

The Impact of Kangaroo Care on the Weight Gain of Premature Infants

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Abstract

Premature birth remains a global health concern, affecting approximately 15 million infants annually (WHO, 2023). Kangaroo Care (KC), involving skin-to-skin contact between caregivers and infants, was developed as a promising intervention to mitigate the adverse effects of prematurity. This study aimed to investigate the impact of KC on weight gain among preterm infants in the neonatal intensive care unit (NICU) at Doctors Hospital of Augusta (DHOA). A quasi-experimental quantitative posttest-only design was employed, with eight preterm infants (<37 weeks gestation) participating in KC for at least 30 minutes daily. Daily weight measurements were collected over a four-week period and compared to the expected weight gain for infants receiving traditional incubator care. Results revealed a statistically significant increase in weight gain among infants receiving KC compared to the historical average for infants in traditional incubator care ($t(7) = 2.443, p = 0.022$). A large effect size (Cohen's $d = 0.864$) further supported the significance of these findings. Despite limitations such as a small sample size and convenience sampling, this study emphasizes that KC enhances weight gain in preterm infants, thus improving overall health outcomes. Implementation of KC requires ongoing support from nurse leaders to ensure proper education and successful integration into routine care practices. Nonetheless, continued research with larger samples and improved randomization is warranted to fully understand the long-term benefits of KC in neonatal care settings.

Keywords: Kangaroo Care, Skin-to-Skin Care, weight gain, premature

Introduction



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Approximately 1 million infants and children die each year due to complications of preterm birth (Perin et al., 2022). Low preterm birth weights place infants at greater risk for developmental delays, neurological disorders, respiratory diseases, and mortality (Souza et al., 2018). Thus, prematurity is recognized as the leading cause of death in children under the age of 5 around the world (WHO, 2023).

Kangaroo Care (KC) or Skin-to-Skin Care (SSC) is the act of placing a naked infant directly on a caregiver's bare chest (WHO, 2023). KC was first established in Bogota, Columbia in 1978 during an incubator shortage (Cunningham et al., 2018). Healthcare workers found that skin-to-skin contact between a mother and child acted as a natural incubator (Cunningham et al., 2018). Since then, KC has been used and studied throughout neonatal intensive care units across the world. It is a cost-effective method of reducing overall infant and neonatal mortality by over 25% (Mathews, 2018). Still, research struggles to prove exactly how and why KC works.

Purpose

To determine if Kangaroo Care compared to traditional incubator care results in increased weight gain for premature infants in Doctors Hospital of Augusta's (DHOA) neonatal intensive care unit (NICU).

Research Question

In preterm infants (P), how does kangaroo care (I) compared to traditional incubator care (C) influence weight gain (O) within the first 2 months of life (T)?

Literature Review

The literature shows that KC has **positive effects on the quality and quantity of breastfeeding**, which ultimately results in weight gain (Kucukoglu et al., 2021; Mathews, 2018; Mehrpisheh et al., 2022; Rehman et al., 2020; Souza et al., 2018; Wang et al., 2021).

Another shared theme in the literature regarding Kangaroo Care is the subsequent **thermoregulation** (Mathews, 2018; Pravitarsari et al., 2020).

It is also suggested that skin-to-skin contact **lowers serum cortisol levels**.

This in turn reduces calorie expenditure resulting in weight gain for newborns (Cristobal Canada et al., 2022; Cunningham et al., 2018).

Barriers to the current literature **include limited sample sizes**, lack of generalizability of results, and the interpretive nature of some of the data.

