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PROVISION OF FORMAL EDUCATION TO NURSING STAFF: KANGAROO MOTHER CARE WITHIN MATERNAL-CHILD UNITS

Jessica Holly
Pittsburg State University, jcalista11@gmail.com

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PROVISION OF FORMAL EDUCATION TO NURSING STAFF: KANGAROO MOTHER CARE WITHIN MATERNAL-CHILD UNITS

A Scholarly Project Submitted to the
Graduate School in Partial Fulfillment of the
Requirements for the Degree of
Doctor of Nursing Practice

Jessica Calista Holly

Pittsburg State University

Pittsburg, Kansas

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PROVISION OF FORMAL EDUCATION TO NURSING STAFF: KANGAROO MOTHER CARE WITHIN MATERNAL-CHILD UNITS

An Abstract of the Scholarly Project by
Jessica Calista Holly

Kangaroo mother care (KMC) is an evidence-based intervention that improves neonatal outcomes and reduces mortality in infants. KMC is not fully integrated into local hospital maternal-child departments and nursing professionals do not have a standard education offering concerning KMC. While the use of KMC is not entirely absent, nursing knowledge and understanding of its correct execution leads to lesser occurrences of KMC initiation. This scholarly project addresses nursing knowledge as a practice quality improvement. A literature review was completed, including searches through CINAHL, Merck Manuals, MEDLINE Plus Health Information, ProQuest, and UpToDate. A pretest, educational video, and posttest were then developed and electronically distributed to a convenience sample of twenty-eight nursing professionals within a local hospital's maternal-child department. The data gathered from the pretests and posttests show that there was a significant increase in the knowledge of nurses regarding KMC after viewing the educational presentation provided. This was the anticipated outcome for this project. In the long-term, it is expected that educating nurses about KMC will have a trickle-down effect and lead to improved utilization of KMC by caregivers with nursing guidance, improved health outcomes, and parental knowledge.

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CHAPTER I

Introduction

"To ensure every child survives and thrives to reach their full potential, we must focus on improving care around the time of birth and the first week of life" (WHO, 2022)

According to the World Health Organization (WHO, 2022), the quality of newborn care after delivery can prevent or predispose the newborn from multiple complications. The initial interventions made by the healthcare provider at birth and the first few weeks of life will impact the overall outcomes of the newborn. Many efforts are made to provide consistent care to stabilize and intervene in the management of essential newborn care. (WHO, 2022).

"Essential newborn care includes:

- Immediate care at birth (delayed cord clamping, thorough drying, assessment of breathing, skin-to-skin contact, early initiation of breastfeeding)
- Thermal care
- Resuscitation when needed
- Support for breast milk feeding.
- Nurturing care
- Infection prevention
- Assessment of health problems

- Recognition and response to danger signs
- Timely and safe referral when needed" (WHO, 2022)

Given the perceived benefits of prolonged newborn skin-to-skin contact, or kangaroo care, it is the focus of this scholarly project to address the knowledge level of nursing professionals regarding kangaroo care as a practice quality improvement. A recent study by the American Academy of Pediatrics identified that kangaroo care, or prolonged skin to skin contact, has accounted for a 33% decline in infant deaths when compared to conventional newborn treatment plans (Boundy et al., 2016). Awareness of incorporating kangaroo care into healthcare provider practice is essential to continually improving patient outcomes. Since evidence-based research has correlated kangaroo care benefits with improved patient outcomes, the goal of the scholarly project is to improve the inclusion of kangaroo care in the maternal-child units at a rural hospital in Southwest Missouri.

Statement of Problem

Kangaroo care (KC) is defined as "skin-to-skin and chest-to-chest contact" between the infant and a family member, most often mother or father (Almutairi & Ludington-Hoe, 2016) with the infant's "legs in a frog-like position and their head turned to face the side" (Jones & Santamaria, 2017). It is also often called kangaroo mother care (KMC) or skin-to-skin (SSC). This intervention provides numerous benefits to both infants and adults who participate, including reduced heart rate, blood pressure, and anxiety level for parents (Jones & Santamaria, 2017), as well as increased oxygen saturations, growth, and thermoregulation for the infant (Maastrup et al., 2017). KMC is also associated with improved bonding between infants and parents. As a result, there is

also a correlation of improved breastmilk supply and success with breastfeeding (Maastrup et al., 2017) and can be performed at any corrected gestational age.

Within the maternal-child units at this rural hospital, there is currently a lack of formal education provided to nurses concerning the practice of KMC. The literature indicates that this lack of nursing education leads to a lack of providers confident in utilizing this skill and a decrease in parental participation in KMC specifically within neonatal intensive care units, however, for the purpose of this project, any unit that involves direct care of infants will be included. As a holistic aspect of nursing care, KMC can be implemented within the maternal-child units. By instilling nursing professionals with the knowledge of how to correctly initiate KMC between parents and infants, nurses can empower parents to better care for their infants while in the hospital and later at home.

Significance in Nursing

Currently, there is a lack of established education concerning the utilization of kangaroo care within the maternal-child units at this rural hospital, leading to lack of participation by parents in care time tasks, specifically skin to skin, which in turn can lead to subpar outcomes for both infant and parents regarding mental health, bonding, breast milk supply, and physical well-being of the infant and parents (Maastrup et al., 2017). Providing additional KMC education to nurses improves their confidence in initiating KMC as an intervention and allows them to teach parents more effectively about the benefits of KMC (Almutairi & Ludington-Hoe, 2016). KMC is an evidence-based nursing intervention that can easily be provided within the maternal-child units

with no need for physician orders and is generally considered low-risk for most infants within a hospital setting.

Nursing is considered a holistic practice as it includes caring for the infant involved and his or her family. KMC is a valuable tool in fostering bonding between the infant and family. If formal KMC education is provided to nurses, nurses will be more knowledgeable and capable to assist with the implementation of KMC as a daily practice. KMC is a budget-friendly and evidence-based intervention that can improve the overall health of the infant and family.

Purpose and Objective

The purpose of this project will be to identify nursing knowledge regarding KMC within the maternal-child units at a local hospital and determine if a standard educational offering provided to participants will improve nursing knowledge. A pretest will be utilized to identify the participants' knowledge of KMC prior to viewing education. The project will provide a prerecorded voiceover educational presentation with an embedded video demonstration as an educational offering to bedside nurses and nurse practitioners in this rural hospital's maternal-child department. The topic of KMC regarding its benefits, barriers, proper usage, and theoretical concepts will be reviewed. A posttest will determine if participants' knowledge of KMC has improved after viewing the educational offering. As a result of this education, it is expected to see an improvement in their knowledge level. This project will focus on determining nurses' current knowledge of KMC and its utilization with neonates within the maternal-child units before and after providing the nurses with education on various aspects of KMC. The primary objective is

to provide nurses within this hospital's maternal-child units with the knowledge that they need to safely assist parents with KMC more frequently.

The foundation of this project is for licensed nursing professionals within this rural hospital's maternal-child units to identify the importance and benefits of incorporating KMC. For the purpose of this project, a licensed nursing professional consists of registered nurses, licensed practical nurses, neonatal nurse practitioners, and certified nurse midwives. An online prerecorded voiceover educational presentation will be presented from November 2022 through January 2023. A pretest and a posttest will be presented before and after the online educational presentation.

