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Kangaroo Care Education for Low Socioeconomic Status families in the Neonatal Intensive Care Unit.

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Kangaroo Care Education for Low Socioeconomic Status families in the Neonatal Intensive Care Unit.

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NURS4500 Nursing Research and Senior Thesis

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Abstract

The early contact between mother and baby is known as skin-to-skin, also referred to as "kangaroo care" (KC). It involves placing the baby on the mother's chest as soon as it is appropriate (Thompson et al., 1979). This interaction was primarily for bonding but many researchers have discovered additional benefits. There is significant correlation between kangaroo care and weight gain (especially for low birth weight infants), as well as body temperature and heart rate regulation, which reduces the risk of medical complications. It also decreases levels of stress in mothers and babies by lowering the release of cortisol hormone (Mohammadi et al., 2021). The purpose of this study is to investigate the disparities in access and utilization of KC for newborns. The study will also assess the impact of these disparities on maternal and infant outcomes such as weight gain, temperature regulation, neurocognitive enhancement, particularly among families of low-socioeconomic status. A literature review investigated research on topics such as benefits of kangaroo care, challenges and disparities for implementation of kangaroo care for families with low socioeconomic status, and prenatal teaching as an intervention. Pregnant women will be randomly assigned to either the control or experimental group receiving the intervention. We will use descriptive statistics to compare the means of the two groups of women. The inferential statistics will be used to determine the p-value and predict statistical significance .

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Introduction

Skin-to-skin, also referred to as “kangaroo care” (KC), involves placing the baby on the mother’s chest as soon as it is appropriate. This early contact between mother and baby was primarily for bonding but many researchers have discovered additional benefits. Dr. Edgar Rey Sanabria, a neonatologist from Colombia, popularized skin-to-skin as a method of keeping the babies warm for lack of proper equipment. Thompson et al. (1979) was the first to investigate the benefits of skin-to-skin related to improvement of breastfeeding rates. She reported that skin-to-skin contact between mothers and their premature infants helped mothers establish successful breastfeeding patterns.

Among the many benefits, skin-to-skin is proven to promote early bonding and attachment, which can have long-lasting positive effects on maternal-infant relationships. In particular Mohammadi et al. (2021) found significant correlation between kangaroo care and weight gain (especially for low birth weight infants), as well as body temperature and heart rate regulation, which reduces the risk of medical complications. It also decreases levels of stress in mothers and babies by lowering the release of cortisol hormone (Bigelow et al., 2014).

Problem Statement

Despite numerous studies proving the advantages of skin-to-skin contact, 6.3 million children under the age of 5 still die each year, with 40% of these deaths occurring during the newborn period (Smith et al., 2017). This can be explained by the disparities in the availability and utilization of kangaroo care for infants, particularly in low-income and minority populations (Brignoni-Pérez et al., 2021). The reason for this is that low-income families are more likely to face obstacles to hospital visits, such as working long hours, a lack of childcare, transportation

issues, age, marital status, and insurance coverage are some examples (Brignoni-Pérez et al., 2021).

These families may have limited access to healthcare resources, such as trained healthcare providers, specialized equipment, and support services, which can hinder their ability to provide optimal care for their premature infants (Brignoni-Perez et al., 2021). The lack of proper education and resources on kangaroo care for these families highlights a significant healthcare disparity that needs to be addressed. It is crucial to identify and implement strategies that can improve access to education and resources for these families to ensure that all premature infants receive the best possible care, regardless of their socioeconomic status.

Purpose Statement

The purpose of this study is to investigate the disparities in access and utilization of Kangaroo Care (KC) for newborns. The study will also assess the impact of these disparities on maternal and infant outcomes such as weight gain, temperature regulation, neurocognitive enhancement, particularly among families of low-socioeconomic status. Through identifying the barriers that contribute to unequal distribution of the benefits of KC, it is possible to provide insights and recommendations to address and promote equity in neonatal care. This research will aim to inform evidence-based interventions and policies that will improve the health and well-being of infants and mothers.

Problem Question

Does education about the benefits of Kangaroo Care (KC) improve utilization and outcomes among low socioeconomic status (SES) populations?

Hypothesis

Education about the benefits of Kangaroo Care (KC) will lead to increased utilization of KC among low SES populations and result in improved maternal and infant outcomes, compared to those who do not receive education about KC.

