

## Effectiveness of Nesting on Bio - Physiological Parameters and Sucking Response among the Low Birth Weight Babies

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### Abstract

This study aims to determine the effectiveness of "Nesting" among the low birth weight (LBW) babies in selected hospitals of Coimbatore. A Quasi experimental study was conducted for 40 LBW babies by using purposive sampling technique. The babies were further divided into two groups with 20 babies in experimental group and 20 babies in control group. Pre test, Post test control group design was used in which nesting was provided to the experimental group babies for 2 hours in morning and 2 hours in evening for three consecutive days. The Bio - Physiological parameters and Sucking Response were assessed before nesting (Pre test) and after administration of nesting in the evening of second day (Post test I) and third day (Post test II) using Digital Thermometer, Pulse Oximeter and Manual Count of respiration and modified early feeding skills assessment scale respectively. The LBW babies of experimental group exhibits comparatively stable Physiological Parameters and also significant improvement in sucking response after administration of nesting.

**Keywords:** Nesting; LBW Babies; Bio - Physiological Parameters; Sucking Response.

### Introduction

Human Birth is the most miraculous, transformational and mysterious event of life and Newborns are the most vulnerable group in getting adjusted to the new environment [1]. LBW babies need special care after birth such as help with breathing, staying warm, protection against infection and getting enough nutrition. Low birth weight infants are more prone to Hypothermia because they have higher body surface area to weight, thereby exposing more skin surface to the environment [2]. The Physiological changes during stress and discomfort are hypoxemia, increased respiratory rate, heart rate and blood pressure. Due to in-coordinated sucking and swallowing, there are difficulties in self-feeding. LBW babies should be provided with in-utero milieu [3]. LBW babies under developed in all aspects. So the nurses must provide an environment which is safe, adopted to their physiological needs and promotes nursing services to enhance their rate of survival [4]. Positioning and handling techniques promote comfort and minimize stress, while creating

a balance between nurturing care and necessary interventions [5]. "Nesting" is a Supportive positioning technique used should enhance flexion, promote comfort and provide opportunities for movement as well as have simulated intrauterine boundaries [6]. Several article reviews reveals that newborn care including positioning and maintaining posture is an important aspect and it can play a major role in the development of newborn babies. Since the incidence of physiological instability, distress and developmental problems related to improper maintenance of posture is increased, the researcher felt that it is the responsibility of nurses to maintain the posture as much as possible to provide maximum comfort to the baby in order to stabilize the bio - physiological parameters such as temperature, heart rate, respiratory rate and oxygen saturation and also to improve the sucking response of LBW babies.

### Statement of the Problem:

A Study To Assess The Effectiveness of Nesting On Bio - Physiological Parameters And Sucking

Response Among The Low Birth Weight Babies In Selected Hospitals, Coimbatore.

#### *Objectives*

- To assess the bio – physiological parameters and sucking response among the low birth weight babies.
- To assess the effectiveness of Nesting on the bio – physiological parameters and sucking response among the low birth weight babies in the experimental group.
- To compare the bio – physiological parameters and sucking response among the low birth weight babies between experimental and control group.
- To associate the findings with the selected demographic variables.

#### *Conceptual Framework:*

The Conceptual Framework used in this study is based on Modified Levine's Conservation Model of Nursing, 1973.<sup>7</sup>

#### *Definitions*

*Nesting:* It is an intervention which gives comfortable flexed position to the LBW baby by providing a shell – shaped boundary using a rolled cotton.

*LBW Babies:* Babies born with birth weight between 1500 grams and 2500 grams in the selected hospitals.

*Bio-Physiological Parameters:* It Includes Temperature, Heart Rate, Respiratory Rate and Oxygen Saturation which are assessed by using Digital thermometer, Pulse oximeter and manual count of respiration respectively.

*Sucking Response:* Baby instinctively sucks on the nipple that touches the roof of their mouth or lips that is assessed using Modified Early Feeding Skills Assessment Scale.

### **Methodology**

*Research Design:* Pretest posttest control group design was adopted in this study.

*Setting:* The study was conducted in three selected hospitals with intensive newborn care facilities in Coimbatore.

*Population:* The neonates who are born with birth weight above 1500 grams and below 2500 grams

are considered as target population.

*Sample Size and Sampling Technique:* A total number of 40 LBW babies (20 in experimental and 20 in control group) were selected using purposive sampling technique.