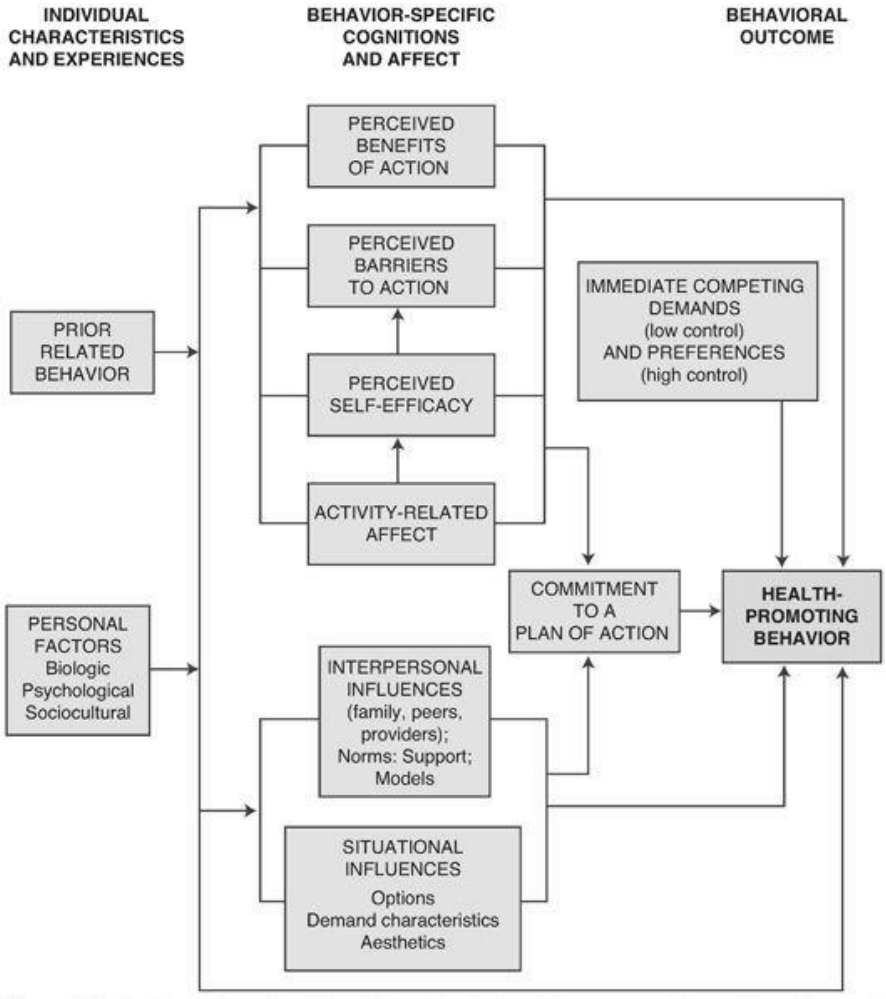
Conceptual Framework

The concepts that this project intends to address are based in Nola Pender's health promotion model (Nursing Theory, 2020). This model includes thirteen theoretical statements, many of which are directly applicable to the use of KMC within the maternal-child units. In this health promotion model, it is stated, "Perceived competence or self-efficacy to execute a given behavior increases the likelihood of commitment to action and actual performance of the behavior," which means that by improving knowledge on a subject or behavior will improve the chance that an individual will act on that knowledge. This project aims to demonstrate this statement by exhibiting how nurses who are well-educated on the topic and confident in the skills required are going to be more likely to initiate KMC when parents are available (Almutairi & Ludington-Hoe, 2016). Another statement by Pender in this health promotion model highlights how health care providers can encourage the utilization of certain interventions, such as KMC, for parents within the maternal-child units by simply using their knowledge and experiences to effect

change and empower parents to make positive changes for their infant (Maastrup et al., 2017; Pender's Health Promotion, 2020). This conceptual model will serve as a basic framework for exploring the impact of KMC within the maternal-child units and its effects on infants and parents.

Figure 1.

Pender's Model of Health Promotion (Nurse Key, 2017)



Project Questions

1. Prior to the educational intervention, what is the KMC knowledge level of nurses?

2. After the educational intervention, what is the KMC knowledge level of nurses?
3. Is there a difference between the knowledge level regarding KMC on the pretest and posttest?

Definitions of Key Terms/Variables

Bonding – "the formation of a close relationship (as between a mother and child or between a person and an animal) especially through frequent or constant association" (Merriam-Webster, n.d.).

Cluster care – completing several interventions together instead of spacing them out over time with the goal of allowing for longer rest periods for the infant between care times (Valizeda, 2014).

Early term infant – infants born at 37 to 38 week and 6 days of gestation (U.S. Department of Health and Human Services, *n.d.).*

Evidence-based practice – "Evidence Based Practice (EBP) is the integration of clinical expertise, patient values, and the best research evidence into the decision-making process for patient care" (University of North Carolina at Chapel Hill, n.d.).

Growth and development – "growth is defined as an irreversible constant increase in size, and development is defined as growth in psychomotor capacity. Both processes are highly dependent on genetic, nutritional, and environmental factors" (Balasundaram & Avulakunta, 2022).

Healthcare provider – for this purpose, nurses (RN, LPN, APRN, NNP), respiratory therapists, nurse managers, physicians, other ancillary staff that participate in the newborn's care.

Infant – Child less than one year of age (CDC, 2020).

Kangaroo mother care (KMC) – the act of placing a newborn on the mother's (or other caregiver's) chest making skin-on-skin contact; also called skin-to-skin care (SSC) or simply kangaroo care (KC) in some literature; according to Ham-Baloyi, Ricks, and Rooyen (2018), KMC includes "vertical position of infant between the mother's breasts," "exclusive breastfeeding (EBF), and any type of medical, emotional, psychological, and physical support for the well-being of both mother and infant."

Neonate – an infant, specifically less than four weeks old (Merriam-Webster, n.d.); for the purpose of this project, referring to infants within the maternal-child units.

Premature infant – infants born at or less than 37 weeks gestational age (CDC, 2020; Balest, 2021).

Protocol – "a detailed plan of a scientific or medical experiment, treatment, or procedure" (Merriam-Webster, n.d.).

Term infant – infants born a 39 to 40 weeks and 6 days (U.S. Department of Health and Human Services, n.d.)

Thermoregulation – "the maintenance of a particular temperature of the living body" (Merriam-Webster, n.d.).

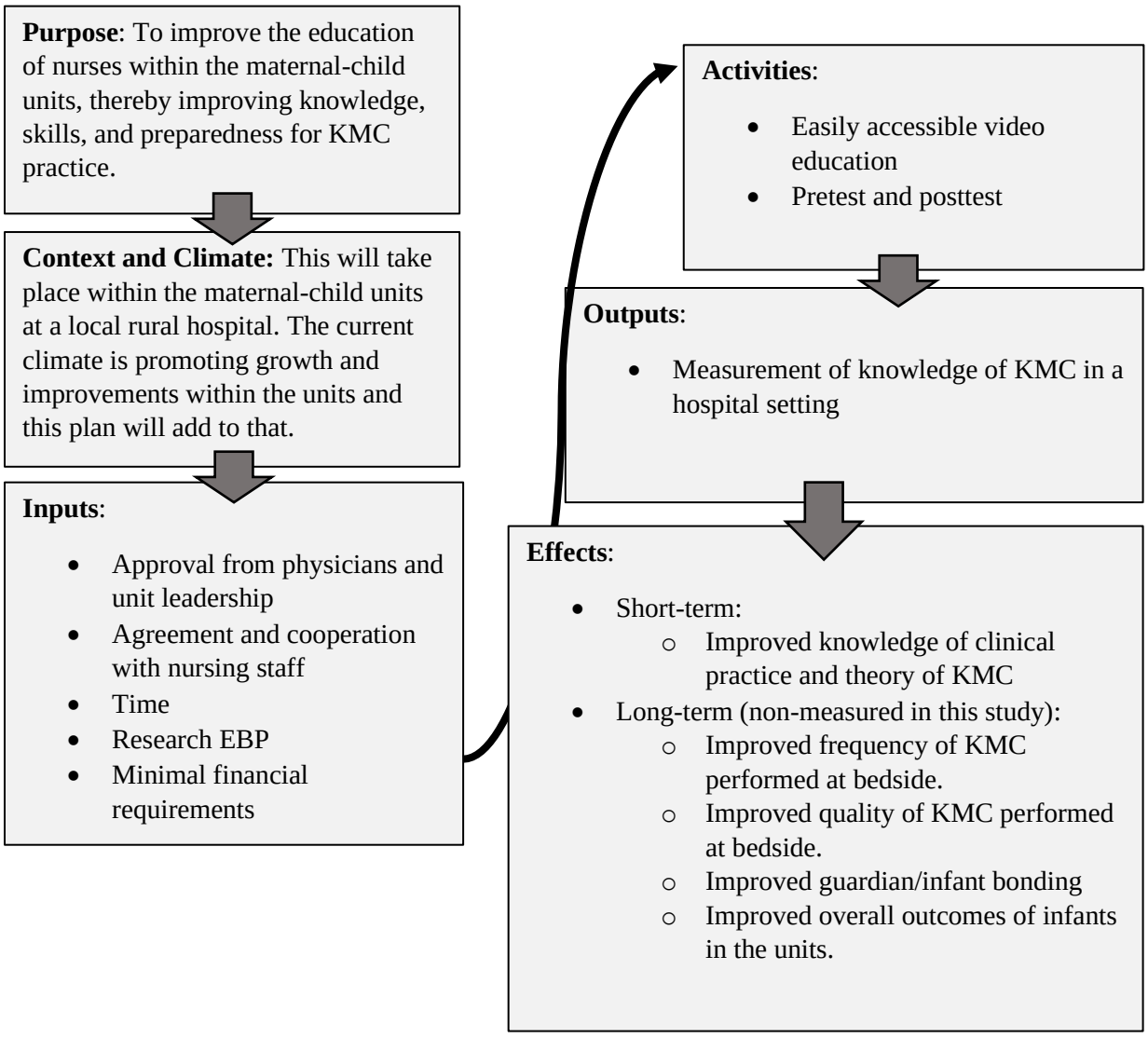
Logic Model

The logic model for this project includes the climate of the hospital's maternal-child units as well as expected long-term outcomes that will not be measured within the scope of this project. By providing KMC education to licensed nursing professionals within the hospital's maternal-child units, it is expected that the knowledge, skill, and preparedness of nurses within the maternal-child units will improve leading to additional

longer-term benefits within the units. The long-term benefits include an improved frequency and quality of KMC performed at bedside, improved guardian-to-infant bonding, and improved overall outcomes of infants within the maternal-child units.

Figure 2.

Logic Model for Kangaroo Mother Care (KMC) Nursing Education within rural Southwest Missouri Hospital's Maternal-Child Department.



Summary

KMC is an underutilized practice that can be incorporated into the hospital and home settings. Its usage within the maternal-child units is valuable to the growth and development of term and preterm infants. KMC encourages parent-infant bonding, improves lactation for mothers, and leads to improved outcomes for infants. KMC is an evidence-based holistic nursing intervention that can be initiated with nearly all infants within the hospital setting.

This project's intent is to determine if a prerecorded educational video about KMC will improve the knowledge of nurses caring for infants in a rural hospital in Southwest Missouri. It is anticipated that this project will show significant improvements in these areas in the short-term and will lead to potential long-term benefits for infants and families within the hospital. This project will potentially be a catalyst toward improved education within the hospital's maternal-child department and lead to additional positive changes within the culture of the department.

