affirm the recommendations of the BFHI. In a recent opinion on breastfeeding, the organization recommended that that members should tailor intrapartum care of mothers and infants to follow the Ten Steps (Crowe & Hanley, 2018). Specifically, obstetricians should emphasize the importance of early and safe skin-to-skin care, early breastfeeding, rooming-in, on demand feeding, and avoiding unnecessary formula supplementation.

This study also demonstrated that women whose own mother breastfed were more likely to not supplement with formula during the postpartum hospital stay. Whether a woman's own mother breastfed is used as a proxy for determining maternal grandmother attitudes toward breastfeeding. It follows that if a grandmother breastfed her own children, she will be supportive of her daughter breastfeeding her grandchildren. Family support for the breastfeeding mother is integral to her breastfeeding success. Although few studies have been conducted specifically examining the role of maternal influence in breastfeeding, Mueffelman et al. found, in examining personal relationships influential to breastfeeding, that a woman's own mother strongly influenced her intention to breastfeed exclusively (Mueffelman et al., 2015). Further, French researchers concluded that among women who received infant feeding advice from their own mothers, those whose own mother formula fed them as infants were least likely to breastfeed their infants (Wagner et al., 2019).

Though mode of birth was not a predictor of breastfeeding exclusivity at discharge in this study, the experience of cesarean birth often leads to a complicated journey to establishing breastfeeding. Implementing the Ten Steps after cesarean birth is challenging in the operating room and during recovery from surgery. Specifically, implementation of Step Four, "facilitate immediate and uninterrupted skin-to-skin contact and support mothers to initiate breastfeeding as soon as possible after birth", is difficult in the operating room. Though the World Health Organization concurs with BFHI that every mother and infant have at least 60 minutes of uninterrupted skin to skin contact immediately following birth, this is difficult to implement during cesarean birth due to staffing and safety concerns (Balatero et al., 2019; WHO & UNICEF, 2018). The

physical environment of the operating room and the medicated state of mothers undergoing surgery necessitates that a dedicated baby nurse is needed to ensure safety of the infant (Kjelland et al., in press). Additionally, Step Seven, “enable mothers and their infants to remain together and to practice rooming-in 24 hours a day” is difficult to implement following cesarean birth. Limited mobility and post-surgical pain contribute to mothers feeling unsafe in caring for their newborn (Chaplin et al., 2016). Delayed initiation, post-surgical pain and limited mobility are some of the factors that likely contribute to in-hospital formula supplementation for cesarean mothers. These complications can lead to early termination of both any breastfeeding and exclusive breastfeeding through the first 12 weeks of life (Chen et al., 2018).

Although no significant difference in breastfeeding exclusivity was noted between primiparous and multiparous women in this study, this finding diverges from literature examining parity and breastfeeding exclusivity (Gubler et al., 2013). For example, an analysis of 542 women who gave birth in Hershey, Pennsylvania showed that primiparous mothers experienced more breastfeeding problems during the hospital stay and were more likely to initiate supplementation in the hospital when compared to multiparous mothers (Hackman et al., 2015). That women in the present study did not have different exclusivity experiences based on parity or mode of birth could be a result of the positive influence of Baby Friendly practices.

Limitations

Data collection for this study was conducted in the Spring of 2020. On March 11, 2020, the World Health Organization declared the Novel Coronavirus, or COVID-19 pandemic (Ghebreyesus, 2020). In the days following this declaration, strict social

distancing measures were mandated, including stringent limitations on hospital visitors and closure of University campuses, including the University where this study was conducted. As a result of these public health measures, data collection for this study was terminated early, thus limiting the sample size.

Of the data that was collected, there is the potential that only women who were succeeding with breastfeeding opted to participate in this study. Given the heightened emotional state of the new mother, women who were struggling with breastfeeding initiation were likely less inclined to agree to participate in a study about breastfeeding. Also related to the stress and emotions surrounding childbirth, women who were generally overwhelmed either refused to participate or were not approached, based on the advice of her nurse. Likewise, for the follow up survey, women who were struggling with breastfeeding at home perhaps did not want to take time to finish their participation in this study.