#### *Criteria for Sample Selection:*

- Neonates with the birth weight between 1500 grams and 2500 grams.
- Neonates whose age is less than 7 days.
- Low birth weight babies with the gestational age between 34 weeks and 37 weeks of gestation.
- Low birth weight babies those who are admitted in the hospital and stay for 3 days or more.
- Neonates who were not on CPAP or ventilator and not diagnosed with severe medical and surgical conditions.
- Neonates whose APGAR score is not less than 7.

#### *Description of the Tool:*

*Section A:* Demographic variables of mother and LBW babies.

*Section B:* Bio – Physiological parameters which consists of Temperature, Heart rate, Respiratory rate and Oxygen saturation by using digital thermometer, pulse oximeter and manual count of respiration.

*Section C:* Modified early feeding skill assessment scale to assess the sucking response.

#### *Data Collection*

Data collection was done for a period of one month. By using purposive sampling technique, based on the inclusion and exclusion criteria, 40 samples were selected and assigned to experimental and control group. The demographic data of mother and newborn were obtained by using structured interview and case records. Pretest of Bio – Physiological parameters and Sucking response were assessed for both groups by using respective tools. The babies in the experimental group were kept in nesting on the same day and for next two days and for a duration of 2 hours in the morning and 2 hours in the evening. Posttest were assigned on second day (Posttest I) and third day (Posttest II) using the same tool in both groups.

**Results**

*Description of Demographic Variables*

Among the 40 samples, most of the mothers of LBW babies were multigravida (55%) and most of LBW babies are delivered through LSCS (65%).

*Findings Related to Bio-Physiological Parameters*

Regarding temperature, There is a significant difference between the pretest, posttest I and posttest II scores (F = 11.28) among the LBW babies in experimental group, which shows nesting is effective in maintaining the thermal balance for LBW babies. Similarly control group also shown minimal significant difference (F = 9.59) due to routine care.

Similarly, there is a highly significant difference between pretest, posttest I and posttest II scores on heart rate (F = 92.91), respiratory rate (F = 55.19) and oxygen saturation (F = 107.92) among the experimental group. Hence it shows that nesting is effective in stabilizing the heart rate, respiratory rate and oxygen saturation for the LBW babies. Control group also had minimal significant difference between pretest, posttest I and posttest II scores on heart rate (F = 4.81), respiratory rate (F = 3.41) and oxygen saturation (F = 9.96) due to routine care. (Table 1)

*Findings Related To Sucking Response*

In experimental group, concerning the sucking response among the LBW babies, In pretest, none

