Effectiveness of nesting technique on motor performance among low birth weight babies

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Abstract- Low birth weight babies have less motor skills compared with normal birth weight babies. Nesting technique is a nursing skill maintained babies in a comfortable position, facilities the monitoring of vital signs and enabled to have spontaneous motor performance to have normal neuromuscular and skeletal joint function. **Aim:** to assess the effectiveness of nesting technique on motor performance among low birth weight babies. **Method:** A quantitative approach with quasi experimental, pre-test- post-test non-equivalent control group design was used among 40 low birth weight babies (20 in experimental and 20 in control group). Non Probability consecutive sampling technique was used for selecting the samples. The data was collected by structured observational checklist to assess the motor performance of low birth weight babies. Following the pre-test, intervention was given to low birth weight babies in the experimental group, i.e.," nesting technique" for 8 hours continued for 4 days. The posttest was conducted at the end of 4th day for both the groups. **Results:** It was observed that in experimental group majority of subjects 15 (75%) had moderate motor performance before nesting technique whereas after nesting technique majority of subjects 15 (75%) had adequate motor performance. In control group majority of subjects 14 (70%) had moderate motor performance during pre –test whereas in post –test majority of subjects 16 (80%) had moderate motor performance. The analysis of unpaired t-test showed the table value of 9.20 which was significant at the level of p<0.05. **Conclusion:** It indicated that nesting technique had contributed in improving motor performance of low birth weight babies to experimental group showing statistically significant difference between post test scores of experimental and control group at the level of p<0.05.

Index Terms- Low birth weight babies, Motor performance, Nesting technique

I. INTRODUCTION

Low birth weight babies are the most vulnerable group to get adjusted to the new environment. Following birth, the first few months act as a transitory period during which the baby adjusts from the aquatic to the aerial environment. These babies have less sharp reflexes, diminished responses to visual and auditory stimuli and other neurological impairments such as attention deficit, difficulty adapting to their environment and reduced motor skills compared with normal birth weight babies.[1]

During these first 28 days of life, the child is at highest risk of dying. It is thus crucial that appropriate feeding and care are provided during this period, both to improve the child's chances of survival and to lay the foundations for a healthy life.[1]

Newborn, or neonatal, deaths account for 45% of all deaths among children under 5. The majority of all neonatal deaths (75%) occurs during the first week of life, and between 25% to 45% occurs within the first 24 hours. The main causes of newborn deaths are prematurity and low-birth-weight, infections, asphyxia and birth trauma. These causes account for nearly 80% of deaths in this age group[9].So as per this statistic it shows that the neonatal mortality rates are increasing it is moreover related to the postural defects such as dolicocephaly, narrowing of head, kyphosis, scoliosislordosis etc.[2]

Due to birth injury, birth trauma, poor posture cause motor delay during child's life. Early motor delays are often a sign of neurological dysfunction. When a child has primarily motor delays, conditions such as cerebral palsy, ataxia, spinal bifida, spinal muscular atrophy and myopathy may be present. If there is no motor delay, a child does not have cerebral palsy. When a motor delay exists with delays in other developmental areas, the children have visual impairment or mental handicap. Hypotonia is the most common symptom of motor dysfunction in newborns and infants.[3]

The child's developmental assessment should include the quality of the pregnancy, including the onset and vitality of fetal movements and problems during labor and delivery. To manage the motor function of newborn babies, babies' posture should be maintained immediately for motor system development and therewith perhaps their health and development. The way in which baby is positioned throughout this time is very important and baby's posture dictates the level of his well-being.[3]

Neonatal posture requires a number of active postural control mechanisms that is, neuromotor functions which allow a living system to control its body posture at rest, during displacement and during active movements. Postural control is intimately linked to motor control: dynamic motor actions cannot be performed without first stabilizing body posture. This is true for voluntary as well for involuntary movements.[4]

Nesting and positioning is a nursing skill used in the developmental care of infants. This skill maintains infants in a comfortable position, facilitates the monitoring of stable vital signs, and enables spontaneous motor activity for normal neuromuscular and skeletal joint function.[5]