CHAPTER II

Review of the Literature

Kangaroo mother care (KMC) is an evidence-based neonatal developmental care strategy that is linked to improved outcomes in preterm infants (Coutts et al., 2018). In recent years, more research is being done concerning the benefits of KMC within NICU settings and how nurses, parents, and infants are all affected by the practice and how the practice can be improved upon and streamlined. In 2016, almost 20% of the 996 functional NICUs in the United States reported routine use of KMC within their units; this is an extremely low fraction of NICUs utilizing a seemingly simple intervention with such notable benefits (Almutairi & Ludington-Hoe, 2016).

An extensive literature search was done using Cumulative Index to Nursing and Allied Health Literature (CINAHL) complete, Merck Manuals, MEDLINE Plus Health Information, ProQuest, and UpToDate, all made available through Pittsburg State University's Axe Library online resources. Keywords used to find appropriate literature included "NICU kangaroo care," "skin to skin," "kangaroo mother care," "NICU education," "kangaroo care education," "kangaroo care," "video learning," and "nursing education." The results from these searches were reviewed for relevance to the topic of this project and selected accordingly. The search was limited to publications with full-text peer-reviews and with dates from 2016 or newer.

The purpose of this literature review was to gain additional insight into the benefits of and barriers to conducting KMC within the maternal-child units of a hospital as well as how education and protocols have improved the implementation and quality of KMC in the units studied. The education and knowledge gained from this literature review will provide the basis for developing a standardized education offering for maternal-child nurses. Providing nurses with this education will ultimately improve the confidence of nursing staff and empower them to initiate KMC more often within the units.

Benefits of KMC

KMC is a cost-effective, natural, and evidence-based intervention that can typically be easily initiated with any stable preterm or term infant (Coutts et al., 2018). Many of the publications that were identified through this literature review focused on the benefits of KMC to the parents and infants involved. The literature review identified various benefits for both infants and parents.

Infants

As a result of the literature review, there is a recurring theme expressing numerous infant benefits gained from incorporating KMC. Several sources listed similar advantages to using KMC within the hospital. These include improvements in vital signs, such as reduced instances of tachypnea, more regular heart rate, improved blood pressures, and better thermoregulation (Andrews et al., 2019; Kenaley et al., 2020; Ludington-Hoe, 2011; Maastrup, et al., 2017). These publications also list increased growth and weight gain, reduced pain scores, reduced risk of nosocomial infections, and reduced overall mortality. Two studies also cited noticeable changes in the infants'

behavioral states, indicating that the infants involved were more relaxed and calmer during KMC (Andrews et al., 2019; Maastrup et al., 2017). Andrews et al. (2019) also describes a shortened NICU stay as another potential benefit to initiating KMC within the unit.

Baker-Rush (2016) identifies premature or complicated deliveries as situations that increase stressors on the infant. KMC can be used as an anti-stress technique in these situations and has been found to increase the release of the neuronal hormone, oxytocin, which reduces stress and increases bonding and trust (Baker-Rush, 2016). In addition to what other sources have referenced as benefits to KMC, Baker-Rush (2016) also noted that the infants involved in KMC had improved distal extremity perfusion, heart rate variability, as well as sensory system activation.

Coutts et al. (2018) also took a slightly different approach to benefits of KMC within the NICU and recognized that infants generally had reduced negative neurological outcomes, reduced stress, improved sleep patterns, and improved neurodevelopment. They identified that KMC facilitated the infant's transition to extrauterine life through improved comfort and positive social interactions. This finding further supports the promotion of KMC use for neonates at risk for poor neurological outcomes.

Parents

While many of the publications throughout this literature review focused on the benefits for the infants, there are also several notable advantages for the parents that participate in KMC as well. Most often cited is the improved bonding that the mother and/or father may experience with their child due to KMC (Andrews et al., 2019; Jones & Santamaria, 2017; Kenaley et al., 2020; Ludington-Hoe, 2011; Maastrup, et al., 2017).

There is an increased level of confidence in caring for their infant as well as increased level of satisfaction by providing that care (Kenaley, et al., 2020) and other "enhanced parental feelings" as the parents begin to fulfill their role as the infant's caregiver (Maastrup, et al., 2017). While it has not been studied in depth at this time, at least one of these studies found that despite the fact that dealing with an infant or fetal demise can be understandably difficult for parents involved, that KMC when demise is imminent or has already occurred is still meaningful and can still be beneficial to the parents for their mental healing (Maastrup et al., 2017). Deliveries are also often stressful, especially when the infant is taken directly to the NICU or goes there soon after and encouraging KMC in these situations can improve the mother's emotional healing also (Kenaley et al., 2020). This is likely due to the known benefits to stress and anxiety reduction that other studies indicate can be another advantage of KMC (Jones & Santamaria, 2017; Kenaley et al., 2020).

It has been indicated that simply participating in the infant's care, such as changing diapers while the infant remains in the incubator, warmer, or crib is not sufficient to cause significant bonding and affection towards the baby; rather, being able to hold the infant and sense their body weight and movement while skin to skin promotes higher levels of bonding (Maastrup et al., 2017). As parents experience an increase in confidence with participating in KMC, satisfaction in caring for their infant and infant bonding is improved. This makes them more likely to come to the NICU and participate in their infant's care and initiate KMC more often, creating a positive cycle of improved infant care (Kenaley et al., 2020).

Barriers to KMC

Despite the many benefits of KMC, there are still barriers to its inclusion in the daily care of infants. Common barriers to the implementation of KMC are the physical lack of ability to touch the infant due to a critically ill status and emotional barriers due to the fear of the unknown. These barriers prevent the use of KMC for a wide variety of reasons as explored below.

Parents

Anxiety is a significant mental barrier to KMC for many parents. Parents are anxious about their infant being too small or too young or too fragile to be removed from an incubator for KMC (Maastrup et al., 2017). Parents that are anxious about moving their infant are often worried about disturbing the medical equipment such as monitor cords, respiratory adjuncts, or intravenous lines (Andrews et al., 2019). Many parents are also uncertain of their own skills and ability to keep their infant safe while handling (Maastrup et al., 2017), or may be concerned with impeding their child's breathing or making them too cold or too stressed and causing them undo harm (Andrews et al., 2019; Coutts et al., 2018; Kenaley et al., 2020).

Alternatively, there are parents who do not understand the benefits of KMC, are ambivalent toward the concept, or simply do not buy into it at all (Kenaley et al., 2020). Some of these parents may have had a negative experience previously and require additional encouragement (Kenaley et al., 2020). Clear and gentle communication and understanding can help parents overcome these specific barriers.

Additionally, there are physical barriers that parents must face when their infant is in the NICU. The first physical barrier to KMC is maternal postpartum pain and recovery

from delivery (Andrews et al., 2019; Kenaley et al., 2020). Whether a cesarean section or a vaginal delivery, mothers go through a significant amount of pain and will require time to heal after delivery, and the use of epidurals, spinal blocks, Pitocin, and magnesium that can all affect the mother's course of recovery for several hours after delivery should also be taken into consideration when discussing early KMC (Kenaley et al., 2020). Secondly, many mothers choose to breastfeed their infant, which results in a rigorous breast pumping schedule if the infant is in the NICU. This can easily be seen as a barrier to KMC due to the mother feeling as though she is constantly needing to leave the NICU or put her infant down to ~~go and~~ pump again (Andrews et al., 2019).

After the mother is discharged home, there are other confounding barriers to KMC. Some parents have unreliable transportation or simply cannot afford to drive back and forth daily to visit their infant (Andrews et al., 2019). Many parents also have other children that must be tended to, causing parents to split time between the NICU and their other children (Andrews et al., 2019; Coutts et al., 2018). There are other parents who do not live close to the hospital at which their infant remains admitted, either due to the mother or infant being transported elsewhere for a higher level of care or because of a lack of NICU care near them. This makes it difficult for parents to visit reliably due to the cost of travel and/or the cost of accommodations near the hospital (Andrews et al., 2019).

There are times when the infants are admitted for very long periods of time, also. If an infant is born at 23 weeks' gestation, it is not unusual for that infant to remain in the NICU until their due date at 40 weeks. This means that an infant could be in the NICU for upwards of 17 weeks, or almost four months. This is much longer than the average maternity or paternity leave granted by most companies within the United States. This

leads to parents, often the mother, either leaving or losing her job (Andrews et al., 2019). There are also parents who do not have much or any parental leave available due to their jobs, causing similar issues (Andrews et al., 2019). These parents, whether by choice or by default, are then dealing with the additional barrier of a reduced income, which can compound with the previously listed physical barriers and present an even greater hardship on them (Andrews et al., 2019).

Nurses

One of the most frequent barriers found in the literature reviewed was the perceived lack of time and resources to facilitate the appropriate and safe use of KMC within the NICU (Coutts et al., 2018; Kenaley et al., 2020). This includes some nurses stating that the design of the unit, lack of physical space, or even the lack of comfortably reclining chairs prevents them from promoting KMC for some parents due to lack of comfort (Coutts et al., 2018). This also includes perceived lack of staff and heavy nursing workloads, hindering the nurse's ability to feel as though they can safely initiate KMC while still being available to assist with repositioning, monitoring, and answering other questions the parents may have (Coutts et al., 2018).

