Experimental Study to Assess the Effectiveness of Oro-Motor Stimulation for Improving Feeding on Preterm Babies Admitted in Tertiary Care Hospital, Bhubaneswar, Odisha

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Abstract: *Prematurity is the leading cause of death in preterm babies in India. Those who survive are liable to have physiological handicaps of prematurity. Oro motor stimulation improves sucking and swallowing reflexes of Preterm neonates. An experimental study was conducted to assess the effectiveness of Oro-motor stimulation on preterm babies in NICU at Pradyumna Bal Memorial Hospital, Kalinga institute of medical sciences, KIIT Deemed to be University, Bhubaneswar. The objectives of the study were to assess the feeding difficulty of preterm babies, to assess the weight gain on experimental and control group and to compare the effectiveness of Oro-motor stimulation in control and experimental group. The conceptual frame work adopted for the study was based on J.W. Kenny's open system model. Observational check list used as data collection tool for this study. 30 preterm babies (15 in experimental and 15 in control group) were selected through purposive sampling technique. Pre-test was conducted on 1st day in NICU. Post test was conducted after 15 days by using the same tool. Descriptive and inferential statistics were used .Post test "t" value is 8.55 which is more than the table value. There was significant variation of preterm babies' weight level among experimental group. All the findings revealed that the Oro motor stimulation was effective in preterm babies. The study can be implemented in Nursing Education , practice and research.*

1. Introduction

Preterm infants frequently experience oral feeding difficulties because of their under develop cardiovascular system, central nervous system, and oral musculature. Oral feeding difficulties often affect an infant's ability to reach independent oral feeding, prolong hospital stays and may lead to long term feeding difficulties. Infant born before 37 wks gestational age are at an increased risk for difficulties associated with oral feeding from the mother's breast or from a bottle. Common oral feeding problems include:

- Absence of a successful suck-swallow reflex.
- Oral textural aversions leading to the rejection of food in the oral cavity.
- Difficulties coordinating the movements of the tongue during eating.

Feeding difficulties are also linked to prolonged hospital stays, diminished critical maternal bonding and persistent feeding difficulties. Due to increasing numbers of preterm births, a prominent need for interventions to address the associated complications, including oral-motor dysfunction, is present.

Some studies published previously suggested that early oral motor intervention which consist of oral stimulation, oral support can better the effect of oral feeding in preterm infants and shorten the stay of hospital duration.

Oral feeding problems in preterm infants are of growing concern over the world: cases of breast feeding and bottle feeding failures often result in delayed hospital discharge, maternal stress and long term health problems.

Title: Experimental study to assess the effectiveness of oro-motor stimulation for improving feeding on preterm babies admitted in tertiary care hospital, BHUBANESWAR, ODISHA.

Objective
1) To assess the feeding difficulty of preterm babies admitted in NICU.
2) To assess the weight gain on experimental and control group
3) To compare the effectiveness of Oromotor stimulation in control and experimental group.

2. Methodology

A quantitative research approach was taken in this study , the quasi experimental research design was used to evaluate the effectiveness of Oromotor stimulation for improving feeding among 30 preterm babies which include 15 in experimental and 15 in control group. The study was conducted in June 2016 -July 2017at NICU of a tertiary care hospital Bbsr Odisha by using purposive sampling technique. The samples were selected as per inclusion and exclusion criteria .The study was approved by institutional

review board (Ethics committee, Kalinga institute of medical sciences, KIIT deemed to be university)

Data Collection Procedure
Written permission from IRB and the authorities of the hospital was obtained prior to data collection. Consent was obtained from the study participants after explaining the objective of the study, 30 preterm babies, with 15 in experimental group and 15 in control group, who satisfy the inclusion criteria will be selected by using purpose sample technique.

On 1st day of admission at NICU the premature baby was assessed and considered as pre-test for both groups experimental and control was collected by investigator by using demographic variablesPerforma.