Nesting can be used as a facilitator to reduce the stress caused by aggressive procedures, such as suctioning. Some of the positive effects of nesting on the motor development of newborns include the improvement of coordinated and fine motor function

of different body parts and prolongation of curved body positioning similar to the fetal position.[4]

Objectives of the study

1. To assess the motor performance of low birth weight babies before nesting technique in experimental and control group.
2. To determine the effect of nesting technique on motor performance of low birth weight babies in experimental group.
3. To compare the motor performance in low birth weight babies in between experimental group with control group.
4. To find out the association between the pretest motor performance of low birth weight babies with their selected demographic variables in experimental and control group.

II.   MATERIAL AND METHODS

The quasi experimental, pretest- posttest nonequivalent control group design was adopted to assess the effectiveness of nesting technique on motor performance among low birth weight babies in selected hospitals, Bengaluru. Study was conducted in NICU and post natal ward of Sagar Hospital and Sri Krishna Sevashrama Hospital at Bengaluru. The sample size was 40 low birth weight babies. The samples were assigned in two group i.e. experimental and control group. In order to avoid contamination at a time, the investigators ensured the presence of babies either in experimental or control group. Each group consisted of 20 low birth weight babies (20 in experimental and 20 in control group). Babies with birth weight between than 1kg to 2.5 kg and both male and female low birth weight babies were included. Babies with congenital anomalies and transgender were excluded in the study. Non-probability consecutive sampling technique was used for selecting the samples. 30 structured observational checklist to assess the motor performance of low birth weight babies. Nesting technique was provided in experimental group for 8 hours per day continued for 4 days. The data analysis and interpretation was planned to include descriptive and inferential statistics. Data was analyzed with SPSS package (20.0 versions), α was set as 0.05. Paired "t" test was used to test the significant difference of pre and post-test motor performance in both experimental and control group. Unpaired "t" test was used to test the significant difference between the posttest motor performance in between experimental and control group. Chi-square test was used to find out the association between pre-test motor performances of low birth weight babies with their selected demographic variables.

