

Effectiveness of Kangaroo Mother Care in Reducing Pain from Intravenous Procedures among Preterm Neonates in Selected Pediatric Hospitals, Hyderabad

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Abstract

Introduction: Historically newborn infants were believed to be decorticate beings without the capacity to feel or be affected by pain like adults. Infants were considered comparable to a semi – anesthetized adult. Many surgical procedures, including circumcision, have been routinely performed on infants younger than three months without anesthesia or analgesia. Our knowledge of pain in neonates has increased dramatically in the past two decades. Supported by an impressive body of neuroanatomical, neurochemical, and biobehavioral evidence, term and preterm infants possess the ability to perceive and respond to pain and remember pain experiences. Kangaroo Mother Care has been shown to prevent infections, promote breastfeeding, regulate the baby's temperature, breathing, and brain activity, decreases pain and encourages mother and baby bonding. So the investigator performed an experimental study to assess the Effectiveness of Kangaroo Mother Care in reducing pain from intravenous procedures among preterm neonates in selected hospitals, Hyderabad. **Methodology:** Research design selected for the present study was experimental design.¹⁸ Premature Infant Pain Scale was used to collect data. The study was conducted at Niloufer children's hospital Red hills, during a specified period of 14 days. Simple Random sampling technique was used for the selection of sample. Total sample for the study were 60.⁸ **Results:** The study results showed that majority of preterm neonates 26 (86.7%) from control group were having severe pain. Majority of preterm neonates in experimental group 28 (93.3%) were having moderate pain. The mean of control group is 15.87 whereas mean of experimental group is 8.67. The calculated t- value (16.187) is more than the table value (2.0017) at the level of 0.05 probability. Hence it can be stated that kangaroo mother care is effective in reducing the pain.¹¹

Keywords: Preterm Neonates Effectiveness; Kangaroo Mother Care; Pain; Intravenous Procedures.³

Introduction

Premature infants are more hypersensitive to nociceptive stimuli compared to full-term infants because of immature sensory processing within the spinal cord leads to lower thresholds for excitation and sensitization, thereby potentially maximizing the central effects of tissue-damaging inputs.¹ Acute physiologic changes caused by painful or stressful stimuli can be implicated as important factors in the causation or subsequent extension of early intraventricular hemorrhage (IVH) or the ischemic changes leading to periventricular leukomalacia (PVL). Therapeutic interventions that provide comfort/analgesia in preterm neonates were correlated with a decreased incidence of severe IVH.¹ Anand, K. J. (1998)

Kangaroo Mother Care was originated as an alternative for an incubator.⁵ The mother is a great source of heat and comfort to her baby. Kangaroo Mother Care (KMC) is a special way of caring of babies. Skin-to-skin contact is a remarkably potent intervention against the pain experienced during heel stick in newborns.⁵ Gray, L (2000).

Skin-to-skin contact is a remarkably potent intervention against the pain experienced during heel stick in newborns.⁵ (Gray 2000)

Kangaroo care (skin-to-skin holding) is an intervention that meets development care criteria by fostering neurobehavioral development. The five dimensions of neurobehavioral development are autonomic, motor, state, attention/interaction, and self-regulation. Kangaroo care promotes stability of heart and respiratory function, minimizes purposeless movements, improves behavioral state profiles, offers maternal proximity for attention/interaction episodes, and permits self-regulatory behavior expression.⁹ (Anderson 1999).

The effect of repeated Kangaroo Mother Care analgesia remains stable in preterm infants over repeated painful procedures. Given the many invasive procedures that are part of clinical care in preterm infants and most mothers preferred to provide comfort for their infants during painful procedures,

Kangaroo Mother Care may be a safe analgesic alternative in preterm infants in whom it is feasible.¹⁰ (Johnson et al 2008)

It fosters their health and wellbeing by promoting effective thermal control, breast feeding, infection prevention and bonding. Infant held in KMC for 15 minutes prior to and throughout heel lance procedure, pain was marked with Premature Infant Pain Profile (PIPP), which is comprised of three facial actions, maximum heart rate, and minimum oxygen saturation levels from baseline in 30-second blocks from heel lance showed moderate pain¹⁰. Johnston et al (2008) Pain assessment tool effectively quantified neonates' pain Hodgkinson⁶ (1994). There are many invasive procedures performed for preterm babies and using kangaroo Mother Care is the effective means of reducing pain in these children.