Conclusion

The purpose of this study was to investigate the relationship between breastfeeding specific care and breastfeeding exclusivity during the postpartum hospital stay. The results of this study showed that closer adherence to the Ten Steps yielded a higher likelihood that a woman would breastfeed exclusively throughout her hospital stay. Though this study was conducted at a Baby Friendly designated hospital, hospitals without this designation can still follow the Ten Steps in order to increase breastfeeding exclusivity for their patients. This could include training for postpartum nurses regarding how to incorporate the Ten Steps into their practice as a pathway to increasing breastfeeding exclusivity. Additionally, women with a family history of breastfeeding,

that is if her own mother breastfed, were more likely to breastfeed exclusively throughout the hospital stay. This suggests the power of family culture in breastfeeding promotion. For families who have not historically practiced breastfeeding, comprehensive family breastfeeding education might positively orient the family culture to breastfeeding to improve exclusivity and duration for first-generation breastfeeding mothers. Further research could include examining practices that facilitate or inhibit promotion of exclusive breastfeeding in hospitals without Baby Friendly designation.

Table 4.1: The Ten Steps to Successful Breastfeeding

Step 1a	Comply fully with the <i>International Code of Marketing of Breast-milk Substitutes</i> and relevant World Health Assembly resolutions.
Step 1b	Have a written infant feeding policy that is routinely communicated to staff and parents.
Step 1c	Establish ongoing monitoring and data-management systems.
Step 2	Ensure that staff have sufficient knowledge, competence and skills to support breastfeeding.
Step 3	Discuss the importance and management of breastfeeding with pregnant women and their families.
Step 4	Facilitate immediate and uninterrupted skin-to-skin contact and support mothers to initiate breastfeeding as soon as possible after birth
Step 5	Support mothers to initiate and maintain breastfeeding and manage common difficulties.
Step 6	Do not provide breastfed newborns any food or fluids other than breast milk, unless medically indicated.
Step 7	Enable mothers and their infants to remain together and to practice rooming-in 24 hours a day
Step 8	Support mothers to recognize and respond to their infants' cues for feeding.
Step 9	Counsel mothers on the use and risks of feeding bottles, teats and pacifiers.
Step 10	Coordinate discharge so that parents and their infants have timely access to ongoing support and care.

Table 4.2: Questionnaire for the Breastfeeding Mother

			Point Value
1	During your hospital stay, how have you fed your baby?	1. Breastfeeding exclusively 2. Both breastfeeding and feeding breast-milk substitutes such as formula or donor breast milk 3. Feeding my baby only breast-milk substitutes (not breastfeeding at all)	1 0 0
2	How long after birth did you first hold your baby?	1. Within five minutes 2. Within 30 minutes 3. Within 1 hour 4. More than 1 hour 5. As soon as I was able to respond after c-section 6. Can't remember	1 0 0 0 1 0
3	For about how long did you hold your baby the first time?	1. Less than 30 minutes 2. 30 minutes to less than 1 hour 3. One hour or more 4. Can't remember	0 0 1 0
4	How did you hold your baby the first time?	1. Skin-to-skin 2. Wrapped without much skin contact	1 0
5	During the first time you held your baby, did anyone on the staff encourage you to look for signs that your baby was ready to feed and offer to help you with breastfeeding?	1. Yes 2. No	1 0
6	After the first time you breastfed your baby, did the staff offer to help you with breastfeeding during later feeding sessions?	1. Yes 2. No	1 0
7	Did the staff give you any help with positioning and attaching your baby for breastfeeding before discharge?	1. Yes 2. No 3. The staff offered help, but I didn't need it	1 0 1

Table 4.2 (Continued): Questionnaire for the Breastfeeding Mother

			Point Value
8	Were you given any suggestions by the staff about how or where to get help, if you have problems with feeding your baby after you go home?	1. Yes 2. No	1 0
9	Were you separated from your baby for more than one hour per day while you were in the hospital?	1. Yes 2. No	0 1
10	Did the staff show you or give you information on how you could express your milk by hand?	1. Yes 2. No	1 0
11	Did you try expressing your milk yourself?	1. Yes 2. No	1 0
12	Were you able to express any milk?	1. Yes 2. No	1 0
13	How often did the staff advise you to feed your baby?	1. They did not give me any advice 2. Every time my baby seems hungry (as often as he or she wants) 3. Every hour 4. Every 1-2 hours 5. Every 2-3 hours	0 1 0 0 0
14	How did the staff advise you about how long your baby should stay at the breast in one feeding?	1. They did not give me any advice 2. For a limited amount of time 3. For as long as my baby wants to	0 0 1
15	Has your baby been given anything other than your breast milk during your hospital stay?	1. Yes 2. No	0 1
16	Was your baby given a pacifier while you were in the hospital?	1. Yes 2. No	0 1
17	Were you given any gifts that promote formula while you were in the hospital	1. Yes 2. No	0 1