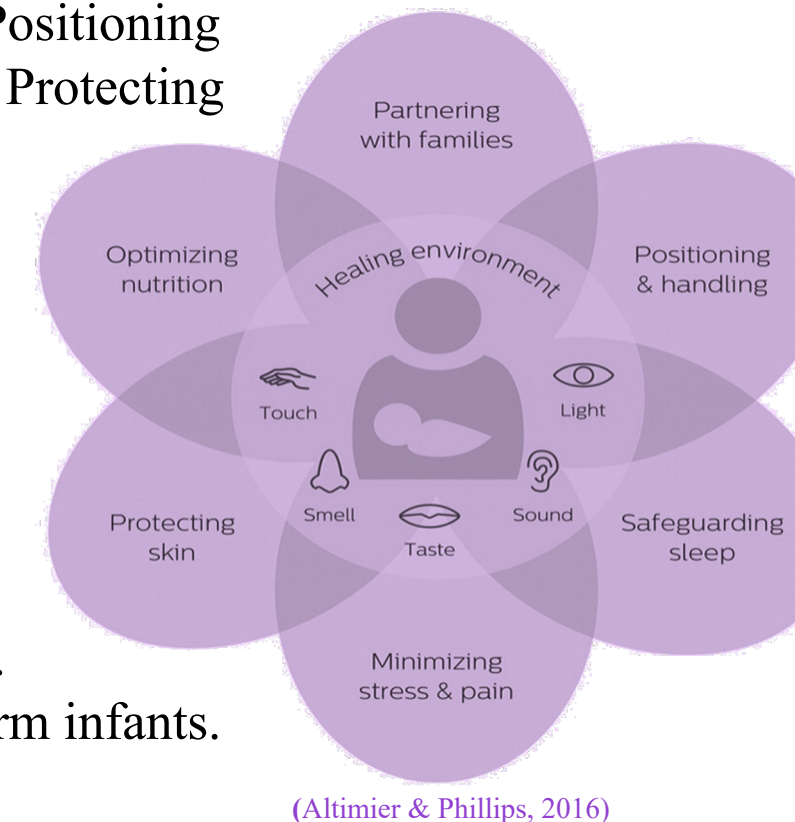


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Methods

Theoretical Framework

The Neonatal Integrative Developmental Care Model utilizes a lotus flower image to express the seven core measures for family-centered developmental care of neonates. The Healing Environment is the center of the lotus, and the petals are Partnering with Families, Positioning and Handling, Safeguarding Sleep, Minimizing Stress and Pain, Protecting Skin, and Optimizing Nutrition. The overlapping petals of the model demonstrate the integrative nature of neonatal care (Altimier & Phillips 2016). Altmier and Phillips (2016) identify SSC as the ultimate healing environment for newborns.



(Altimier & Phillips, 2016)

Research Design

A quasi-experimental, quantitative, post-test-only design.

Variables

The independent variable was the application of Kangaroo Care.

The dependent variable was the subsequent weights of the preterm infants.

Participants

Participants were selected from DHOA's NICU unit voluntarily. Inclusion criteria were preterm infants (<37wks gestation), <2 months old, whose legal guardians volunteered and signed consent for participation. Exclusion criteria included any physical or mental limitations preventing the safe application of KC.

Data Collection

Data was collected over 4 weeks. Infants were weighed daily, on an electronic scale, without clothing. The experimental group received at least 30 minutes of uninterrupted SSC. The average experimental weight change was compared to the expected weight gain of infants receiving traditional incubator care.

Results

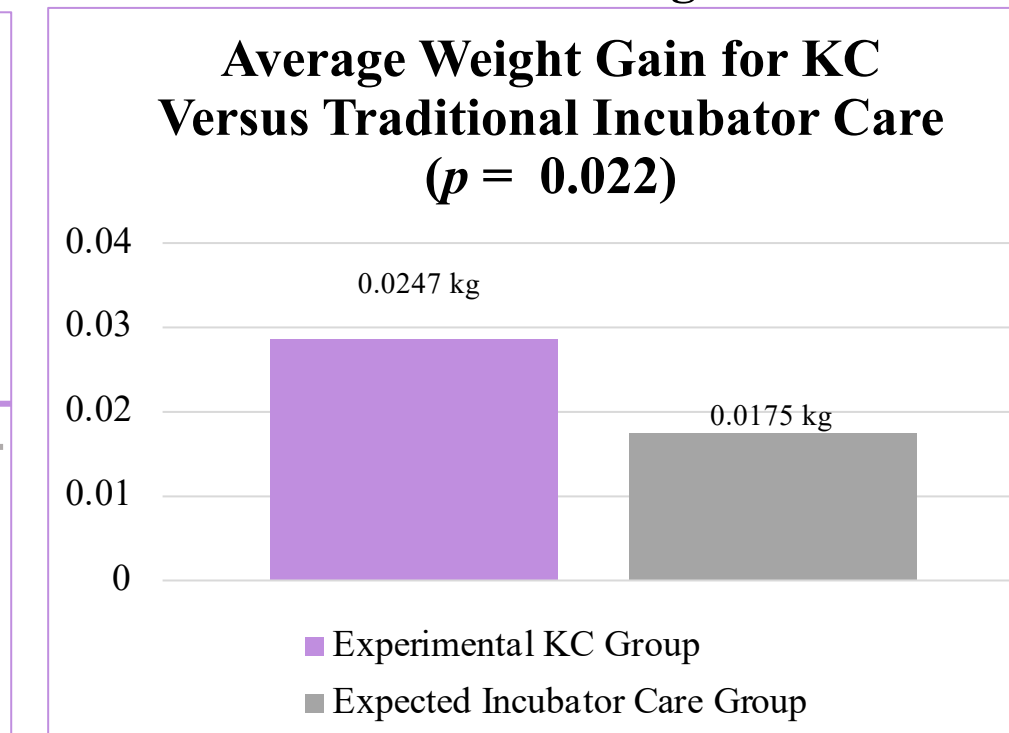
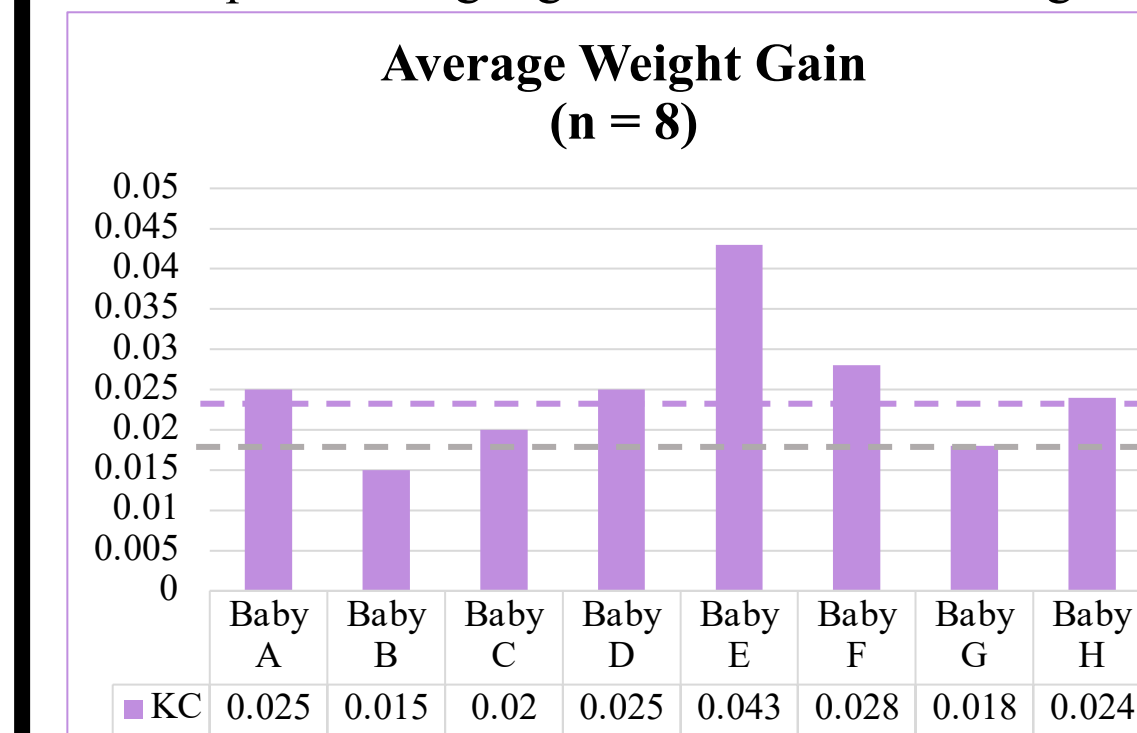
Sample Size