III.   RESULTS

Figure 1: Distribution of subjects in both the group according to gender
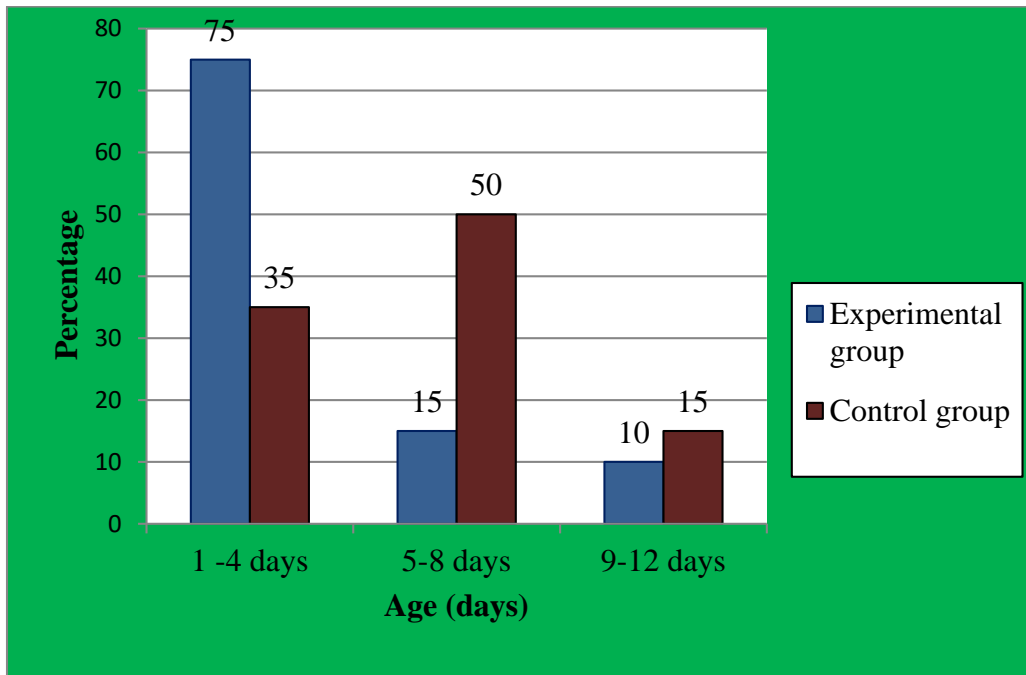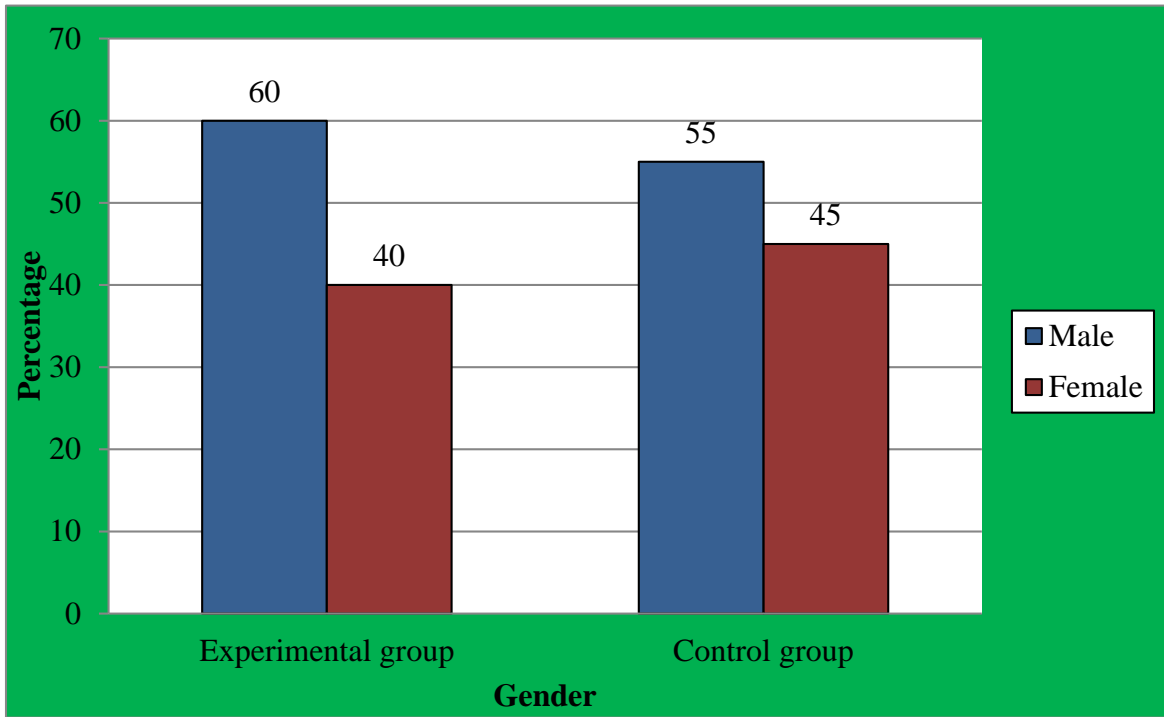