Additionally, nurses are often subject to a lack of specific KMC education and training regarding its appropriate technique and use as well as the benefits that it promotes for infants and parents (Almutairi & Ludington-Hoe, 2016; Coutts et al., 2018; Kenaley et al., 2020; Ludington-Hoe, 2011). Further curtailing this, is a lack of policies and guidelines within some units that would be able to aid nurses in making decisions on which infants are safe for KMC and the appropriate steps to take to ensure infant safety during KMC (Almutairi & Ludington-Hoe, 2016; Coutts et al., 2018). This lack of

protocol and education leads to nurses who are uncertain of their role in KMC and do not have a firm understanding of why KMC is important for parents and infants (Coutts et al., 2018).

There are some nurses who do not encourage KMC with parents due to their perception of the parents' lack of ability or willingness to perform KMC safely and correctly (Coutts et al., 2018). Nurses could feel this way for a variety of reasons such as the parents are young, perceived as uneducated, or perhaps have learning disabilities. The inability of the parents to stay at bedside for the extended periods of time required to participate in KMC adequately is another reason that nurses cite as a barrier to initiating this intervention (Coutts et al., 2018).

Additional barriers for nurses include those that could potentially cause harm to the infant. Nurses initiating KMC may have a fear of removing arterial or venous lines, monitor wires, or respiratory adjuncts (Coutts et al., 2018). NICU nurses have also often been trained to keep infants under a certain gestational age midline after birth to prevent intraventricular hemorrhage (IVH). This is not easily done when the infant is in proper KMC positioning with the parent and can cause nurses to delay early KMC despite its other known benefits (Kenaley et al., 2020). Furthermore, nurses of all backgrounds are trained to "cluster care," but it is emphasized even more within the NICU to prevent overstimulating the infant; many nurses cite that KMC is in direct contrast to this method of caring for infants (Coutts et al., 2018).

Nursing Role

The views and attitudes of the nursing staff and healthcare providers can greatly influence the initiation and perceptions of KMC within the NICU (Maastrup et al., 2017).

This means that nurses are an essential part of promoting, supporting, and encouraging KMC within the unit (Maastrup et al., 2017). Nurses are the driving force behind facilitating KMC by improving perceptions through education and instruction, which leads to increasing prevalence of KMC (Andrews et al., 2019). Ensuring that nurses have an understanding and awareness of current practices versus KMC goals can aid in promoting the practice of KMC and improving the education and policies available (Almutairi & Ludington-Hoe, 2016; Coutts et al., 2018).

Nurses are the most common point of contact for NICU parents and are tasked with guiding these parents throughout their hospital stay and helping them understand what is going on around them. This includes assuaging fears and misconceptions of KMC that can be keeping parents from initiating or participating (Andrews et al., 2019). As previously discussed, many parents are fearful of causing harm to their child, but nurses are typically able to recognize this fear and help the parents overcome it and lead them to hold their infant with assistance, even if the child is sick or in the NICU (Kenaley et al., 2020). Nurses who have been educated about the correct usages and benefits of KMC can further support parents to provide routine infant care and empower parents to become experts on their baby's care and health needs (Coutts et al., 2018). This combination of empowering and educating parents is a vital part of the nurse's role in increasing the prevalence of KMC (Andrews et al., 2019).

Protocol and Education

KMC is a cost-effective intervention to promote infant well-being and parental bonding (Andrews et al., 2019; Ten Ham-Baloyi et al., 2018). This alone should warrant its use within the NICU, despite barriers discussed. However, as previously noted, when

there is a lack of utilization of an intervention, there is typically some kind of knowledge deficit as well (Almutairi & Ludington-Hoe, 2016). Coutts et al. (2018) stated that increasing KMC use within the NICU will require a paradigm shift in NICU culture to allow for the shift in neonatal caregiving. They go on to state that "caregiving practices, attitudes, and health system priorities need to align" in order to promote the practice of KMC (Coutts et al., 2018, p. 11). Basically, the attitude and culture of the maternal-child units must change to reflect the changes that are being worked towards. This can start by developing appropriate protocol or policy to alleviate nurse and other healthcare provider fears about when KMC can and should be initiated and which babies can safely participate (Coutts et al., 2018). Putting a protocol in place with a standardized education provided to all maternal-child providers would also provide them with appropriate evidence-based information that is required to make suitable and educated clinical decisions concerning the infant's health and involvement in KMC (Coutts et al., 2018; Ten Ham-Baloyi et al., 2018).

Some units have implemented quality improvement projects using a multi-disciplinary team approach to create a decision-making flowchart, which has improved nursing attitude toward KMC on the unit (Kenaley et al., 2020). The flowchart or pathway approach to decision-making for KMC can help standardize the nurses' response to appropriate initiation of KMC and can help summarize the evidence into practice, making continuity of care much more cohesive (Coutts et al., 2018). One NICU found that the combination of providing their nurses with a decision pathway and an educational video was beneficial to adequately shifting the mindset of the unit to accept new KMC research evidence (Coutts et al., 2018).

Video Learning

Alternative learning styles are becoming more prominent due to improving technology combined with necessity for distance learning since the COVID-19 pandemic. There is a significant increase in satisfaction in nursing skills training when the teaching involves watching a video and video-based learning has been found to often be preferred to traditional learning methods (Arslan et al., 2018). Video learning promotes learning at the students' pace, allowing them to access the material at their convenience, view it multiple times, and in a self-directed fashion (Arslan et al., 2018; Wirihana et al, 2017). Through video learning, nurses can still be taught the theory behind the implementation of the intervention but can also receive an active visual representation of the physical and technical skills involved (Wirihana et al, 2017). The video presented can be tailored to meet specific needs of the nursing unit while allowing the information to be provided in a uniform manner every time it is viewed, which eases some barriers to nursing education such as time constraints on a busy unit (Wirihana et al, 2017).

Summary

The review of the literature has shown that KMC is of significant benefit to infants and their parents, despite a plethora of barriers to initiating this intervention and a significant underutilization throughout many facilities. However, the review of literature determined that nurses who are well-versed in KMC utilization can be a driving force behind providing parents with the appropriate tools needed to safely perform KMC and reap benefits. This literature review solidifies the need for a standard educational provision for nurses within the hospital to provide them with the evidence, knowledge,

and skill to be able to decide when and how to initiate KMC safely to improve the quality of KMC provided.

CHAPTER III

Methodology

Improving the education of our nurses charged with caring for the vulnerable population that the NICU and additional maternal-child units are comprised of should be a top priority. The nurses and other healthcare professionals who care for infants are uniquely positioned to improve patient outcomes through a variety of interventions and developmentally appropriate cares. The goal of this project was to improve knowledge of the practice and theory of KMC for the licensed nursing professionals involved in caring for infants throughout the maternal-child department, including pediatrics, birthing center, postpartum, well-baby nursery, and neonatal intensive care unit (NICU). Video learning was utilized in order to promote improved understanding and knowledge retention. Through this education, the participating nurses caring for infants will be better prepared to empower, educate, and aid parents in KMC and the overall care of their infants.

Project Design

This study was designed to determine if the knowledge of nurses will improve after being provided KMC education. The educational presentation offered as part of this project explains the theory and correct clinical practice of KMC within a hospital setting. The education provided includes a prerecorded voiceover educational video with text,

video demonstration, and diagrams addressing evidence-based use of KMC within maternal-child units. A pretest and posttest were included with this education to determine its effectiveness. The goal of this project was to increase the initiation and utilization of KMC within the units by improving the quality of information provided to nurses concerning the benefits, barriers, and facilitators.

The educational presentation was provided to licensed nursing professionals (registered nurses [RNs], licensed practical nurses [LPNs], certified nurse midwives [CNMs], and neonatal nurse practitioners [NNPs]) within the hospital's maternal-child department who are responsible for caring for newborns of all gestations and sizes. Prior to viewing the education, a pretest was provided to all participants to determine initial knowledge of KMC. The posttest assessed if the provided education increased the nurses' knowledge of KMC as anticipated.

Setting and Participants

The target population of this project included licensed nurses working with infants in the hospital, specifically within the maternal-child department. A convenience sampling was used to recruit participants from registered nurses (RNs), licensed practical nurses (LPNs), certified nurse midwives (CNMs), and neonatal nurse practitioners (NNPs) who work within these maternal-child units at a rural hospital in Southwest Missouri. This convenience sample of maternal-child department colleagues was recruited to participate in this project via departmental staff email, closed private social media groups dedicated to maternal-child staff only, and printed flyers distributed to all eligible departments. Participants were able to access and complete the educational presentation at their convenience any time between November 2022 and January 2023.

Inclusion criteria for this project included nurses with valid professional licenses who care for infants within this rural hospital's maternal-child department, English speaking, and between the ages of 21 and 70 years old. Exclusion criteria for participants included being less than 21 years of age, individuals over 70 years old, non-English speaking, not caring for infants within the maternal-child setting, or not possessing a professional nursing license. Any participants deemed to not meet these requirements were not included in the final results.

Protection of Human Subjects

An Institutional Review Board (IRB) application was submitted to the Pittsburg State University Committee for the Protection of Human Research Subjects (CPHRS) for review and approval. The target population of this project included only adult subjects with professional nursing licensure. Confidentiality of participants was maintained throughout the research process. Minimal risks were associated with participation in this project. All survey responses remained anonymous throughout the project.

