THE ASSOCIATION OF KANGAROO MOTHER CARE, ENERGY CONSERVATION, AND BONDING IN PRETERM NEONATES

Dorothy E. Forde PhD\textsuperscript{1}, Douglas Deming MD\textsuperscript{2}, Raylene Phillips MD\textsuperscript{2}, Danilo Boskovic PhD\textsuperscript{2}, Danilynn Angeles PhD\textsuperscript{2}, Mary K. Barger PhD\textsuperscript{2}, and Eileen Fry-Bowers PhD\textsuperscript{4}

\textsuperscript{1}Hahn School of Nursing, University of San Diego, and \textsuperscript{2}School of Medicine, Loma Linda University

BACKGROUND

- Prematurity is the leading cause of death in children under age 5 because premature neonates cannot adequately meet their energy needs.
- The World Health Organization advocates Kangaroo Mother Care (KMC) to reduce neonatal risks.
- KMC is an essential intervention for neonatal growth, maturation, and healing.

PURPOSE

1. Determine if KMC ↓ neonatal stress and ↓ energy utilization by decreasing ATP expenditure.
2. Investigate the bonding effects of KMC using the Mother-to-Infant Bonding Scale.

RESEARCH QUESTIONS

1. Does KMC intervention reduce energy demands in the preterm neonate as evidenced by decreased biochemical markers of ATP degradation?
2. Is there a relationship between KMC and reduced oxidative stress?
3. Is there a relationship between KMC and maternal–infant bonding?

CONCEPTUAL MODEL

The effect of 1 hr of KMC will be measured in an age-stratified, randomized control trial of 50 mother–infant dyads between 26-34 weeks gestational age.

Neonatal urinary samples collected before, 3 hr after, and 6 hr after KMC will be tested for purine degradation products (i.e., hypoxanthine, xanthine, and uric acid) to measure ATP expenditure and allantoin to measure oxidative stress.

Bonding will be quantified using the Mother-to-infant Bonding Scale, a reliable 8-item self-assessment with a demonstrated two-factor model, good predictive validity, and acceptable internal consistency ($\alpha = 0.71$).

HYPOTHESES

If KMC decreases neonatal stress and energy utilization, then:

- There will be a significant decrease in the urinary ATP utilization markers of preterm neonates after KMC.
- There will be a significant decrease in oxidative stress in preterm neonates after KMC.
- There will be a significant increase in the parent–infant bonding score after KMC.

METHODS

STUDY DESIGN

Early KMC $n = 25$

Delayed KMC $n = 25$

DOL 1 MIBS 3 MIBS 4 MIBS

Urine Urine Urine

1. Does KMC intervention reduce energy demands in the preterm neonate as evidenced by decreased biochemical markers of ATP degradation?
2. Is there a relationship between KMC and reduced oxidative stress?
3. Is there a relationship between KMC and maternal–infant bonding?

IMPLICATIONS

- This study will provide physiological evidence of the benefits of energy conservation via KMC to the recovery adaptations of preterm neonates.

RESULTS

Data collection is in progress; results are forthcoming.

ACKNOWLEDGEMENTS

AACN Johnson & Johnson Minority Nurse Faculty Scholarship 2016