For experimental group Oromotor stimulation was given all over the cheek, upper lip, lower lip, upper and lower lip curl, upper gum, lower gum, internal check, lateral borders of the tongue, midblade of the tongue, elicit a suck, pacifier for 15 min stimulation program, where by the first 12 mins involved stocking the cheeks, lip, gums, and tongue, and the final 3 minutes consisted of sucking on a pacifier routinely used in the nursery.

3. Result and Discussion

Section 1

Maximum number of experimental

Table 1: Distribution of frequency and percentages of age of mother of experimental and control group

Age of mother			
Group	Age of the mother in year	Frequency	Percentage (%)
Experimental	18 – 23	6	40
	24 – 29	5	33.3
	30 – 35	4	26.7
Control	18 – 23	6	40
	24 – 29	6	40
	30 – 35	3	20

In Table 1 maximum number of experimental group 18-23 age group were 40% and in control group 18-23 and 24-29 age group were also 40%.

Table 2: Distribution of frequency and percentages of mode of delivery of mother of experimental and control group

Mode of delivery			
Group		Frequency	Percentage (%)
Experimental	Normal vaginal delivery	7	46.7
	LSCS	8	53.3
	Total	15	100
Control group	Normal vaginal delivery	8	53.3
	LSCS	7	46.7
	Total	15	100

Table 2: In experimental group majority were LSCS (53.3%) and in control group normal vaginal delivery were53.3%

Table 3: Distribution of frequency and percentages of gravida of mother of experimental and control group

Gravida of mother			
Group		Frequency	Percentage
Experimental	Primi	8	53.3
	Second	6	40
	Third	1	6.7
	Total	15	100
Control	Primi	6	40
	Second	7	46.7
	Third	2	13.3
	Total	15	100

Table no-3: maximum no of experimental group Primi mothers were 53.3% and in control group maximum were second gravida mother (46.7).

Table 4: Distribution of frequency and percentages of education status of mother of experimental and control group

education status of mother			
Group		Frequency	Percentage (%)
Experimental	Illiterate	3	20
	Primary	2	13.3
	middle	1	6.7
	High School	5	33.3
	Higher secondary	4	26.7
	Total	15	100
Control	Illiterate	1	6.7
	Primary	4	26.7
	middle	4	26.7
	High School	3	20
	Higher secondary	3	20
	Total	15	100

Table no 4: in experimental group group were High school education 33.3% and in control group were primary and middle group 26.7.

Table 5: Distribution of frequency and percentages of type of work mother of experimental and control group

Type of work mother			
Group		Frequency	Percentage (%)
Experimental	Working	1	6.7
	Non-working	14	93.3
	Total	15	100
Control	Working	5	33.3
	Non-working	10	66.7
	Total	15	100

Table no 5: Basically majority mother were non-working 93.3% in experimental group and 66.7% were in control group.

Table 6: Distribution of frequency and percentages of type of family of experimental and control group

Type of family			
Group		Frequency	Percentage
Experimental	Nuclear	4	26.7
	Joint	11	73.3
	Total	15	100
Control	Nuclear	5	33.3
	Joint	10	66.7
	Total	15	100

Table 7: Distribution of frequency and percentages of area of residence of experimental and control group

area of residence			
Group		Frequency	Percentage
Experimental	Urban	3	26.7
	Rural	12	73.3
	Total	15	100
Control	Urban	5	33.3
	Rural	10	66.7
	Total	15	100

Table 8: Distribution of frequency and percentages of no. of sibling of experimental and control group

No. of sibling			
Group		Frequency	Percentage
Experimental	One	8	53.3
	Two	5	33.3
	Three and above	2	13.3
	Total	15	100
Control	One	6	40
	Two	6	40
	Three and above	3	20
	Total	15	100

Table 9: Distribution of frequency and percentages of gestational age of baby of experimental and control group

Gestational age of baby			
Group		Frequency	Percentage
Experimental	28 - 30	10	67
	31 - 33	5	33
	Total	15	100
Control	28 - 30	11	73
	31 - 33	4	27
	Total	15	100