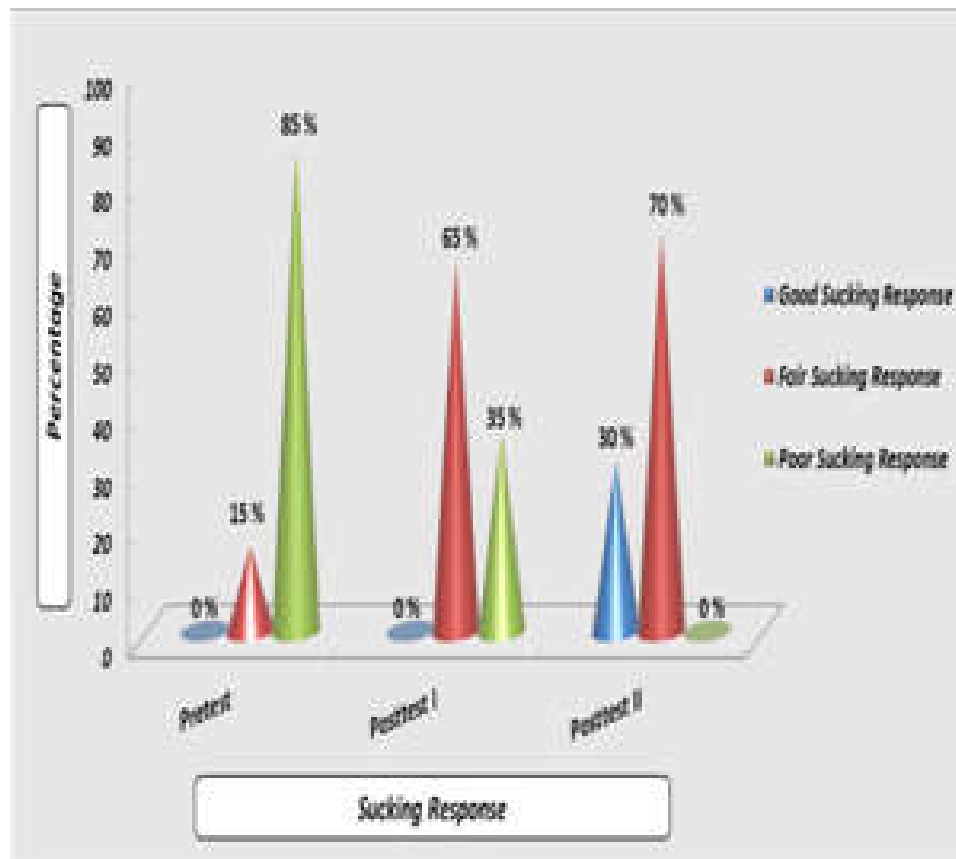


Fig. 1: Distribution of Sucking Response among the low birth weight babies in Experimental group

Table 1: Comparison of pretest and post test of temperature among the Low Birth Weight babies in experimental and control group.

| Temperature        | Source                        | Degrees of Freedom | Sum of Squares | Mean Sum of Squares | Repeated Means of ANOVA | Table Value of F at 5% Level of Significance |
|--------------------|-------------------------------|--------------------|----------------|---------------------|-------------------------|--|
| Experimental group | Between values of temperature | 2                  | 32.93          | 16.47               | F = 11.28               | F = 3.162                                    |
|                    | Errors                        | 57                 | 83.04          | 1.46                |                         |  |
|                    | Total                         | 59                 | 115.97         |                     |                         |  |
| Control Group      | Between values of temperature | 2                  | 6.66           | 3.33                | F = 9.59                |  |
|                    | Errors                        | 57                 | 9.92           | 0.17                |                         |  |
|                    | Total                         | 59                 | 16.58          |                     |                         |  |

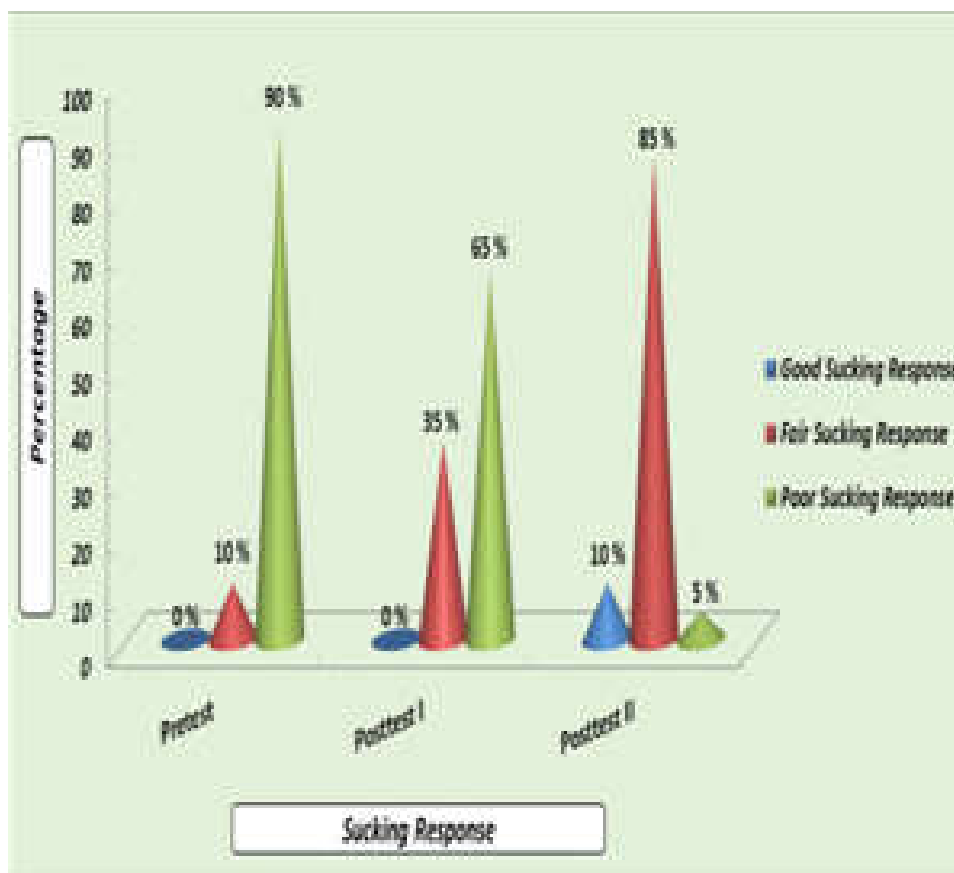


Fig.2: Distribution of Sucking Response among the low birth weight babies in Control group