Figure 2: Distribution of subjects in both the group according to age groups (days)
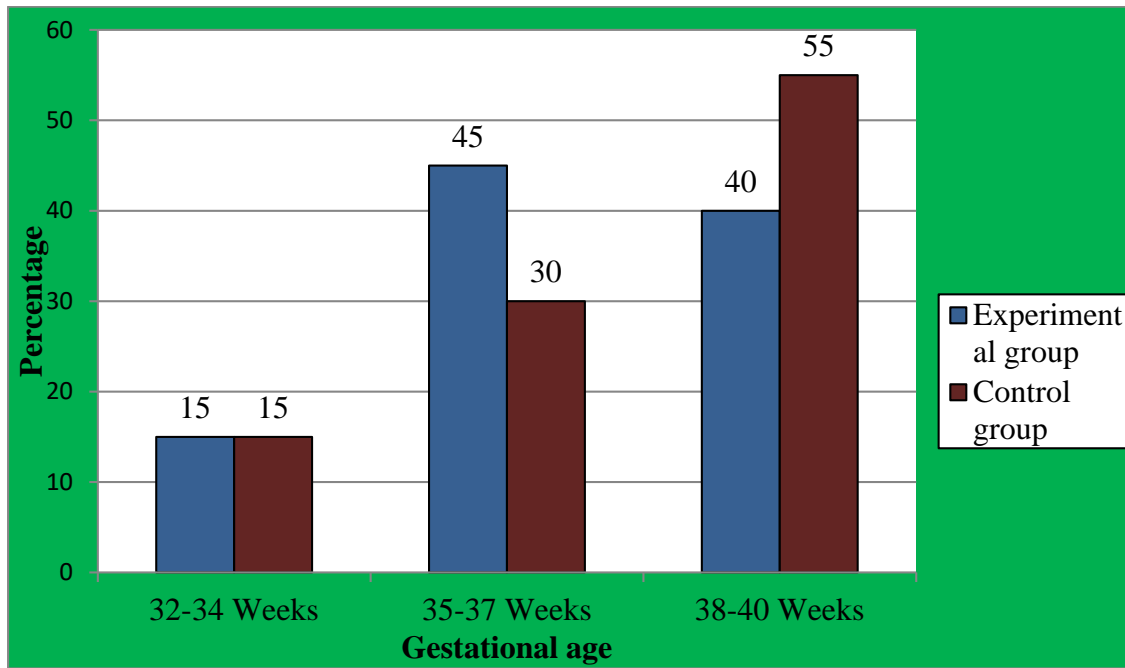
Figure 3: Distribution of subject in both the group according to gestational age
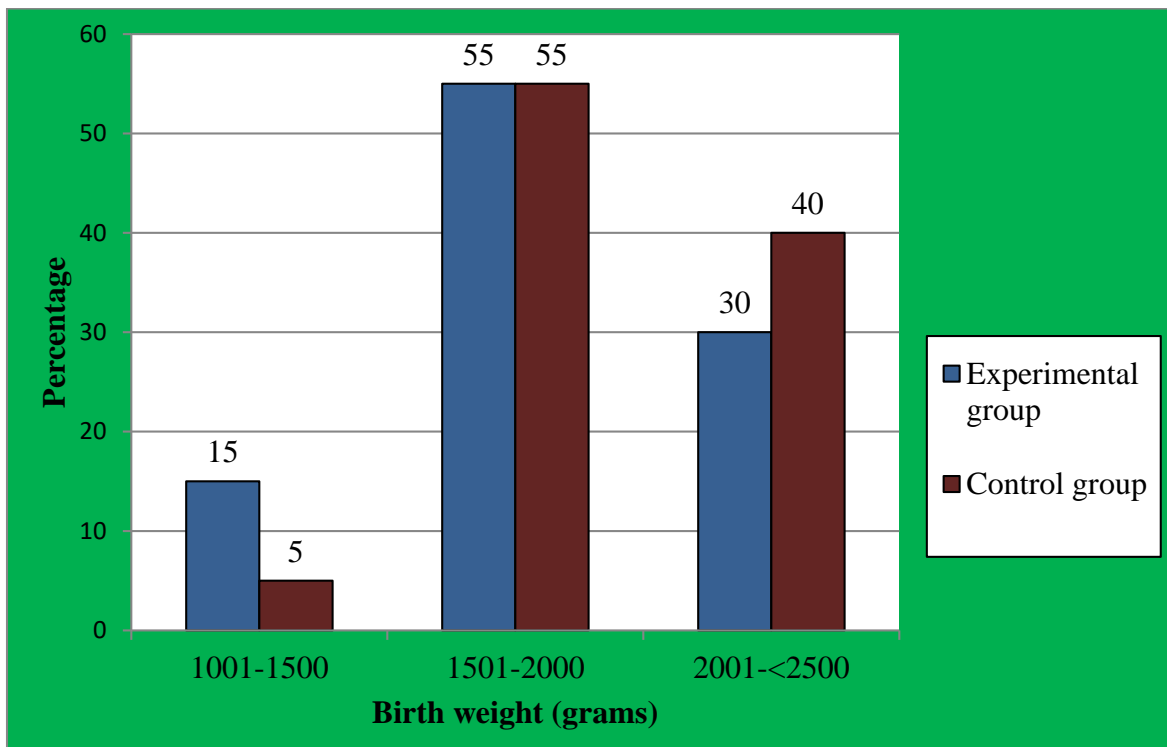