Objectives of the Study

- To assess the level of pain from intravenous procedures among preterm neonates with Kangaroo Mother Care in experimental group in selected Pediatric Hospitals.
- To assess the level of pain from intravenous procedures among preterm neonates without Kangaroo Mother Care in control group in selected Pediatric Hospitals.
- To evaluate the effectiveness of Kangaroo Mother Care in reducing pain from intravenous procedures among preterm neonates in experimental and control group in a selected pediatric hospital.
- To determine the association between level of pain and selected demographic variables.

Hypothesis

H₁- There will be a significant difference in reduction of pain from intravenous procedures among preterm neonates receiving Kangaroo Mother Care in experimental group in selected pediatric hospitals.

H₂- There will be a significant association between the effectiveness of Kangaroo Mother Care in pain reduction among

preterm neonates with selected demographic variables in selected pediatric hospitals.

Materials and Methods

The Research approach: Quantitative Approach.

Research design: true experimental design posttest only.

The Research setting: Niloufer Hospital, Red Hills, Hyderabad.

Sample: Preterm neonates who were admitted in neonatal intensive care unit. The total number of samples for the study were 60 (30- Experimental, 30-Control).

Sampling technique: Random Sampling.⁸

Data collection procedure: The investigator collected the data at Niloufer children's hospital Red hills, during a specified period of 14 days. Tool had two sections.

Section 1: The first part of the tool consisted of nine items about the selected background variables such as Age, Gender, Birth weight, Gestational age, Gravidia, Religion, Socio- Economic status, Mode of delivery, Birth order of the child.

Section 2: Pain scale- premature infant pain profile. {PIPP} which consists of 7 sub sections.

Scoring of Premature Infant Pain Profile

- Score gestational age before examining infant.
- Score the behavioral state before the potentially painful event by observing infant for 15 seconds.
- Record the baseline heart rate and oxygen saturation.
- Observe the infant for 30 seconds immediately following the painful event. Score physiologic and facial changes seen during this time and record immediately.

Premature Infant Pain Profile = SUM (Points for all 7 indicators)

Interpretation

Minimum score: 0

Maximum score: 21

The higher the score the greater the pain behavior.

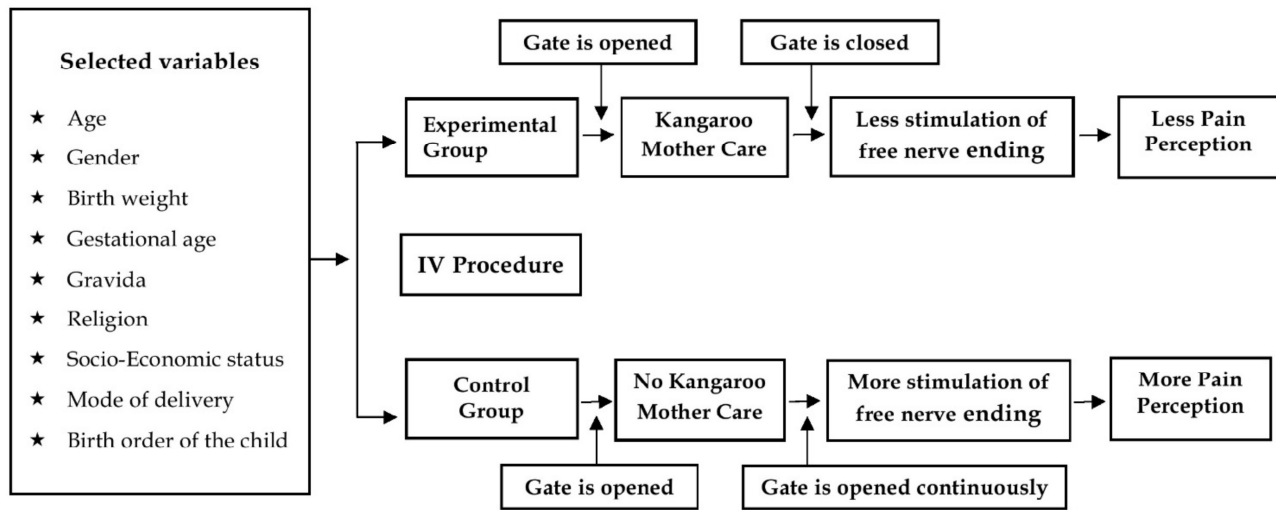


Fig I: Conceptual Framework (Wall and Malzack's Gate Control Theory).

Variables under Study

Dependent Variable: Reduction of pain in preterm neonates.