Introduction to the literature critique

Search Strategy

The following literature review explores benefits of Kangaroo Care in infants while analyzing the disparity in distribution of KC amongst infants from low socioeconomic status (SES) families. The articles used for this review were retrieved from the following databases: *Google Scholar*, *PubMed* and *CINAHL*. The keyword search terms for each database included, "kangaroo care", "skin-to-skin contact", "Neonatal Intensive Care Unit", "maternal-baby attachment." Articles had to meet two criteria to be included in this literature review: peer-reviewed, and published no more than 10 years ago. A total of six articles were selected for this literature review and are organized under the following subheadings *Benefits of Kangaroo Care*, *Challenges and disparities for implementation of kangaroo care for families with low SES* and *Prenatal Teaching as an Intervention*. Literature Review Table can be found in Appendix A.

This literature critique focuses on the physiological and psychological benefits of kangaroo care for preterm infants and their mothers. This review includes six articles that highlight these benefits, as well as the challenges that parents in the Neonatal Intensive Care Unit (NICU) face when caring for their infants. Families that face the most challenges are usually from low SES, or do not speak English as their primary language. These obstacles prevent mothers from obtaining education needed to care for their fragile infants and poses other

obstacles to getting the education needed to tend to their fragile infants (Brignoni-Pérez et al., 2021).

The articles were based on studies that reinforce the importance of KC, the challenges families face to be able to perform KC, and obstacles the healthcare system faces to implement KC such as personal bias, time constraint, parents willingness to learn, and language barriers.

Benefits of Kangaroo Care

In a seminal study, Thompson et al. (1979) conducted a randomized controlled trial with a culturally diverse sample of 30 women between the ages of 21 to 33 years old in labor with their firstborn at St. Mary's hospital. The purpose of the study was to promote breastfeeding through KC as an intervention. The convenience sample was divided into two groups. The control group followed the hospital routine, whereby the baby was briefly held by the mother for less than five minutes; subsequently placed under blue light, and received standard nursing interventions. During the intervention the baby was placed in the mother's chest, receiving skin to skin contact for 30 minutes as permitted by the infant's needs. (Thompson et al., 1979).

Researchers found that in both groups the mother's experiences with infants ranged from happy, sad, confused and emotional. Mothers who have positive encounters with their newborns achieve successful breastfeeding experiences, at least until two months of age. One limitation of this study was the very small (n=15) sample size of mothers. All of the women in the study who demonstrated a less than positive experience when meeting their newborns failed to establish successful breastfeeding. This information prompted researchers to conclude that maternal first impressions may have long-term effects on the relationship between a mother and her child (Thompson et al., 1979).

Sinha et al. (2021) conducted an extensive randomized controlled trial to analyze and compare the prevalence of postpartum depression among mothers who are exposed to KC versus those who are not. Through a meta-analysis study in India, researchers estimated that 22% of mothers with preterm infants experience postpartum depression. The convenient sample was of 1950 participants, the age mean was 23 years old, low SES, and mothers of low birth weight infants (1500-2250g). Mothers of twins or triplets were excluded from this study. The study happened from April 2017 through March 2018. For the purpose of this research, pregnant women were randomized by an off-site coordinator. The intervention was performed through a personal staff team visiting the family and teaching KC and breastfeeding for mothers. The families were visited nine times during 28 days postpartum and addressed any issues that arose. The control group received usual care which includes at home visits.

Researchers affirm that 99% of mothers of the intervention group practiced KC. They found a 25% lower risk of postpartum depression symptoms among mothers in the intervention group compared to the control group (Sinha et al., 2021). In another study, researchers reported that depressive symptoms were lower in mothers who performed KC versus those who did not (Bigelow et al., 2014). The reason why researchers believe that KC influences depression symptoms is by creating a love bond between mother and potentially by the effects of oxytocin (Sinha et al. 2021). One limitation this study faced was that they specifically worked with stable low birth weight infants, therefore cannot confirm the same results on unstable infants (Sinha et al., 2021).

Challenges and Disparities for Implementation of Kangaroo Care for Families with Low SES

Brignoni-Pérez et al. (2021) conducted a quantitative study. The purpose of the study was to determine whether the rate, frequency and length of KC with preterm infants in the NICU were influenced by the family's SES. The convenient sample was of 116 infants born at less than 32 weeks of gestational age who were hospitalized at Lucile Packard Children's Hospital in Stanford. The researchers collected data from May 1, 2018 to March 8, 2020 from the electronic medical record (EMR). They divided the cohort into two groups based on SES and language but for the purpose of this literature critique, the focus will be on SES. To determine their SES the study used health insurance as a proxy, private insurances meant high SES while public insurances meant low SES (Brignoni-Pérez et al., 2021).