of them had good sucking response, 3(15%) of them had fair sucking response and 17 (85%) of them had poor sucking response. In posttest I, none of them had good sucking response, 13 (65%) of them had fair sucking response and 7 (35%) of them had poor sucking response where as in posttest II, 6 (30%) of them had good sucking response, 14 (70%) of them had fair sucking response and none of them had poor sucking response. In control group, in pretest, none of them had good sucking response, 2 (10%) of them had fair sucking response and 18 (90%) of them had poor sucking response. In posttest I, none of them had good sucking response, 7 (35%) of them had fair sucking response and 13 (65%) of them had poor sucking response where as in posttest II, 2(10%) of them had good sucking response, 17(85%) of them had fair sucking response and 1(5%) of them had poor sucking response.(Figure 1,2) In comparison of pretest, posttest I and posttest II of sucking response of LBW babies in

experimental group, there is a highly significant difference between the scores ( $F = 92.22$ ). Hence it is proved that nesting is effective in improving the sucking response of LBW babies. (Table 2)

*Findings Regarding Association between Pretest Sucking Response of LBW Babies And Selected Demographic Variables:*

There is a significant association between the birth weight and sucking response, gestational age and sucking response of LBW babies in both experimental and control group.

*Recommendations for Future Study:*

- Prospective study can be done to find out the long term outcomes in the LBW babies with poor sucking response.
- Comparative study can be conducted to

Table 2: Comparison of pretest and posttests sucking response among the LBW babies in experimental group.

| Source                          | Degrees of Freedom | Sum of Square | Mean Sum of Square | Repeated Measures of ANOVA | Table Value of F at 5% Level of Significance |
|---------------------------------|--------------------|---------------|--------------------|----------------------------|--|
| Between Sucking Response Scores | 2                  | 1167.43       | 583.72             |                            |  |
| Errors                          | 57                 | 360.50        | 6.33               | F = 92.22                  | F = 3.162                                    |
| Total                           | 59                 | 1527.93       |                    |                            |  |

assess the sucking response among babies born by normal vaginal delivery and LSCS.

- Comparative study can be done to assess the sucking response among the LBW babies on direct breast feeding and expressed breast milk or formula feeding.
- Prospective study can be done to assess the effectiveness of nesting on length of stay in hospital and number of days in phototherapy.
- Studies can be conducted to assess the effectiveness of structured teaching programme on knowledge and practice regarding handling the LBW babies with nesting among NICU staff nurses.

### Discussion

The study shows that Nesting was effective in to stabilize the bio- physiological parameters and to improve the sucking response among the low birth weight babies. This finding of the study was consistent with the study conducted by F Ferrari (2007) aimed to evaluate the Posture and movement in healthy preterm infants in supine position in and outside the nest. The researcher reported that a nest promotes a flexed posture of the limbs with adduction of shoulders and increase the comfort [8]. This finding was consistent with findings of the study conducted by Comaru, T. to determine the effectiveness of Postural support on distress and pain during diaper change in preterm infants. It was found that all babies displayed increased distress and pain scores during diaper change and this was significantly less for babies nested compared with non nested babies [9]. This was consistent with the findings of the study conducted by Kihara H, Nakamura T. which concluded that a prone position with nested and swaddled positioning support might facilitate sleep and heart rate stability compared to prone positioning alone in Very low birth weight babies [10].

### Conclusion

Children are the gift and reward from the Lord. The most precious jewels that a woman will ever wear around the neck are the arms of their children [11]. It is our prime responsibility to provide maximum comfort to the newborn babies who will reduce the physiological instability and stress in adjusting to external environment. Nesting is one of the measures to keep the baby comfortable.

Hence from the data analysis and results, it was concluded that nesting is an effective intervention to stabilize the bio – physiological parameters and to improve the sucking response among the low birth weight babies. Nurses are central in hospital efforts to improve quality care. Comforting interventions in the field of nursing care will contribute to high patient satisfaction and eventually will lead to institutional development. Nurse administrators should provide and recommend the interventions like Nesting in the setting like NICU of the hospital [12].

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