Data for this project was obtained through anonymous pretest and posttest. The educational presentation was strictly voluntary, and no monetary compensation was provided for participating. Data obtained from the pretest and posttest was analyzed using descriptive statistics and t-test statistics to determine if knowledge, preparedness, and confidence of nurses improved after being provided with this educational presentation.

Instruments

The pretest and posttest developed for this project consisted of 16 multiple-choice questions, each test having the same 16 questions. These questions were developed by the primary investigator of this project using previous nursing knowledge and resources

found through the literature review. Questions were all concerning different aspects of KMC, such as proper positioning, duration of KMC, and appropriate indications for use. These questions were reviewed for clarity and grammar by the project committee prior to distribution to participants. The pretest and posttest did also serve to collect some demographic information of the participants such as what departments they worked in and what licensure they possessed; participants were also asked to verify that they met the additional inclusion criteria.

This project utilized a third-party online survey software, Qualtrics, to gather data from the pretest and posttest. The pretest was provided prior to the educational presentation with the posttest available immediately after completion of the education. Descriptive and t-test statistics were used to analyze data from these pretests and posttests to determine if the knowledge of nurses to utilize KMC in the units changed after viewing the educational video. The pretests and posttests were reviewed by Pittsburg State University faculty to ensure content validity.

Procedure

The proposal for this project was sent to the proposal committee in October 2022. A meeting with the proposal committee was arranged to discuss project content, ideas, and organization prior to IRB approval. The project was discussed with the hospital's maternal-child leadership and approval was obtained for the departments to be included in the convenience sampling. Once IRB approval was obtained, the pretest, educational presentation, and posttest were provided, collected, and all data analyzed as described above. Once that portion of the project was completed, the project defense took place in

April of 2023 and involved Pittsburg State University faculty members from the School of Nursing and the Department of Psychology and Counseling.

The educational presentation and pretests and posttests were provided through a third-party web-based software, Qualtrics. Participants remained anonymous throughout data collection and analysis. Qualtrics settings were selected to ensure that IP addresses remained anonymous as well. Participants were asked to create a unique and random five-digit number that would be used at the sole identifier to link the pretest and posttest results.

Treatment of Data

Education relating to the use of KMC within the maternal-child units was provided to participating nurses who worked with these infants from November 2022 through January 2023. Pretest and posttest surveys were used to assess nursing knowledge regarding KMC. The pretest and posttest included questions regarding demographics and nursing knowledge of KMC. The pretest and posttest were available to participants immediately before and after viewing the education, respectively. Confidentiality and anonymity were maintained throughout this process. Respondents were asked to provide a random and unique five-digit number to be used for both their pretest and posttest to allow for tracking an individual's scores while maintaining anonymity.

Evaluation Measures Linked to Objectives

The purpose of this project was to evaluate nursing knowledge of KMC within this rural hospital's maternal-child department. The pretest and posttest surveys were provided via a third-party web-based survey software program using Qualtrics. The data

was analyzed to determine if provision of KMC education increased the knowledge of KMC practice and theory by nurses caring for infants in these units.

Methods of Analysis

Data obtained from the pretest and posttest surveys were analyzed using t-test statistics to determine if knowledge of KMC improved after provision of the KMC educational presentation. The pretest and posttest individual answers were linked using the unique five-digit number that participants were asked to create. A paired t-test was used to compare average scores of pretest and posttest responses before and after the KMC education. Additional descriptive statistics were completed to analyze responses versus participant demographic information.

Sustainability

The sustainability of this project was a priority for increasing nursing knowledge of KMC within the maternal-child units. This education was expected to help nurses provide improved evidence-based care and consequently be able to provide parents with the skills and knowledge they need to aid in caring for their infants during the hospital course. It was expected that this education would increase the potential for improved bonding, pain tolerance, and infant growth, among many other benefits for both infants and parents.

Providing education in a timely manner was also key to improving the sustainability of this education and its expected outcomes. Ensuring that all nurses have access to this education early in their career as well as providing continuing education at regular intervals should reinforce the concepts and skills that nurses gain through this

education. Offering this education along with other yearly education could continue to emphasize the importance of this topic and further improve its utilization.

Summary

Due to the multitude of benefits to a growing infant and their parents, kangaroo mother care should be a priority nursing intervention for all appropriate infants. KMC education can provide nurses with the knowledge, skills, and confidence to safely perform KMC interventions while continuing to safely monitor the infant and parent involved. As reviewed previously, studies repeatedly cite numerous benefits to KMC for parents and infants. The goal of this project was to improve the nursing knowledge of KMC in the hospital setting and thereby improve the overall quality of care provided to the infants.

CHAPTER IV

Results

The purpose of this scholarly project was to educate nurses providing care for neonates and infants about the benefits and correct use of kangaroo mother care (KMC). A pretest was developed and provided to any nurses (registered nurse, licensed practical nurse, certified nurse midwife, or neonatal nurse practitioner) who wished to participate in this project. This pretest, administered through the third-party software Qualtrics, was used to identify the providers' current knowledge of the benefits, risks, positioning, and other information about KMC. After the nurses had taken the pretest, they were directed to view the prerecorded voiceover presentation through another third-party, Canva.com. This educational presentation included information about KMC including risks, benefits, statistics, and correct usage and positioning. After viewing this presentation, participants were asked to complete a posttest via Qualtrics that was identical to the pretest to determine if the nurses' knowledge of KMC improved due to the education provided.

Description of Population

The sample population for this project consisted of a convenience sample of nurses (registered nurses [RNs], licensed practical nurses [LPNs], certified nurse midwives [CNMs], and neonatal nurse practitioners [NNPs]) who work within the maternal-child department at a rural hospital in Southwest Missouri. Participants were

recruited through staff email and closed private social media groups that only include only the staff members of these departments. Flyers were created through Canva.com and placed in the staff areas of the units involved in the recruitment: pediatrics, neonatal intensive care unit (NICU), birthing center, postpartum, and nursery. These flyers included QR codes that could be scanned to take participants directly to each section of the project: pretest, education, and posttest. Links were also provided via staff email and the private social media groups.

Inclusion criteria required participants to be a licensed nursing professional (RN, LPN, CNM, or NNP) working within the maternal-child department of a local rural Southwest Missouri hospital, at least 21 years of age, less than 70 years of age, and who are fluent in reading, writing, and understanding the English language. Demographic information was divided into professional license and department. Participants who did not complete the pretest and posttest or did not meet all inclusion criteria were not included in the analyzed data.

The data collection portion of this project took place between November 2022 and January 2023 via Qualtrics. A total of forty-two pretest responses and thirty-one posttest responses were collected. After pretest and posttest completion, the data was aggregated to form a total sample population of twenty-eight participants who had completed both the pretest and posttest. Data was input into Excel and organized based on participants' chosen five-digit numbers. Descriptive statistics were completed via Excel and paired t-tests were completed via IMB SPSS.

Of these twenty-eight participants, fifteen (53.6%) worked in the NICU, five worked in postpartum and five worked in the birthing center (17.9% each), and three

(10.7%) worked in the newborn nursery (see Figure 3 below). There were zero participants who identified as pediatric unit staff. Most of the respondents (92.9%) identified themselves as RNs and the remaining 7.14% identified themselves as NNPs (see Figure 4 below). Both NNPs identified their primary unit as NICU, meaning that the remaining thirteen participants were all RNs. There were no LPNs or CNMs that participated in this project.

Figure 3.

Maternal Child Unit Participation (%)

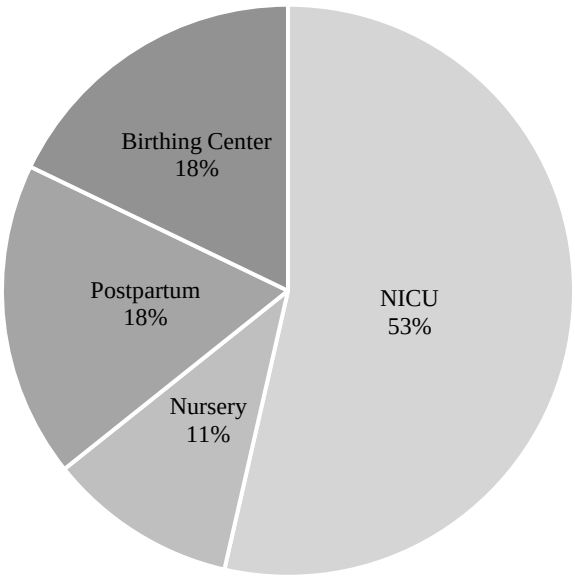
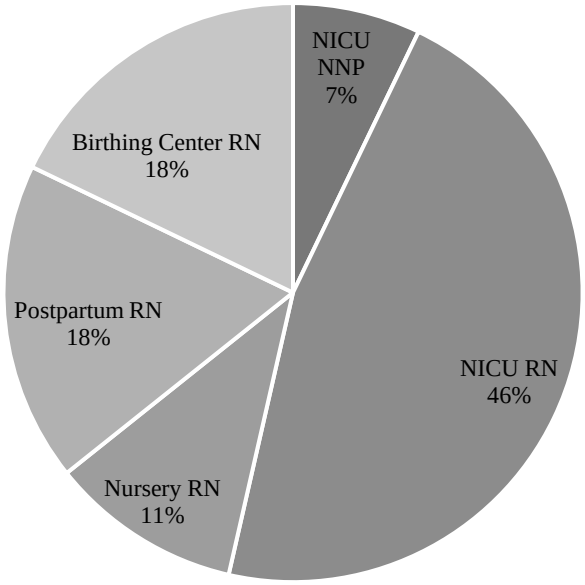


Figure 4.

