THE PROBLEM

Premature birth (babies born before 37 weeks of gestation) accounts for one in eight births (over 500,000 annually) in the United States and can lead to long-term health problems and lifelong disabilities. The estimated societal economic cost for the country is at least $26.2 billion annually. Complications of preterm delivery are associated with numerous developmental abnormalities that may impact the overall quality of life of the infant. There is concern that an unfavorable environment in the Neonatal Intensive Care Unit (NICU) can negatively affect the infant's growth, with the brain being particularly vulnerable. Although survival among premature infants has improved over the past two decades, the long term morbidity of survival is a serious concern and increased behavioral problems in these children.

Interventions have been shown to be beneficial for premature infants convalescing in the NICU. More interventions are required to determine the effectiveness of care for premature infants. It is important to assess the effectiveness of a nurse-driven maternal simulated intervention in order to provide developmentally appropriate care to these infants.

DEVELOPMENTAL CARE MAKES THE DIFFERENCE

Early experience can modify the anatomy of the rapidly developing brain, which implies that early intervention may alter developmental paths and improve health, educational and social outcomes. Individualized developmental care is a framework for providing care that enhances the neurodevelopment of the infant through interventions that supports both the infant and family unit. Research has shown that development care enhances the outcomes of high-risk infants who require neonatal intensive care. Additionally, many interventions are still not well tested by research and require cautious implementation.

The process of providing nursing care should be adjusted in response to communication from the infant, or behavioral cues. The aim is to decrease associated stress and increase the potential of the available skills possessed by the infant to regulate and organize his/her responses. Evidence-based developmental care with the incorporation of the family unit is pivotal for the long-term outcomes in this fragile population.

THE PURPOSE OF THIS STUDY

The literature supports the use of many developmental interventions for premature infants convalescing in the NICU. Interventions have been shown to be beneficial to premature infants by helping to increase weight gain, shortened hospital stay, and improve bonding (Dodd, 2005).

A number of devices that support developmentally positioning of premature infants are currently in use in many Neonatal Intensive Care Units, however, few of these support devices have been explored to determine the benefits for the infant. The purpose of this study was to explore the impact of simulating maternal intervention in the development of these infants that are born prematurely and are hospitalized.

THE DESIGN

To assess the effectiveness of a nurse-driven maternal simulated intervention in providing development care to infants, 24-38 weeks gestation by assessing: 1. self-regulatory versus stress behaviors. 2. physiologic data. To evaluate implications for nursing practice.

METHOD / DESIGN

In a Single Blind Randomized Trial, a sample of 45 infants was randomized into four groups to explore differences over time when different developmental interventions were applied. Differences in pain scores, episodes of apnea of prematurity/bradycardia, vital signs, and occurrences of self-regulatory and stress behaviors were observed. Participants were infants admitted to the Level III Neonatal Intensive Care Unit (NICU) between 24-38 weeks in gestation. IRB approval and informed consent from the parents was obtained.

Exclusion criterion included surgical infants, infants with severe retinopathy, infants who were transferred from another NICU, infants with developmental disabilities, and infants that were randomized to the Maternally Scented intervention group. The randomization procedure was conducted by the research staff.

RESULTS

There is evidence to suggest the unscented and scented Zakys® is beneficial for the results below for SRI, SRI, SRI, SRI, SRI, SRI, SRI, and SRI and the Maternally Scented Zakys® demonstrating a better response for all of the self-regulatory items. The Maternally Scented Snuggle Insert demonstrates modest benefit.

DESCRIPTIVES

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group A mean (sd)</th>
<th>Group B mean (sd)</th>
<th>Group C mean (sd)</th>
<th>Group D mean (sd)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (weeks)</td>
<td>30.5 (4.6)</td>
<td>30.1 (3.7)</td>
<td>31.0 (3.9)</td>
<td>28.1 (4.0)</td>
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<tr>
<td>Apnea</td>
<td>5.2 (5)</td>
<td>5.9 (2.4)</td>
<td>5.7 (1.9)</td>
<td>4.8 (2.4)</td>
</tr>
<tr>
<td>DOR</td>
<td>18.9 (13.9)</td>
<td>15.1 (13.7)</td>
<td>6.7 (6.4)</td>
<td>17.3 (19.5)</td>
</tr>
</tbody>
</table>

SUMMARY

The maternal simulated intervention used had positive effects on infants in the NICU.

- Infants that used the Zakys® (maternal simulated intervention) experienced fewer episodes of apnea and bradycardia (p<0.05), especially those Maternally Scented.
- The odds of observing stress behaviors were very high for the infants receiving standard nursing care than for the odds for the infants receiving the simulated interventions (OR=10-15, p<0.05).

CONCLUSIONS

The Zakys®, the maternal simulated intervention used in this study, suggests an efficacious method to reduce adverse physiologic and development outcomes for preterm infants. Additional studies are needed to determine the efficacy of this method.

Further research is required to determine the efficacy of this intervention as it has the potential to provide tremendous public health benefit such as:

- Significantly reduce life threatening apnea of prematurity (pause in the regular breathing of a baby lasting longer than 15-20 seconds) and bradycardia (heart rate below 100) which are potentially detrimental to the developing brain. Current knowledge suggests immaturity of the cardiovascular, respiratory, and nervous systems of the premature baby as a cause of apnea and bradycardia.

- Improved quality in the standard care while reducing cost related to treatment.

- Improved neurodevelopmental and quality of life for the baby, the family, and the NICU.

REFERENCES