Table 4.3: Participant Demographics N = 34

	EBF n = 25 (74%)	Not EBF n = 9 (26%)	p-value
Maternal Age	29 (SD 4.2)	29 (SD 6.3)	.889
Gestation	39 (SD .96)	39.1 (SD .958)	.782
Mode of Delivery			
Vaginal	18 (72%)	6 (67%)	.538
Cesarean	7 (28%)	3 (33%)	
Education Attained			
Less than Bachelor's	11 (44%)	5 (56%)	.417
Degree	14 (56%)	4 (44%)	
Bachelor's Degree or Higher			
Parity			
Primiparous	14 (56%)	3 (33%)	.219
Multiparous	11 (44%)	6 (67%)	
Own mother breastfed			
Yes	18 (72%)	3 (33%)	.025*
No	5 (22%)	6 (67%)	
BFHI Self-Assessment Survey	14.7 (SD 1.8)	13.3 (SD 1.3)	.049*

Table 4.4: Logistic Regression Analysis for Predictors of Exclusive Breastfeeding at Discharge N= 32

Predictor	Odds Ratio	95% CI	p
Score of BFHI assessment survey	2.64	1.035 – 6.746	.042
Own Mother Breastfed	75.64	2.136 - >99	.02
Vaginal Birth	8.18	.452 - 148	.163

Chapter Five: Discussion and Conclusion

Introduction

The first days of life are critical to establishing an exclusive breastfeeding relationship between mother and infant. Lactogenesis is a hormonally driven process governed by both endocrine and autocrine stimulation (Riordan & Wambach, 2010). Each time the infant is put to the breast and stimulates the nipple, oxytocin is released, which stimulates the release of prolactin, the governing hormone of milk volume. Thus, frequent feeding is necessary to establish a milk supply adequate for exclusive breastfeeding. Interrupting this sensitive process with formula supplementation is detrimental in this critical time (Chantry et al., 2014). However, supplementing with formula in the first days of life is common, even among women who desired to breastfeed exclusively (Nelson et al., 2016). For mothers to persevere through challenges in exclusive breastfeeding, they must believe that the risks of supplementation outweigh the challenges of breastfeeding (Rosenstock, 1974). By closely following the Ten Steps to Successful Breastfeeding (Ten Steps), developed by the Baby Friendly Hospital Initiative, hospitals can create an environment optimal for breastfeeding mothers and infants.

Commitment to the Ten Steps is demonstrated through hospital protocol and staff education. There is a responsibility for both individual nurses and hospital administrators to work toward providing optimal breastfeeding care to promote breastfeeding exclusivity. Mothers directly perceive and value evidence-based support delivered by individual nurses (Mauri et al., 2012). Continuing education in breastfeeding support should be a priority for both hospitals and individual nurses. Mothers also directly

perceive and value the quantity of time nurses invest in hands on breastfeeding support (Mauri et al., 2012). Individual nurses can structure their workflow to dedicate adequate time to individual breastfeeding support. Hospitals too should plan nurse-patient ratios with individual time for breastfeeding support as a priority.

The influence of Baby Friendly practices on breastfeeding has not been well studied in the Southeastern United States, where breastfeeding rates are low (CDC, 2018; Munn et al., 2016). The hospital experience and breastfeeding care given by postpartum nurses, physicians, and lactation consultants has an association with breastfeeding success. The purpose of this dissertation was to examine the relationship of breastfeeding care received during the postpartum hospital stay, defined as the first 48-72 hours of life, and breastfeeding exclusivity among term, healthy infants. This dissertation adds to this body of knowledge as these studies were carried out in a university hospital in the Southeastern United States.

The Health Belief Model and Breastfeeding Exclusivity

This dissertation was guided by the Health Belief Model, a cognitive behavioral theory developed by Isaac Rosenstock (Rosenstock, 1974). The Health Belief Model posits that a person chooses to engage in health preventive behavior through a cognitive process of weighing risks of not engaging with the benefits of engaging in a particular behavior. For this dissertation, the health behavior studied was exclusive breastfeeding. Some of the obstacles to successful breastfeeding exclusivity include pain and perceived insufficient supply (Chen, 2018, Chantry, 2014). Influencing the perceived threat of risks associated with formula feeding are individual perceptions and modifying factors. This dissertation focused on the modifying factor of structural environment, specifically the

postpartum hospital environment. By engineering a hospital environment that eliminates barriers to breastfeeding exclusivity through supporting mothers in managing common barriers by following the Ten Steps, nurses can positively influence the desired outcome of this dissertation, increasing the likelihood that a mother will breastfeed exclusively.