Participant Demographic Distribution (%)



Independent Variable

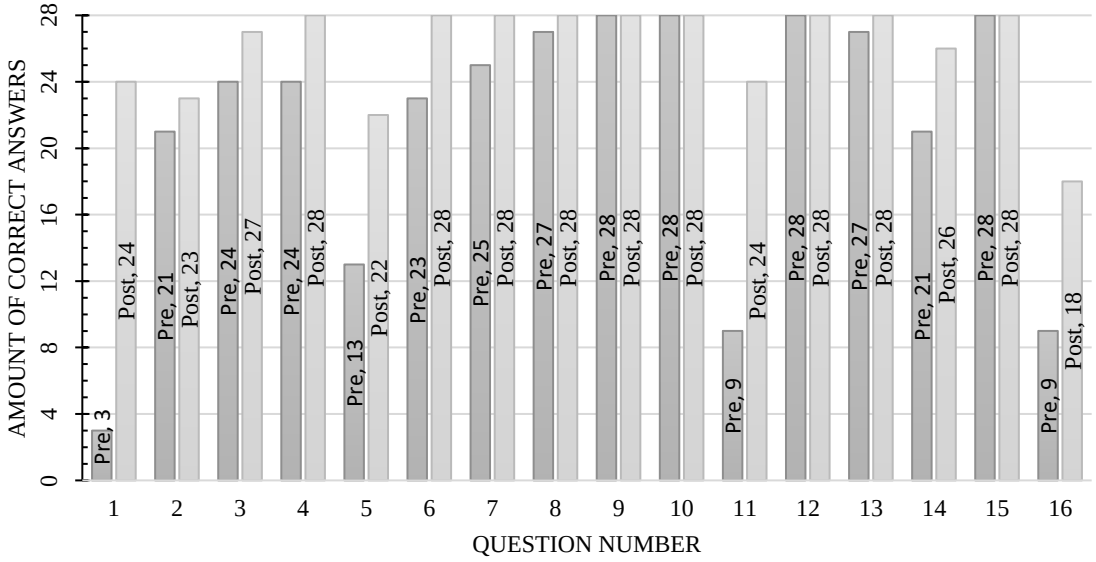
The independent variable in this project was the educational offering provided to participants. All participants had equal access to the educational video through the provided QR code and weblinks. This allowed participants to view the education in their own time and at their own pace and allowed them the opportunity to pause, rewind, or rewatch to allow for improved comprehension.

Dependent Variable

The dependent variable for this project was the measured change in knowledge. This was measured by determining the change in numbers of questions each participant answered correctly on the pretest as compared to the posttest. Each correctly answered

question on the pretest and posttest were scored as a 1 and an incorrect answer was given a 0. The totals of each test were summed up per participant. Descriptive statistics and the paired t-test aided in analyzing changes between the pretest and post-test results as well as determining which units scored best and had the most improvement in knowledge. Figure 5, below, shows how each question was performed individually on the pretest and posttest, respectively.

Figure 5.
Question Performance, number correct



Analysis of Project Results

This project utilized a pretest, educational presentation, and posttest to evaluate if the educational presentation improved the knowledge of KMC of nurses within the maternal child department. Data from the pretest was compared to data from the posttest to determine if there was a significant change in participants' knowledge of KMC. Sixteen questions were developed for the pretest and identical questions were used in the posttest. All questions were answered by all twenty-eight participants. On the pretest, these twenty-eight participants scored an average of 12.11 correct answers out of 16,

75.67% average. However, the average for the posttest was 14.86 out of 16 possible correct answers, or 92.86% (see Table 1 below). A paired samples t-test was completed, showing a mean difference of 2.750, with a standard deviation of 1.838. This makes the results of the posttest compared to the pretest statistically significant ($t = 7.915$, $p = .000$, see Table 2 below).

The results of the paired samples statistics show that there was a wider range of scores (std. deviation pretest =1.641, see Table 1.) on the pretest with the average being 12.11 correct answers. The posttest statistics indicate that not only did the number of correct answers increase, but there was less deviation in the number of correct answers as well (std. deviation =0.970, see Table 1.). This directly answers all three of the proposed research questions. Nursing KMC knowledge prior to the educational offering was less than nursing KMC knowledge after the educational offering ($12.11<14.86$, see Table 1.), indicating that there was a significant increase in knowledge gained by viewing the education ($t = 7.915$, $p = 0.000$, see Table 2.)

Table 1.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pretest scores	12.11	28	1.641	.310
	Posttest scores	14.86	28	.970	.183

Table 2.

Paired Samples Test

		Mean Difference	Std. Deviation	t	df	Sig. (2-tailed)
Pair 1	Pretest scores – Posttest scores	2.750	1.838	7.915	27	.000

Summary

Data analysis was completed using IBM SPSS Statistics. Descriptive analysis was utilized through Excel for quantitative data interpretation. Results of the administered pretest indicated that nurses would benefit from additional KMC education. After viewing the educational presentation, results of the posttest indicated that participants had gained a significant increase in KMC knowledge.

The purpose of this project was to increase the quality of KMC education provided to nurses within the maternal-child department of this rural hospital. The project results demonstrated that the education provided a statistically significant increase in correct answers on the posttest compared to the pretest. Therefore, it can be concluded that there is an indication for improved KMC education that is provided to nursing professionals who care for newborns within all maternal-child units at this hospital.

CHAPTER V

Discussion

The purpose of this project was to improve the education provided to nursing professionals caring for newborns regarding kangaroo mother care (KMC) and its usage within the hospital setting. This project obtained data from nursing professionals caring for newborns within a rural Southwest Missouri Hospital's maternal-child department through the utilization of an identical pretest and posttest. The pretest was used to measure baseline knowledge of KMC of the participants. The posttest measured the knowledge change after the participants viewed a prerecorded educational presentation.

Relationship of Outcomes to Research

Three research questions were investigated for this project. The following questions were investigated and answered through this project:

1. Prior to the educational intervention, what is the KMC knowledge level of nurses?
2. After the educational intervention, what is the KMC knowledge level of nurses?
3. Is there a difference between the knowledge level regarding KMC on the pretest and posttest?

The first and second research questions were analyzed through descriptive statistics and percentages. The third question was answered by comparing pretest and posttest answers and a paired t-test was completed to determine any statistical differences between the two tests. Regarding the first question, participants scored an average 75.67% correct on the pretest, for an average of 12.11 correct answers out of 16. For the second question, participants scored 92.86% correct, with an average of 14.86 correct answers on the posttest after viewing the presented education.

In answering the third question, the mean difference of the collected data revealed an increase in correct answers by participants by an average of 2.750 points from pretest to posttest. The standard deviation decreased when comparing the pretest (1.641) and posttest (0.970) and the mean of the standard error also decreased (pretest 0.310; posttest 0.183). These findings suggest that participants' knowledge did improve after viewing the educational presentation since the standard deviation was low, which implies less variability in the posttest answers than on the pretest.

Observations

Participants were recruited via convenience sampling via social media, staff email, and physical flyers distributed through the maternal-child units. This resulted in a total of forty-two pretest responses and thirty-one posttest responses. Due to inclusion and exclusion criteria, only twenty-eight participants' responses were able to be analyzed for this project. This indicated a low completion rate and that a portion of the respondents did not regard the inclusion and exclusion criteria prior to participation.

The pretests and posttests indicated increased KMC knowledge across the majority of the items that were measured. Items that showed the greatest KMC

knowledge change were questions related to the statistical use of KMC throughout NICUs in the United States and when a KMC session should be ended (See Table 3, below).

Table 3.

Questions with most knowledge change

Question	Pretest (participants correct out of 28)	Posttest
As of 2016, ___ of functional NICUs in the US confirmed regular usage of Kangaroo Care.	3	24
Kangaroo care should be discontinued when:	9	24

The only items that did not show an increase in knowledge were items that scored 100% correct on both the pretest and posttest. The validity of these questions should be further reviewed to ensure that good test taking skills and process of elimination were not factors that attributed to answering the questions correctly. Going forward with a similar project, all questions in the pretest and posttest should be evaluated for this quality to ensure that each question is a true measure of knowledge of the concept.

Evaluation of Theoretical Framework

The data from this research supports Nola Pender's health promotion model (Pender's Health Promotion, 2020). This nursing theory highlights that the improvement of knowledge on a specific topic will improve the chance that an individual will act on that knowledge. This improved knowledge also leads to providers then encouraging the use of certain interventions related to the knowledge obtained. The aim of this project

was to complete the first aspect of this concept and improve the knowledge of nursing professionals who participated with the intention that there would be a trickle-down effect of increased usage of KMC within the maternal-child department, even if that aspect was not specifically measured. This leaves room for further investigation and future research to determine if provided education and improved knowledge does improve the incidence of KMC usage within this department.

Evaluation of Logic Model

The logic model of this study identified the measurable goal of this project to be the improved knowledge of the clinical practice and theory of KMC with an educational presentation. This goal was obtained with a pretest, educational presentation, and then a posttest. The results of the project show that the education provided was beneficial for increasing nursing professionals' knowledge of KMC.