A total of eight premature infants participated in the study (n = 8).

Weight Gain Comparison

Mean weight gain for infants receiving kangaroo care: **0.0247 kg** (SD = 0.0082)

Mean expected weight gain for infants receiving traditional incubator care: **0.0175 kg**



Statistical Analysis

A paired t-test was conducted to compare weight gain between the two groups. Infants receiving kangaroo care showed a **significantly higher weight gain** compared to those receiving traditional incubator care ($t(7) = 2.44, p = 0.022$).

Effect Size

The difference in weight gain between the two groups is further supported by a **large effect size** (Cohen's $d = 0.86, 95\% CI [0.02, 1.67]$).

Conclusion



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Consistent with existing literature, the findings of this study emphasize the significant impact of Kangaroo Care (KC) on weight gain among premature infants compared to traditional incubator care. These results adequately support the use of KC for preterm infants < 2 months old in the neonatal intensive care unit at Doctors Hospital of Augusta.

Strengths

KC poses **no potential harm**, is **simple to perform**, and has **no financial costs** (Artese et al., 2021). The daily weights are exact **ratio measurements**, the highest level of data. This type of data suggests **content validity** and improves the rigor of the results (Polit & Beck, 2017, p. 310). There is also **inter-rater reliability**.

Limitations

The study's limitations are similar to previous research designs. It has a **limited sample size** causing a **lack of generalizability** of results. Also, true **randomization cannot be achieved** due to voluntary participation and **convenience sampling**. Lastly, many extenuating variables could not be controlled such as secondary illnesses or breastfeeding versus formula feeding.

Nursing Implications

Implementation of KC in NICUs is a reliable and noninvasive intervention to enhance the health outcomes of preterm infants. Given the staggering global prevalence of premature births and its associated mortality rates, the observed weight gain through KC implementation signifies a potentially lifesaving measure. Still, further research is needed to address existing gaps and ensure generalizability and rigor. In conclusion, the overwhelming benefits of KC advocate for its widespread acceptance and integration into neonatal care protocols.

Recommendations

Ongoing professional development opportunities should be provided to nurses to enhance their proficiency in implementing KC. Also, **larger-scale** research with **improved randomization** of participants is warranted.

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