Effectiveness of Nesting and Swaddling Technique on Bio-physiological Parameters, Neuro-behavioral Activity and Sucking Response among Sick Neonates

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Abstract

Babies delivered before 37 weeks or 259 days of gestation are deemed premature. It is believed to be the direct cause of 24% of infant fatalities. While preterm births account for between 5% and 7% of all live births in some developed nations, it is believed that the proportion is much higher in developing nations. Nearly 30% of infants in India, or 7.5 million, are born low birth weight (LBW) (2500 g). This accounts for 42% of the global burden, more than any other nation. Approximately 60% of LBW neonates are born at term after fetal growth restriction, while the remaining 40% are born prematurely. The prevalence of SGA is 46.9%, exceeding all countries except two. Nesting is one of the most important factors in maintaining a healthy position for a premature infant, which involves positioning the hands near the face and the feet together while using positioning aids to create a secure, snug, and supportive nest. The capacity to nest keeps premature neonates in a comfortable position, enables spontaneous motor activity for skeletal joint and neuromuscular function, and facilitates the monitoring of stable vital signs. Commonly, infants are wrapped in a breathable, lightweight blanket to help them unwind and fall asleep.

Keywords: Nesting, swaddling, bio-physiological, neuro-behavioral, sick, neonates

INTRODUCTION

Birth is the most miraculous, life-altering, and mysterious occurrence that can occur, and neonates are the most susceptible group in terms of adjusting to their new surroundings.[1] Prematurity is a word that is used for all neonates that are born <37 weeks or 259 days into their respective pregnancies. It is believed to be the direct cause of 24% of all deaths that occur in neonates. In the United States, preterm birth (PTB) affected approximately one infant out of every ten that was born. From 2007 to 2014, there was a downward trend in the rate of preterm births. Newer data, however, suggest that there was a marginal rise in the overall rate of premature births in the United States from 2014 to 2015. When compared to the rate of PTB experienced by women (9%), the rate of PTB experienced by African American women (13%) was approximately 50% greater.[2]

For premature neonates to develop and live, they are a particularly fragile population that needs highly specialized nursing care and advanced medical interventions.[3]

NESTING

A nursing skill that is frequently employed in the developmental care of premature infants is the nesting technique. Nesting, on the other hand, involves placing the hands and feet together close to the face and creating a secure, comfortable, and supportive nest for the premature baby utilizing positioning assistance. The ability to nest keeps preterm babies in a comfortable position, allows for spontaneous motor activity to support skeletal joint and
neuromuscular function, and makes it easier to keep an eye on stable vital signs.

**Swaddling**

A new-born is traditionally wrapped up gently in a soft blanket to promote relaxation and sleep.

**Swaddling steps**

Step 1 – Make sure your muslin is large enough to completely cover your infant before setting it down on a level surface
Step 2 – Fold one corner of the cloth so that it is about the length of your infant’s body from neck to bum. You’ll end up with a shape that resembles a triangle
Step 3 – Baby’s left hand should be tucked beneath the fold you’ve produced before you wrap that side around their torso and tuck it under them
Step 4 – Baby’s left hand should be tucked beneath the fold you’ve produced before you wrap that side around their torso and tuck it under them
Step 5 – The right side should be folded across the baby’s torso, with the baby’s right hand tucked below the fold (making sure their hands are adjacent to their faces). They ought to have a “V” curve under their chin
Step 6 – Finally, completely encircle the right side below, tucking the corner’s end into the front of the swaddle.

The World Health Organization estimates that over 15 million neonates worldwide, or more than one in ten of all babies, are born preterm each year. Every year, almost 1 million children pass away as a result of premature birth difficulties. The main reason for new-born fatalities worldwide is PTB.

**Why swaddle?**

You might be thinking that swaddling your baby every time they go to sleep (which is a lot) seems like a lot of work, but there are many benefits to swaddling your baby. Here are some you and your baby will experience:

- Swaddling protects your baby against their natural startle reflex, which means better sleep for both of you
- It may help calm a colicky baby
- It helps eliminate anxiety in your baby by imitating your touch, which helps your baby learn to self-sooth
- It keeps her hands off her face and helps prevent scratching. It helps your baby sleep longer and better
- It helps prevent sudden infant death syndrome by keeping unnecessary items like pillows, blankets, and stuffed animals out of your baby’s crib
- It keeps your baby on his back while he sleeps.

The pace of decline in the early neonatal mortality rate (ENMR) is substantially lower than that of the late neonatal mortality rate (LNMR) among neonatal deaths. The high level of early NMR, along with its delayed decline, is reflected in a perinatal mortality rate that is also high and has remained relatively unchanged. Since the National Rural Health Mission was initiated in the middle of 2005, the rate of fall in NMR and, to a certain extent, ENMR has quickened significantly.