Limitations

The method chosen for this research project was a one-group pretest-posttest design using descriptive statistics, mean, and standard deviation. One limitation in this project was poor participation resulting in a relatively small sample size of only twenty-eight participants. The narrow project timeline of November 2022 through January 2023 likely contributed to the smaller sample size. Since there were fewer nurses meeting the inclusion criteria, this could contribute to the limited convenience sampling. Since the participants were recruited through convenience sampling, sampling bias was present. Participants were recruited via limited social medica groups, staff emails, and physical flyers distributed to the maternal-child units to ensure adequate exposure of the project to all potential participants. A final limitation of this project is that there is no standard

protocol or universal education for the correct use of KMC. This means that the education, knowledge, protocols, and practice of KMC varies widely throughout different hospitals and facilities. Since this was a small study with a small sample size, the results are non-generalizable and should therefore be repeated with a larger sample size, ideally with nursing professionals from various hospitals for more accurate results.

Implications for Future Research

Evaluation of nursing professionals' knowledge of KMC and its utilization in the care of newborns is a cost-effective technique to obtain a starting point for the educational need concerning KMC. The utilization of KMC within NICUs alone within the United States is only at 20% as of 2016 (Almutairi & Ludington-Hoe, 2016). It has been shown by multiple studies that improving the knowledge of nursing professionals will lead to a trickle-down effect and improve the utilization of KMC and improved understanding of the use of KMC by parents (Almutairi & Ludington-Hoe, 2016; Andrews et al., 2019; Coutts et al., 2018; Maastrup et al., 2017). This indicates further that increased education for nursing professionals regarding KMC should be used to improve the understanding, frequency, and quality of KMC utilized within hospitals or departments caring for newborns. This project could be replicated with additional education programs on the same topic with a different sample population or it could be used as a template to investigate educational offerings with similar aspects.

To improve the design of this project, the author could focus the education provided to specific nursing units rather than the entire maternal-child department to better assess the educational needs of specific units and the improvement upon conclusion of the project. Follow-up surveys could also be useful for evaluating

knowledge retention and the effect of this knowledge in clinical practice. Furthermore, an alternative project design could be utilized to determine perceptions and feelings towards the utilization of KMC within the maternal-child units to gain additional insight into barriers and facilitators of KMC use.

Implications for Practice, Health Policy, and Education

The results of this project indicate there is a need for improved education relating to KMC and its benefits and utilization within the maternal-child department. The project outcomes were positive with a small posttest standard deviation of 0.970 and a posttest mean score of 14.86 out of 16, indicating a 2.75 mean score increase from the pretest. These results indicate that the education presented was beneficial for improving KMC knowledge of the nursing professionals who participated in the project. Recommendations to nursing practice could include the incorporation of KMC education on an annual basis for nursing professionals working with newborns in the hospital setting. This annual education could potentiate the knowledge, understanding, utilization, and quality of KMC within the maternal-child department, thus potentiating additional benefits, including improved newborn and neonatal outcomes.

The results of this project and future projects could be utilized for nurses and other healthcare professionals to advocate for improved education opportunities and funding regarding KMC. Additionally, changes in legislative involvement could mandate KMC education and/or provide funding for KMC education. To further expand on this concept, additional changes could be made throughout the hospital or via legislation to allow for easier access to education concerning healthcare topics beyond KMC.

Summary

The purpose of this project was to improve the knowledge of nursing professionals regarding KMC within the hospital setting. By providing KMC education to nursing professionals, nurses caring for newborns within the hospital setting will be better equipped to educate parents on the risks, benefits, and safe utilization of KMC, ultimately leading to improved outcomes of newborns and neonates within the hospital. KMC has been shown to decrease mortality, shorten NICU stays, improve vital signs, encourage parental bonding, relieve parental stress and anxiety, and reduce infant's pain perception (Andrews et al., 2019; Baker-Rush, 2016; Jones & Santamaria, 2017; Kenaley et al., 2020; Ludington-Hoe, 2011; Maastrup, et al., 2017).

This project utilized a pretest, educational presentation, and a posttest offered to nursing professionals within the maternal-child department at a local rural hospital in Southwest Missouri. The pretest indicated that there was a need for improved KMC education to be provided to these nurses. The posttest indicated that the educational presentation was successful in improving the level of knowledge that the participants had gained regarding KMC. It is hoped that this project will encourage nurses and other healthcare professionals to participate in additional educational opportunities to improve their knowledge and skill in providing nonpharmacological and evidence-based interventions like KMC to improve patient outcomes.

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APPENDICES

APPENDIX A

Invitation to Participate

APPENDIX B

Kangaroo Mother Care Scholarly Project Instructions to Participants

This scholarly project is being conducted by Jessica Holly in conjunction with Pittsburg State University's Irene Ransom Bradley School of Nursing to determine the change in knowledge of nurses after viewing an educational video about Kangaroo Mother Care (KMC, or skin-to-skin). A pretest will be administered first via Qualtrecs.com. It is recommended, but not required, to take the pretest at least one week prior to viewing the education. After the education has been viewed by the participating nurse, the posttest may be taken immediately. Participants may scan the QR codes provided to guide them to the pretest, video, and posttest or follow the links provided.

Data collected will not include any identifying information. Participants will be asked to create a unique five-digit number that will be used to match pre and posttest results. However, it is requested that this five-digit number should not include numbers linked to personal identification such as social security numbers, birthdays, phone numbers, or driver's license numbers.

By proceeding with the pretest, viewing the education, and posttest, participants acknowledge that they are participating of their own free will, without impact on their current employment or licensure, and without compensation. Participation is anonymous and can be withdrawn at any point in the project with no ill effects. By proceeding, participants confirm that they are between the ages of 21 and 70, English-speaking, possess active state nursing licensure (RN, LPN, NNP, CNM), and work within Freeman Hospital's Maternal-Child Department.

If you have any questions or concerns about any part of this project or your rights as a participant, please contact:

Jessica Holly (Primary Investigator): JHolly@gus.pittstate.edu

Tracy Stahl (Project Advisor): TStahl@pittstate.edu

APPENDIX C

Pretest/Posttest

This scholarly project is being conducted by Jessica Holly in conjunction with Pittsburg State University's Irene Ransom Bradley School of Nursing to determine the change in knowledge of nurses after viewing an educational video about Kangaroo Mother Care (KMC, or skin-to-skin). A pretest will be administered first via Qualtrecs.com. It is recommended, but not required to take the pretest at least one week prior to viewing the education. After the education has been viewed by the participant, the posttest may be taken immediately. Data collected will not include any identifying information (name, date of birth, IP address, etc.). Participants will be asked to create a unique five-digit number that will be used to match pre and posttest results of individual participants. However, it is requested that this five-digit number should not include numbers linked to personal identification such as social security numbers, birthdays, phone numbers, or driver's license numbers. By proceeding with the pretest, viewing the education, and posttest, participants acknowledge that they are participating of their own free will, without impact on their current employment or licensure, and without compensation. Participation is anonymous and can be withdrawn at any point in the project with no ill effects. By proceeding, participants confirm that they are between the ages of 21 and 70, English-speaking, possess active state nursing licensure (RN, LPN, NNP, CNM), and work within Freeman Hospital's Maternal-Child Department. If you have any questions or concerns about any part of this project or your rights as a participant, please contact: Jessica Holly (Primary Investigator): JHolly@gus.pittstate.edu or Tracy Stahl (Project Advisor): TStahl@pittstate.edu

- **I agree.**

(Posttest only question) I have already completed the Pretest and have viewed the Kangaroo Care Education.

- **Yes**
- No

Please create a unique 5-digit number and enter it below. This number should not include consecutive numbers, duplicate numbers, or other identifying numbers such as phone numbers, driver's license, or social security numbers to reduce risk of duplication or identification. Please commit this number to memory as it will be used to link your pretest and posttest responses.

(Posttest wording: Please enter the unique 5-digit number that you created for your pretest below. This number should be identical to the one you entered on your pretest)

_____

1. I am a licensed _____.
    a. RN
    b. LPN
    c. CNM
    d. NNP
    e. None of these
2. I am over the age of 18.
    a. Yes
    b. No
3. I am under the age of 70.
    a. Yes
    b. No
4. I am employed by Freeman Health System
    a. Yes
    b. No
5. I work in _____ primarily.
    a. Postpartum
    b. Nursery
    c. Birthing Center
    d. NICU
    e. Pediatrics
    f. None of these

1. When initiating Kangaroo Care, what is the correct positioning?
    a. Infant is chest to chest with caregiver, vertical, knees and hips flexed, head turned to one side.
    b. Infant is cradled to caregiver's abdomen, knees and hips flexed, hands at chest/face, maintaining a supine-midline spine and neck
    c. Infant is chest to chest with caregiver, vertical, knees/hips/arms extended, head midline
    d. Infant is cradled to caregiver's abdomen and side-lying facing caregiver, knees and hips flexed and head midline
2. Kangaroo Care is appropriate in which of the following scenarios?
    a. Total body cooling of a 38-week infant
    b. 29-week infant on an oscillator and epinephrine
    c. 25-week intubated infant who has frequent cardio-pulmonary events
    d. None of these
3. Kangaroo Care is proven to benefit infants in what way(s)?
    a. improved blood glucose

b. improved oxygen saturation
c. Decrease in cardio-pulmonary events.
d. All of these