Researchers' significant findings confirmed their hypothesis that infants from low income families experienced less rate and duration of KC than families with higher incomes. These results could be closely related to parental stress, lack of staff support and maternal education. (Brignoni-Pérez et al. 2021). A limitation of this study is that by collecting data from EMR there could be some inconsistencies. Another limitation is that there were multiple variables such as race, SES and language barriers that posed an obstacle to investigate each factor individually as they were interconnected.

Mohammadi et al. (2021) conducted a qualitative study in a teaching hospital in Iran. The convenience sample of n=30 included nurses, midwives, and physicians (neonatologists and a pediatrician). The purpose of the study was to identify barriers that prevent infants from getting KC while in the NICU. Focus groups were used to obtain information about hospital staff's knowledge of KC. In these meetings the facilitator asked questions such as, "How familiar are

you with kangaroo mother care?", "How inclined are you to make continuous KMC?", "To what extent is performing KMC necessary in the neonatal unit?", "What are the most important barriers in launching continuous KMC in your opinion?" and "How can these barriers be removed?" (Mohammadi et al., 2021, p. 138).

The only inclusion criteria for the sample was that they would have at least 10 years of experience in the field. The barriers identified through the focus groups for parents were cultural barriers, mother's physical and mental health, and lack of father's support. Physicians and healthcare workers faced issues related to indifference towards the methods, as well as a lack of financial resources and equipment.(Mohammadi et al., 2021) One limitation was that the study did not take into consideration the parents' views on barriers and challenges to implement KC. Therefore researchers could not conclude whether the results would have been different if parents were involved.

Prenatal Teaching as an Intervention

Shafaei et al. (2020) conducted a randomized controlled clinical trial to determine whether prenatal breastfeeding counseling was effective in mothers who previously failed to establish successful breastfeeding. The convenience sample consisted of 108 pregnant women with a history of unsuccessful breastfeeding during the years 2017-2018. The participants were divided into control and intervention groups. The intervention group received at least four breastfeeding teaching sessions while the control group proceeded with no prenatal teaching. After birth, the mothers in the intervention group received four months of support. In this clinical trial the researchers found that the intervention had a positive influence in helping mothers initiate and maintain breastfeeding rates up to four months after delivery. (Shafaei et al., 2020). The limitation of the study is that it was only done in health centers versus hospitals and only

initiated after 15 days postpartum. The study suggests that initiating breastfeeding immediately after delivery could lead to better outcomes.

Fenwick et al. (2015) conducted a multi-site randomized controlled trial to test interventions that could reduce fear during labor while improving childbirth experiences for mothers and babies. The Birth Emotions and Looking to Improve Expectant Fear (BELIEF) tool was used to assess fear of childbirth, childbirth experience and depressive thoughts and symptoms. The randomized sample of 1410 women was selected based on the following criteria: being 12 and 24 weeks of gestation, fluent in English, at least 16 years old, and able to provide consent for the study. (Fenwick et al., 2015).

In this study the researchers concluded that 8% of women who received education as an intervention opted for natural labor over cesarean surgery and vaginal birth rates increased for women having a first child. In addition, fear and anxiety levels decreased after staff counseling and women's satisfaction with their experience increased. Overall, women reported that the education they received helped with the fear and birth experience. (Fenwick et al., 2015). A limitation of the study was the women in vulnerable situations were harder to engage for lack of support, time constraint and financial obstacles.

Pregnant women should be educated about the importance of skin-to-skin contact with their newborns. Among other benefits, this practice can help in promoting bonding, increase the chances of successful breastfeeding, and improve newborns' physiological stability. However, more research in low socioeconomic populations is essential for deciding how to effectively implement and promote skin-to-skin contact in settings where resources and support may be limited. Understanding the barriers to skin-to-skin contact in these populations can aid healthcare providers in developing strategies to improve uptake and outcomes.

Research proposal

Theoretical Framework

The theoretical framework used in this study is Nola Pender's Health Model Belief. The central idea for this theorist involves seeking and predicting health behaviors. This model suggests that individuals can be actively involved in promoting their health by engaging in behaviors that prevent illness and improve health outcomes (Nursing Theory, 2020).

According to Pender (2011), behavioral counseling is one of the most effective interventions in changing health outcomes. Nurses and healthcare providers have an important role in terms of educating and encouraging patients about lifestyle changes and the benefits of these changes (Whithlock et al., 2002).