Synthesis of Findings and Implications

Chapter Two

The second chapter of this dissertation was an integrated review of literature that aimed to identify aspects of the postpartum hospital experience and specific behavior of nurses that mothers perceive as helpful or not helpful toward successfully establishing exclusive breastfeeding before discharge. This review found that advice and help offered by nurses to new mothers regarding breastfeeding was often inconsistent and anecdotal rather than evidence based. This inconsistency led to increased maternal anxiety, which was in turn associated with a shorter duration of breastfeeding (Chaplin et al., 2016; Kielbratowska et al., 2018). Mothers also perceived that nurses were too busy with other tasks to give adequate time to breastfeeding support. Additionally, nurses were hesitant to give encouragement or advice to breastfeeding mothers out of fear they might cause guilt. Findings from this review could guide development of an assessment tool for measuring breastfeeding care in the hospital, based on constructs identified by mothers.

Chapter Three

Chapter three of this dissertation was a secondary data analysis that aimed to identify if maternal perception of the hospital experience is a predictor of exclusive breastfeeding during the postpartum hospital stay when controlling for age and mode of delivery. This study also examined the relationship between hospital experience,

breastfeeding self-efficacy, and exclusive breastfeeding at four weeks after birth. Women included in this study (N=45) were part of the control group of randomized controlled trial of breastfeeding education. Women who rated their hospital experience with a score of 13 or greater, as measured by a survey based on the Ten Steps to Successful Breastfeeding, were more likely to breastfeed exclusively throughout the postpartum hospital stay than women who rated their experience with a score of 12 or less. At four weeks, the relationship between hospital experience and breastfeeding exclusivity was no longer present. However, higher score on the Breastfeeding Self-Efficacy Scale was positively associated with breastfeeding exclusivity at four weeks. Findings of this manuscript indicate the need for further investigation of the association of breastfeeding care in the hospital and exclusive breastfeeding outcomes through a primary study.

Chapter Four

Chapter four builds from the previous chapter, through a primary research study. The purpose of this study was to investigate the relationship between breastfeeding specific care and breastfeeding exclusivity during the postpartum hospital stay in a hospital in the Southeastern United States (N=34). Additionally, this study aimed to obtain a descriptive account of mothers' experience of breastfeeding care in the hospital. Using the "Questionnaire for the Breastfeeding Mother", a survey from the hospital self-appraisal and monitoring document created by the Baby Friendly Hospital Initiative (Organization & UNICEF, 2009), mothers rated their experience with Baby-Friendly practices during their hospital stay. Results demonstrated a positive relationship between higher rating on this survey and breastfeeding exclusivity during the hospital stay. This

suggests that Baby Friendly practices create a breastfeeding-friendly environment for new mothers in the hospital. Descriptive accounts of participants' experience revealed that frequent visits from a lactation consultant during the hospital stay was perceived as helpful to establishing breastfeeding exclusivity. Participants also lauded having access to lactation support after discharge through the outpatient breastfeeding clinic. Findings of this study affirm that close adherence to the Ten Steps fosters an optimal environment for supporting breastfeeding mothers.

Discussion

Findings of this dissertation suggest that mothers are sensitive to the quality of breastfeeding care given to them by hospital staff, particularly nurses and lactation consultants. Mothers express explicitly that they perceive if their nurse offers evidence-based care as evidenced by different nurses offering different or even conflicting advice. Mothers also perceive if their nurse prioritizes breastfeeding care as evidenced by the amount of time a nurse devotes to direct support for breastfeeding at the bedside. These perceptions suggest that mothers are sensitive to the implementation of steps one and two of the Ten Steps. The importance of breastfeeding care is also demonstrated in this dissertation in the statistically significant relationship between adherence to steps three through ten of the Ten Steps and avoidance of supplementation during the hospital stay. This strong association was demonstrated in both quantitative studies described in this dissertation. Together, these findings suggest that hospital adherence to the Ten Steps have a positive influence on both breastfeeding exclusivity in the hospital and maternal perception of care.

This dissertation adds to the current body of knowledge by exploring the association of breastfeeding care in the hospital in the Southeastern United States. Though this region has low rate of breastfeeding exclusivity compared to other regions of the United States, the influence of Baby Friendly practices on breastfeeding exclusivity has not been well studied in this region (CDC, 2018). This dissertation affirms that Baby Friendly practices have a positive influence in promoting breastfeeding exclusivity among women in the Southeast. Maternal-child nursing care providers in this region could use the Ten Steps as a guide to structuring postpartum care for optimizing breastfeeding exclusivity. The major conclusion of this dissertation is, mothers who have a postpartum experience supportive of breastfeeding, through hospital adherence to the Ten Steps, are more likely to breastfeed exclusively in the hospital.