Figure 4: Distribution of subject in both the group according to birth weight (grams)
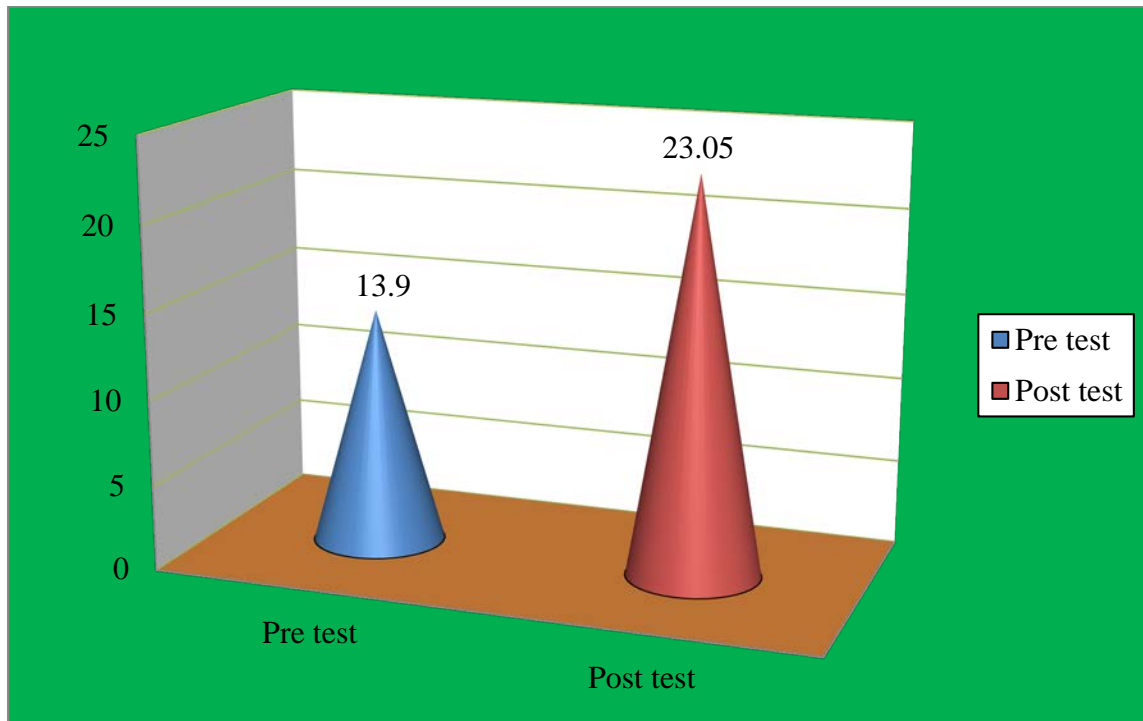
Figure 5: Comparison of mean score of the pre-test and post-test score of motor performance in experimental group. Effectiveness of nesting technique on motor performance of subjects

Table 1: The Outcome of Paired t-test Analysis for Pre and Post -Test Motor Performance in Experimental Group.

S.No	Groups	Max. score	Mean difference	SD of difference	Mean difference percentage (%)	Paired t-test value	P-value
					N=40		
1.	**Experimental Group**	30	9.15	6.81	30.5	6.008[s]	p<0.05
2.	**Control Group**	30	3.6	4.9	13.61	3.28[NS]	p>0.05

Note: S-Significant at 5% level (i.e., $p<0.05$) and NS- Not significant at 5% level (i.e., $p>0.05$)

There was statistically significant difference between pre and posttest motor performance in experimental group at the level of $p<0.05$. But in control group there was no significant difference between pre and posttest motor performance. This showed that there was an improvement in motor performance due to nesting technique.