According to Pender's nursing paradigm, a person is defined as being the sum of both their genetic makeup and their environment, yet possessing the capacity for self-reflection and evaluation, highlighting the crucial role of self-awareness in promoting positive health behavior changes. The environment is an essential part to one's self formation and it includes factors such as society, economics, religion, and politics. Nursing is the multidisciplinary collaboration achieving optimal health status through health-enhancing behaviors. Pender's health promotion model suggests that changes can be made through small adjustments in self-care, personal relationships, and one's relationship with the environment which can result in big changes in one's health potential (Pender, 2011). Therefore, Pender suggests that education, in this case KC, can support parents in contributing positively to their infants' health outcomes.

Research Design

This research proposal will be a quasi-experimental study design with low SES families in the NICU. The study will be divided into three phases: pre-test questions, prenatal educational

program on KC, and post-test checklist. The CO-PARTNER checklist is a tool that was recently developed to measure parents' participation in the NICU. This tool consists in measuring parents' time present in the unit, advocating for their infants, gathering information, time holding and comforting newborns. The higher the score in the CO-PARTNER tool was directly correlated with lower rates of postpartum depression and higher levels of parental and infant bonding. (Veenendaal et al., 2021).

The participants will be chosen using convenience sampling, and then randomly assigned into two groups: experimental and control. Both groups will be given a questionnaire with 10 questions designed to assess their knowledge about KC and its benefits, how it is done, etc. Some questions include "Do you know what the Golden Hour is?", "Do you know the benefits of KC for mother and infant?". The parents must answer the questions without erasing any previous answers.

The experiment group will be divided into three phases: pre-test questionnaire, prenatal educational program in KC, and CO-PARTNER checklist to observe parents' engagement in the infant's care. The placebo group will receive the first questionnaire and the checklist without any training. The educational program will be implemented during the second phase. The parents will receive prenatal counseling about the importance of the golden hour (the first hour of the baby out of the uterus), benefits of skin-to-skin for newborn such as neurological enhancement, temperature regulation and benefits for the mother such as uterus contraction which decreases risk for bleeding. The training will be provided in two days a few weeks before the due date.

The post-test CO-PARTNER checklist is the last phase. During this phase, the checklist will measure whether the educational program provided was sufficient to increase the rates of KC performed by parents. Participants will answer the checklist focusing on Domain 6

(Closeness and Comforting the infant), in this portion parents will be asked whether they comforted, held, cuddled and provided skin-to-skin during their NICU stay.

Sample size

A convenient sample size of 40 families with preterm infants around 25-35 weeks who were born or transferred to Stanford Hospital and UCSF. Inclusion criteria involve neonatal parents in the intensive care unit with their first born that have no knowledge of kangaroo holding with low socioeconomic status and excluding are infants who went home and then were rehospitalized in the NICU and families with high socioeconomic status.

Data Analysis

To assess the effectiveness of the prenatal education program, both questionnaires will be examined using inferential and descriptive statistics. The independent variable is the implementation of a prenatal educational program for parents that are most at risk for preterm infants and parents with low SES. The dependent variable is the amount of parents that implemented KC after the prenatal educational program intervention.

The means of the two groups will be compared using a t-test to determine whether or not the educational program has an effect on the population of interest and therefore it determines if the hypothesis is supported. For this research proposal, the t-test is expected to have a low p-value, indicating that the sample results did not occur by chance and thus the hypothesis was proven.

Limitations

The study's limitations include a small sample size due to the limited number of participants that will meet the inclusion criteria.

Ethical considerations

This study will be presented to the Dominican University of California ethical review board, and receive permission from the Institutional Review Board (IRB) and hospital administrators before data collection. Before taking part, all participants will be given written informed consent. The study's objectives and methods will be explained, and participation will be entirely voluntary. Participants have the right to leave the study at any time. All information gathered will be kept confidential, and assigned IDs will be used instead of personal names.

Conclusion

Researchers have established the myriad of benefits that KC provides through extensive studies. The benefits range from decreasing the risk for postpartum depressive symptoms, decreasing salivary cortisol that contributes to maternal and infant stress (Sinha et al., 2021). As well as promoting exclusive breastfeeding and maternal-infant attachment (Thompson et al., 1979). Despite the known benefits, families from low SES perform less KC than families of high SES, therefore, the disparities can place these parents at risk for postpartum depressive symptoms (Sinha et al., 2021).