Strengths and Limitations

A major strength of this study is that the major conclusion was affirmed in two different populations. In the secondary analysis of chapter two, the data showed that the hospital experience is important for establishing exclusive breastfeeding in the initial postpartum period. The influence of the hospital experience on exclusive breastfeeding outcomes remained strong in the primary study of chapter two.

This dissertation is not without limitations. Chapter three was limited by the ethnic and racial composition of the participant group. The parent study of this secondary analysis was executed in two groups, one with only Hispanic women and one with women of varied ethnicities or races. Thus, 71% of the participants in this secondary analysis were Hispanic. As this sample is not ethnically representative of the greater community, conclusions from this study are not generalizable.

Chapter four was limited by early termination of data collection from restrictions due to the COVID-19 pandemic of 2020. The pandemic limited primary data collection and likely limited participant response to follow up survey. Of 25 follow up surveys sent to participants, 14 (56%) responded. The two-week window of response for many of these participants coincided with the beginning of COVID-19 related social distancing restrictions. In addition to social restrictions, many people lost employment as a result of COVID-19 restrictions. These unprecedented events likely caused additional stress for new mothers that could have limited response to the follow up survey of this study.

Research Implications

Future studies may expand on these findings through development and psychometric evaluation of a tool for measuring breastfeeding care in the hospital. Such an instrument would synthesize the findings of this dissertation. Concepts measured would include patient perception of nurse's knowledge of evidence based breastfeeding support and time allotted to hands-on breastfeeding support. Adherence to the Ten Steps should be included as well as a measure of how mothers value each step. While closer adherence to the Ten Steps is associated with higher rates of breastfeeding, research exploring mothers' perceptions of these practices is lacking (Munn et al., 2016). Future research could focus on studying how mothers perceive the influence of each of the Ten Steps on her breastfeeding success.

Clinical Implications

The influence of postpartum hospital care and successfully establishing breastfeeding exclusivity is established in both existing literature and this dissertation. Though the existence of the association is known, specific behaviors of hospital

caregivers and characteristics of the postpartum hospital experience that help or hinder breastfeeding success have not been synthesized into one tool for measurement. Clinical implications from the review of literature include the importance of continuing education in breastfeeding support for postpartum nurses. This review also highlights the need for assigning breastfeeding support as a clinical priority that should be considered when hospital administrators determine nurse-patient ratios. Finally, special clinical consideration should be given to breastfeeding mothers recovering from cesarean birth. These mothers require concentrated nursing care as they initiate breastfeeding and simultaneously recover from surgery.

The third and fourth chapters affirm that the Ten Steps to Successful Breastfeeding and other Baby-Friendly practices foster an optimal environment for successfully establishing exclusive breastfeeding. Seeking Baby Friendly designation is not feasible to all birthing hospitals. However, the Ten Steps can be implemented in any hospital, whether they seek designation or not. In chapter two, women emphasized the importance of Step Two of the Ten Steps, “ensure that staff have sufficient knowledge, competence, and skills to support breastfeeding”. Chapters three and four did not directly measure adherence to Step Two. Steps 3-10, which were measured in chapters two and three, display specific practices of nurses and hospital staff that are known to facilitate exclusive breastfeeding initiation. Demonstration of these evidence-based practices reflect adherence to Step Two, staff training. By developing protocols that facilitate implementation of Steps 3-10, such as limiting nursery access in order to encourage rooming-in, as well as providing regular continuing breastfeeding education to

postpartum nurses, hospitals can provide an optimal environment for exclusive breastfeeding initiation.

Conclusion

Nursing care received in the hospital during the first days of life is influential in establishing exclusive breastfeeding among mothers who desired to breastfeed exclusively. Further, the Ten Steps to Successful Breastfeeding serve as a useful guide for hospitals to create an optimal environment for helping mothers and infants to establish an exclusive breastfeeding relationship that will benefit both beyond infancy.

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Vita

Martha Monroe

Education

<i>Dates</i>	<i>Institution</i>	<i>Degree</i>
August 2002- May 2006	University of Kentucky	BSN

Professional Positions Held

<i>Dates</i>	<i>Institution</i>	<i>Title</i>
February 2020 – Present	Baptist Health Lexington	Pre-doctoral Research Consultant
2007-2010	Baptist Health Lexington	Staff Nurse, Maternal Services
2006 – 2007	University of Kentucky Medical Center	Staff Nurse, Telemetry / Critical Care Services

Scholastic and Professional Honors

2017 Robert Wood Johnson Future of Nursing Scholar, fellowship

Professional Publications

2020: Kjelland, K., **Monroe, M.**, Moore, T., & Cooper, H. (in press). Skin to skin care following cesarean birth, a designated nurse: An evaluation of clinical outcomes and cost. *Nursing Management*.