Comparison of motor performance in between experimental and control group

Table 2: The Outcome of Unpaired t-test Analysis Post –Test Motor Performance on Subjects in Between Experimental and Control Group.

S.No	Motor performance	Mean	SD	Unpaired t-test value	P-value
1.	**Experimental Group**	**23.05**	**4.49**		
				9.20ˢ	**p<0.05**
2.	**Control group**	**16.5**	**5.64**		

Note: S-Significant at 5% level (i.e., p<0.05) and NS- Not significant at 5% level (i.e., p>0.05)

The analysis of unpaired t-test showed the table value of 9.20 which was statistically significant at the level of p<0.05. It indicated that nesting technique had contributed in improving motor performance of low birth weight babies to experimental group showing statistically significant difference between post test scores of experimental and control group at level of p<0.05.

IV.   DISCUSSION

Evaluate of motor performance of subjects in experimental and control group

The study demonstrated that majority of subjects 15 (75%) had moderate motor performance before nesting technique and 15 (75%) had adequate motor performance after nesting technique in experimental group. In control group majority of subjects 14 (70%) had moderate motor performance during pre –test and whereas in post –test majority of subjects 16 (80%) had moderate motor performance. The findings were consistent with study conducted by Prasanna K., Radhika M (2015) where the result revealed that the pretest mean score was 10.73 with SD 5.09 and the posttest mean score was 18.8 with SD 5.77 in experimental group. In control group the pretest mean score was 10.16 with SD 4.3 and the posttest mean score was 13.5 with SD 6.19 in control group.

Effectiveness of nesting technique on motor performance of subjects

The present study depicted that means difference was 9.15 with SD difference 6.81 and mean difference percentage was 30.5 %. The paired t-test value was 6.008 which was significant at the level of p<0.05 There was statistically significant difference between pre and posttest motor performance in experimental group at the level of p<0.05. This showed that there was an improvement in motor performance due to nesting technique. But in control group there was no significant difference between pre and posttest motor performance. So research hypothesis (H₁) was retained. The findings were consistent with study conducted by Poudlose R, Babu M., Rastogi S (2015) where the result demonstrated that mean difference was 4.59, SD difference 1.97 and paired t-test value was 12.64 at the level of p<0.05. Thus there was significant difference in motor performance of low birth

weight babies in the experimental group before and after administration of nesting technique.

Comparison of motor performance of subjects in between experimental and control group.

The present study indicated that overall mean score of motor performance in experimental group was 23.05 with SD 4.49 whereas in control group overall mean score was 16.50 with SD 5.64. The analysis of unpaired t-test showed the table value of 9.20 which was significant at the level of p<0.05. It indicated that nesting technique had contributed in improving motor performance of low birth weight babies to experimental group showing statistically significant difference between post test scores of experimental and control group at level of p<0.05. The findings were consistent with study conducted by Poudlose R, Babu M., Rastogi S (2015) where the result showed that in experimental group, the posttest score mean was 18.8 with SD of 5.77, where as in control group the post test score mean was 13.5 with SD of 6.19. The calculated independent 't' test value was 3.5 which exceed the table value. Hence null hypothesis is rejected but research hypothesis is accepted. The study shows there is effectiveness of nesting on motor performance among low birth weight babies.

Association between the pre-test motor performance of subjects with the selected demographic variables in experimental group and control group

The present study showed that there was significant association between types of feed and motor performance in experimental group at the level of p<0.05. Whereas in control group there was a statistically significant association between gestational age, birth weight and types of feed and level of motor performance in control group at the level of p<0.05. Other demographic and clinical variables such as age (days), gender,

mode of delivery and order of children had no association with the level of motor performance in control group.

V.   CONCLUSION

The finding of the study reveals that nesting technique had contributed in improving motor performance among low birth weight babies from experimental group significantly. It is an effectiveness intervention in promoting motor performance among low birth weight babies.

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