Independent Variable: Kangaroo Mother Care.²

Demographic variables: Age, Gender, Birth weight, Gestational age, Gravidia, Religion, Socio- Economic status, Mode of delivery, Birth order of the child.¹

Tool: Premature Infant Pain Scale was used to collect data. The content validity of the tool was obtained from experts in the field of Medicine and Nursing.

Validity of the tool: 8 experts including five experts in field of Child Health Nursing and three pediatricians (M.D).

Reliability: The reliability of the tool- Premature Infant pain scale was established by split-half method among⁶ Preterm neonates admitted in selected pediatric hospitals. The co-relation

coefficient was computed using Karl Pearson's Formula which showed 'r' value 0.98 which indicated that the tool was highly reliable.⁸

Conceptual framework: Gate control theory³. The main aim of this model was to assess the pain levels by conducting post test and integrating research findings in such a way as to facilitate the generation of testable hypothesis.¹

Results and Discussion

Majority of preterm neonates 26 (86.7%) from control group were having severe pain.

Table 1: Frequency and percentage distribution of preterm neonates in control and experimental group according to the pain level.

| Level of Pain | Control | | Experimental | |
|---------------|-----------|------|--------------|------|
| | Frequency | (%) | Frequency | (%) |
| Mild | 0 | 0 | 0 | 0 |
| Moderate | 4 | 13.3 | 28 | 93.3 |
| Severe | 26 | 86.7 | 2 | 6.7 |
| Total | 30 | 100 | 30 | 100 |

Table 1: shows the level of pain from intravenous procedures among preterm neonates with Kangaroo Mother Care in experimental group at selected pediatric hospitals. Majority of preterm neonates 28(93.3%) were having moderate pain.

Table 2: Mean, Standard deviation, Standard means error of pain levels among preterm neonates in control and experimental group.

| Group | | Mean | Standard Deviation | Standard Mean Error |
|-----------------------|--------------|-------|--------------------|---------------------|
| Post Test Pain Levels | Control | 15.87 | 1.907 | .348 |
| | Experimental | 8.67 | 1.516 | .277 |

Table 2: shows that the mean of control group is 15.87 whereas mean of experimental group is 8.67. The calculated t-value (16.187) is more than the table value (2.0017) at the level of 0.05 probability⁸. Hence it can be stated that kangaroo mother care is effective in reducing the pain.

Table 3: Mean, Standard deviation, T- value of pain levels among preterm neonates in control and experimental group.

| Group | Mean | Std. Deviation | t- value | Df | Table value |
|--------------|-------|----------------|----------|----|-------------|
| Control | 15.87 | 1.907 | 16.187 | 58 | 2.0017 |
| Experimental | 8.67 | 1.516 | | | |

Table 3: Shows that the mean of control group is 15.87 were as mean of experimental group is 8.67. The calculated t- value is more than the table value at the level of 0.05 probability.⁸ Hence it can be stated that Kangaroo Mother Care is effective in reducing the pain.¹

Hence it is proved that Kangaroo Mother Care was effective. Chi square values computed for pain levels related to demographic variables in both control and experimental group are lesser than the table value at 5% level of significance ⁸ except for gestational age and gender among control group.⁸

This implies that there is no significant association existing between pain level and demographic variables.

Discussion

A Similar study was conducted by Ambika Chidambaram (2013) this crossover trial was conducted at a tertiary care teaching hospital in south India. Premature Infant Pain Profile (PIPP)

related to heel prick was assessed in 50 preterm neonates undergoing KMC and compared with 50 preterm babies without KMC. PIPP scores at 15 minutes and 30 minutes after heel prick were significantly less in KMC group compared to control group. This study highlighted that Mean PIPP difference between baseline and 30 minutes after heel prick was also significantly low in KMC group compared to control group and proved that KMC is effective in reducing pain due to heel prick among preterm babies.

In the present study it shows that the mean of control group is 15.87 were as mean of experimental group is 8.67. The calculated t-value is more than the table value at the level of 0.05 probability.⁸ Hence it can be stated that Kangaroo Mother Care is effective in reducing the pain. Chi square values computed for pain levels related to demographic variables in both control and experimental group are lesser than the table value at 5% level of significance⁸ except for gestational age and gender among control group.

Conclusion

The findings of this study have been discussed with reference to the objectives and hypothesis. The study shows a level of decreased pain in preterm neonates with Kangaroo mother care. Recent studies of this kind should be on going and the authority should provide enough opportunities to apply this in the clinical practice.

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