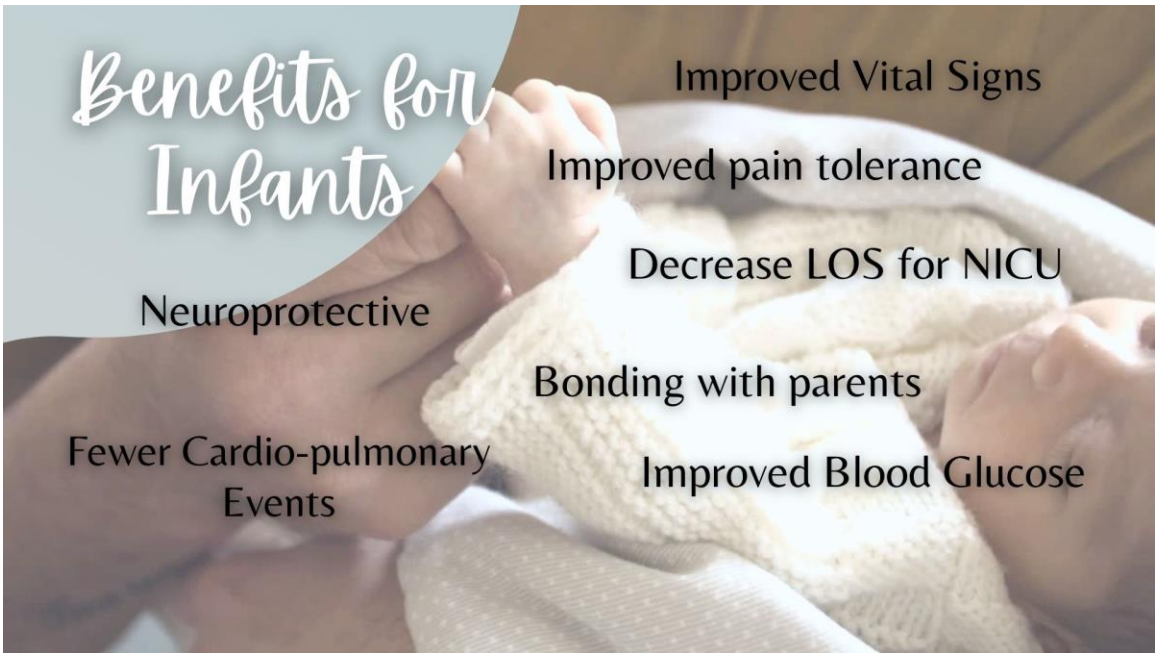
4. Which of the following is considered a contraindication to Kangaroo Care?
    a. Low body temperature
    b. Frequent cardio-pulmonary events
    c. Intubation/ventilation
    d. Oscillator
5. What is the minimum corrected gestational age for safe Kangaroo Care?
    a. 27 weeks
    b. 35 weeks
    c. 29 weeks
    d. There is no minimum gestational age.
6. Which of the following is considered a contraindication to Kangaroo Care?
    a. Low blood glucose
    b. Mother not breastfeeding.
    c. Total body cooling
    d. Infant is cold.
7. Kangaroo Care is:
    a. Cost-effective
    b. Evidence-based practice
    c. Beneficial for parents
    d. All of the above
8. Kangaroo Care can be initiated:
    a. When an infant of any gestation is stable after delivery
    b. When an infant is palliative
    c. When adoptive parents are available to hold
    d. All of these
9. Kangaroo Care:
    a. Is not beneficial to caregivers other than the mother.
    b. Is neuroprotective.
    c. Should only be initiated with a written or verbal order.
    d. Is only useful at delivery.
10. Kangaroo care should be discontinued when:
    a. It is care time.
    b. The infant requires emergent intervention.
    c. A maximum of three hours has passed.
    d. All of these are correct.
11. Kangaroo Care:
    a. Is not something that parents should do once they go home

b. Promotes breastfeeding and bonding.
c. Can improve anxiety and blood pressure for the adult holding
d. Both B and C

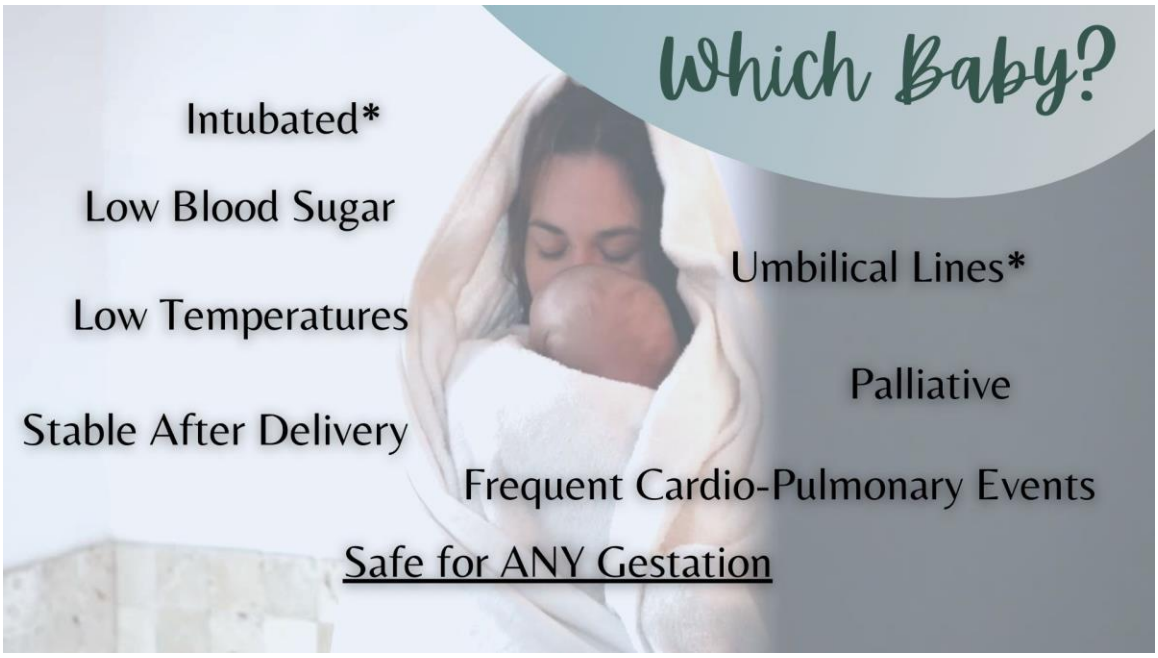
12. Kangaroo Care can be done:
    a. Only in the NICU
    b. Only at home
    c. Only at delivery
    d. None of these
13. Benefits of Kangaroo Care include:
    a. Decreased instance of hyperbilirubinemia
    b. Reduction in infant mortality
    c. Improved blood volume
    d. Reduced risk of head bleeds
14. With the usage of Kangaroo Care, infant mortality has been shown to be decreased up to _____ compared to conventional treatment plans.
    a. 80%
    b. 50%
    c. 10%
    d. 30%
15. As of 2016, ____ of functional NICUs in the US confirmed regular usage of Kangaroo care.
    a. 56%
    b. 71%
    c. 15%
    d. 20%
16. Kangaroo Care has not been shown to affect _____.
    a. Pain perception and tolerance
    b. Infant's blood volume
    c. Father's anxiety
    d. Infant's behavior

APPENDIX D

Educational Video/PowerPoint


Benefits for Infants
Improved Vital Signs
Improved pain tolerance
Decrease LOS for NICU
Neuroprotective
Bonding with parents
Fewer Cardio-pulmonary Events
Improved Blood Glucose


Benefits for Others
Improved Blood Pressure
Reduced anxiety and stress
Improved Bonding
Stimulate Oxytocin Release
Increased confidence
Not just for mom


Which Baby?
Intubated*
Low Blood Sugar
Low Temperatures
Stable After Delivery
Umbilical Lines*
Palliative
Frequent Cardio-Pulmonary Events
Safe for ANY Gestation


Contraindications
Oscillator
Total Body Cooling
During Sterile Procedure
During Emergency or Resuscitation


Additional Info
Care time on Caregiver
Parental Skill for Home
No Time Limit
Two Staff to Transfer
No Physician Order*
Even for "older" babies
Cluster Care
Adoptions and Fosters


Positioning
Vertical
Shoulders and elbows flexed
Knees and hips flexed
Chest to chest, belly to belly
Head to one side
Hands to face or chest
Developmental positioning still applies!


https://youtu.be/VOjGhwMuWFU


https://youtu.be/VOjGhwMuWFU

https://handtohold.org/bonding-with-your-preemie/

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Images and Video Courtesy of:

https://theswaddle.com/skin-to-skin-kangaroo-care-in-hospital-after-birth-risk-poor-hygiene/

Canva.com

https://youtu.be/VOjGhwMuWFU

RecForth App

FilmForth App


Thank You
Please proceed to taking the Posttest at your nearest convenience!

APPENDIX E

Hospital/Director Letter of Permission

FREEMAN
Health System

1102 West 32nd Street | Joplin, MO 64804 | 417.347.1111
freemanhealth.com

To whom it may concern,

Jessica Holly is a Registered Nurse under my direct supervision in the NICU department at Freeman Health System. Jessica has presented her project topic and support that she will need from me and the health system. I have acknowledged and approved her project. If you have any questions or need any further documentation, please let me know.

Kalseji Reeves

Director of Maternal Child Services

Freeman Health System

417-347-3674

kkreeves@freemanhealth.com