Table 10: Distribution of frequency and percentages of sex of baby of experimental and control group

Sex of baby			
Group		Frequency	Percentage
Experimental	Male	3	20
	Female	12	80
	Total	15	100
Control	Male	4	26.7
	Female	11	73.3
	Total	15	100

Table 11: Distribution of frequency and percentages of date of admission of baby of experimental and control group

Date of admission in NICU			
Group	Date	Frequency	Percentage(%)
Experimental	1.5.17	1	6.7
	10.5.17	1	6.7
	11.5.17	1	6.7
	12.5.17	1	6.7
	13.5.17	1	6.7
	2.5.17	2	13.3
	3.5.17	2	13.3
	4.5.17	2	13.3
	6.5.17	1	6.7
	7.5.17	1	6.7
	8.5.17	1	6.7
	9.5.17	1	6.7
	Total	15	100
Control	1.5.17	1	6.7
	10.5.17	1	6.7
	11.5.17	1	6.7
	12.5.17	1	6.7
	13.5.17	1	6.7
	2.5.17	2	13.3
	3.5.17	2	13.3
	4.5.17	2	13.3
	6.5.17	1	6.7
	7.5.17	1	6.7
	8.5.17	1	6.7
	9.5.17	1	6.7
	Total	15	100

Table 12: Distribution of frequency and percentages of mode of feeding of experimental and control group

No. of sibling			
Group		Frequency	Percentage (%)
Experimental	Syringe	11	53.3
	Spoon	4	33.3
	Breastfeed	0	13.3
	Total	15	100
Control	Syringe	3	40
	Spoon	3	40
	Breastfeed	9	20
	Total	15	100

Section II

Table 13: Mean, SD, paired t test and p value to assess the effect oromotor stimulation in birth weight of preterm baby experimental group, $n_1 = 15$

Parameter	Mean $\pm$ SD		t value	df	p value
	Pre-test	Post-test			
Weight	1141.66 $\pm$ 181.68	1157.9 $\pm$ 177.12	8.55	14	0.0001

The table 13 shows that the pretest and posttest mean score of weight of premature baby of children receiving orometer stimulation was 1141.66± 181.68,1157.9±177.12 respectively .The paired t value was 8.55 at 14 degree of freedom at p value 0.0001 which is extremely statistically significant .

Table 14: Mean, SD, paired t test and p value to assess the effect oromotor stimulation in birth weight of preterm baby control group, $n_1 = 15$

Parameter	Mean $\pm$ SD		t value	df	p value
	Pre-test	Post-test			
Weight	1351 $\pm$ 350.86	1352.13 $\pm$ 348.68	35	14	0.01

Table 14 shows that mean score of weight of premature baby of children receiving orometer stimulation was 1351.66± 350.86 and 1352.13 $\pm$ 348.68 respectively .The paired t value was 35at 14 degree of freedom at p value 0.01 which is statistically significant .

Table 15: Mean, SD, un paired t test and p value to compare the effect oromotor stimulation in birth weight of preterm baby control group and experimental group, $n_1 + n_2 = 30$

Parameter	Mean $\pm$ SD		t value	df	p value
	Pre-test	Post-test			
Weight	1157.9 $\pm$ 177.12	1352.13 $\pm$ 348.68	81780.17	29	0.0001

Table 15 shows that the control and experimental mean score of weight of premature baby of children receiving orometer stimulation was 1352.13 $\pm$ 348.68 and 1157.9 $\pm$

177.12 respectively .The paired t value was 81780.17 at 29 degree of freedom at p value 0.01 which is statistically significant

4. Conclusion

The study result showed that oromotor stimulation was effective in reduction of feeding problem among preterm babies. All the subjects in the experimental group had reduced feeding problem on post-test. There was significant difference between the pre-test oromotor stimulation and post-test oromotor stimulation. Finding conclued that oromotor stimulation was effective for oromotor stimulation of preterm babies.

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