This research proposal aims to close the research gap by developing a prenatal educational program for low SES families, providing in-depth knowledge of the benefits both mothers and babies can experience through KC intervention. The main purpose of the study is to raise awareness of a simple, cost free strategy that can improve infant health outcomes, including parents in infant-care, thus increasing patient satisfaction. Nursing practice plays a critical role in promoting skin-to-skin contact between mothers and their newborns. Along with other interventions, the practice of KC should be prioritized, and nurses should take the initiative in educating mothers of its benefits.

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Appendix A

Literature Review Table

Authors/ Citation	Purpose/Objective of Study	Sample Population of interest, sample size	Study Design	Study Methods	Major Finding(s)	Strengths	Limitations
Shafaei et al. 2020 https://doi.org/10.1186/s12905-020-00947-1	This study's goal is to monitor a mother's performance when breastfeeding with and without teaching.	The sample of this trial was 108 pregnant women with prior unsuccessful breastfeeding history.	Randomized control trial	Participants were randomly assigned to interview and control groups. Interview group had four education sessions while the control group did not.	The results supported the hypothesis that education will increase breastfeeding success rates.	One strength of this study is that they gathered an adequate amount of participants and lasted four months.	A limitation of this study is that it was not able to start immediately after birth since mothers were only referred to the study on the 15th day of postpartum.
Brignoni-Pérez et al., 2021 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9046459/	The aim of this study was to investigate whether preterm infants whose families have lower SES experience less kangaroo care compared with their counterparts.	Participants were infants born at a GA of less than 32 weeks, who were hospitalized at the Lucile Packard Children's Hospital (LPCH) in Stanford.	Data collected from the hospital.	Participants were infants born around 32 weeks gestational age (GA), *N*=116. We defined SES by the infants' health insurance.e	Infants in the lower SES and Other language groups experienced KC in reduced amounts, lower frequencies, and shorter durations than infants in either the higher SES or English language groups.	A strength of this study is that it is very recent and explores new nuances of kangaroo care.	A limitation of this study is that data were extracted from EMRs and may thus capture inconsistencies in reporting from clinical staff.

Authors/ Citation	Purpose/Objective of Study	Sample Population of interest, sample size	Study Design	Study Methods	Major Finding(s)	Strengths	Limitations
Mohammadi et al. 2021 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8609115/	The study aimed to understand the barriers for implementation of kangaroo care among the hospital staff.	The participants in this study included 17 nurses, 4 midwives, 5 neonatologists, head of the hospital, hospital manager, matron and director of administrative affairs.	Qualitative research	Content analysis was conducted in Iran in a teaching hospital with a third level NICU consisting of 24 beds, about 5000-6000 births annually.	They found many barriers associated with mothers, the healthcare system including physicians and fathers which is helpful in order to try and solve those problems.	The strength is that the study analyzed the perspective of mothers, fathers and the healthcare team.	One of the limitations of this study is the absence of mothers in a group discussion to identify barriers to kangaroo care implementation.
Thompson et al. 1979 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2383381/?page=3	The study aims to explore why so many women abandon breastfeeding and how skin-to-skin can help.	The women in this study were from a variety of ethnic backgrounds, aged 21-33 years, who entered St. Mary's Hospital for delivery of their first child.	Randomized control trial	Mothers and infants were randomly assigned to a control or early contact group.	Mothers in the early contact group were successfully breastfeeding while in the control group were partially breastfeeding and giving their kids one or	The strength is that is a double blind study	The limitation is that it is a very small sample size.
Fenwick et al. 2015 https://doi.org/10.1186/s12884-015-0721-y	The study aims to understand the effect of education in reducing fear of childbirth.	There were 339 participants in the study who confirmed fear and anxiety about labor.	Multi-site randomized control trial	A two armed non-blinded parallel multi-site randomized controlled trial was used.	Participants were 12-24 weeks along, 16 years of age and older, able to communicate in English.	The strength is the large sample size.	A limitation was that younger and less educated women were harder to participate.

Authors/ Citation	Purpose/Objective of Study	Sample Population of interest, sample size	Study Design	Study Methods	Major Finding(s)	Strengths	Limitations
Sinha et al. 2021 https://pubmed.ncbi.nlm.nih.gov/33885776/	The study wanted to investigate the effects of KC on postpartum depressive symptoms.	The participants' mean age was 23 years old and they belonged to the lower income families.	Randomized control trial	Pregnant women were followed until delivery. They were then screened for eligibility and randomly assigned to a group.	The findings suggested that there is a decrease in risk for moderate and severe maternal postpartum depression in the groups with KC.	The strength is that the study had a large sample of 1950 women.	The limitation of this study is that it was limited to stable low birth weight infants and the findings may not be the same with another population of infants.