**Physiological Parameters, Neurobehavioral Activity and Sucking Response of the Sick Neonates**

More excitability was linked to brain damage (P = 0.002). No correlations between any of the prenatal exposures and developmental progress from 34 weeks postmenstrual age to term equivalent, however, could be found. At term equivalent, preterm infants have impaired neurobehavioral in a wide range of categories. Neurobehavioral changes are altered by cerebral damage; however, the early stages of these changes do not seem to be affected. Before term, significant neurobehavioral changes take place, which presents a chance for interventions in the neonatal critical care unit.[4]

In addition, a higher total number of painful episodes during new-born development was linked to a lower quality of cognitive and motor development at the age of 1 year, as well as changes in cortical rhythmicity and cortical thickness in children when they were 7 years old. It was found that neonatal pain-related stress was connected with abnormalities in early as well as later developmental outcomes for infants who were born prematurely. There have only been a handful of studies that have looked at the effects of neonatal discomfort on the long-term development of children who were born prematurely.[5]

Factors present in early life that are connected with neurobehavioral outcomes in premature infants while they are hospitalized in the neonatal intensive care unit in older gestational age infants, a higher proportion of mother breast milk intake was predictive of better self-regulation, excitability, and quality of movement. Infants born prematurely are especially susceptible to the negative effects of early-life pain and stress. Positive associations have been shown between higher levels of general activity and better neurobehavioral outcomes in the offspring.[6]

**Swaddling Effect on Sick Neonates**

In the research, statistical analysis was conducted using the Mann–Whitney U test, and the cutoff. It was discovered that there was not a significant difference in the pain score between Group A and Group B before, during, immediately after, or at the 2-min mark; however, there was a significant difference in the pain score at the 4, 6, and 8-min marks. During chest physiotherapy at 4, 6, and 8 min, swaddling is an excellent method for reducing the amount of discomfort experienced by infants.[7]

Swaddling was determined to be an effective method, according to the findings of a study, for keeping the physiological and neurobehavioral parameters of neonates within the normal range. The findings of this study also led the researchers to the conclusion that swaddling did not have any negative impact on the physiological or neurobehavioral parameters of the infants. Swaddling was also effective in preventing the development of any problems in neonates. The most important takeaway from this research is that swaddling is an excellent method.
for keeping the physiological and neurobehavioral parameters of neonates in a normal state. This was determined to be the case based on the findings of this study. The findings of this study indicate that swaddling is more effective in maintaining the physiological and neurobehavioral parameters of neonates within a normal range in neonates who got swaddling than in neonates who did not get swaddling.\[9\]

A randomized and controlled trial to determine whether or not swaddling is effective at reducing the amount of pain experienced by preterm neonates during medical procedures. During the immediate, 2, 4, and 6 min following the heelstick operation, the mean Premature Infant Pain Profile scores were considerably lower in the intervention group compared to the control group. This reduction was seen during and immediately after the procedure. At each of the time points that were examined, the changes in heart rate and oxygen saturation that occurred in the intervention group were much less severe than those that occurred in the control group. It is important to note that the swaddled children immediately returned to the baseline level at 2 min, whereas the control group took an extended period of time of 6 min to achieve the stable condition. The results of this study indicate that swaddling preterm neonates is both practical and effective in mitigating the pain associated with the heelstick technique. There were no detrimental consequences that could be seen.\[9\]

The development of premature neonates who were being treated in neonatal critical care units was helped by a novel style of swaddling apparel. When compared with those in the control group, those in the intervention group showed significant improvements in both their muscle tone and their overall score on the Dubowitz method. After conducting an evaluation of the participants in the intervention group both before and after the introduction of the device, we found that State 1 increased from 53.5% to 69.2% following the introduction of the device. There was no discernible difference between the groups in terms of the frequency of vomiting and apnea that was observed. The new swaddling garment, which had an increased capacity to stretch, improved the muscular tone of the infants and increased the amount of time they spent sleeping by reducing the number of premature infants. In neonatal intensive care units, this is a useful tool that can assist in the growth and development of infants.\[10\]

According to the findings of this research, swaddling preterm neonates can lessen the likelihood that they will require blood collection and can also preserve their vital signs in a better state. Therefore, it is recommended that nurses in the neonatal critical care unit employ it as an effective intervention during the performance of painful operations such as blood sample.\[11\]

**Effect of Nesting on the Sick Neonates**

The bio-physiological parameters and sucking response were evaluated prior to the administration of nesting (Pre-test), following the administration of nesting in the evening of the second day (Post-test I), and on the 3rd day (Post-test II) using a digital thermometer, pulse oximeter, and manual count of respiration, as well as a modified early feeding skills assessment scale, respectively. After being given nesting materials, the LBW neonates in the experimental group showed rather constant physiological parameters and a considerable improvement in their sucking response.\[12\]

Using a digital thermometer, a pulse oximeter, a manual count of respiration, and a modified early feeding skills assessment scale, researchers evaluated the bio-physiological parameters and sucking response before nesting (Pre-test) and after nesting administration in the evenings of the 2nd and 3rd days (Post-test I and Post-test II), respectively. After receiving nesting hormone, the LBW neonates in the experimental group show relatively constant physiological parameters as well as a considerable improvement in sucking responsiveness.\[12\]

Enhancing how nurses in the neonatal critical care unit provide nesting and placement for premature infants. Following implementation, there was a 58.3% increase to a 92.3% increase in nurse cognition regarding premature infant nesting and posture. The percentage of times the right technique was used increased from 63.3% to 91.4%. For enhancing the appropriateness of nesting and positioning in nursing care, this intervention is valid. This project improved the quality of care for premature infants and standardized teaching in terms of nesting and placement practice targets.\[13\]

**Conclusion**

The researcher has concluded that the nesting and swaddling procedures could be impactful on bio-physiological parameters and neuro-behavioral activity in sick neonates based on a review of previous studies.

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**Conflicts of Interest**

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REFERENCES


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