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Effectiveness of oil massage on physical parameters among low birth weight babies at selected hospitals in Vellore

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Abstract

The birth of a newborn is certainly an emotional and inspirational moment in human life. Infants born at right-term, pre-term or post-term, if it weighs less than 2500 gms are considered as Low Birth Weight (LBW) babies. Low Birth Weight is one of the important factors, as almost 80% of neonatal deaths and 50% of infant deaths are associated with LBW.

Although, weight gain of a baby due to the effect of massage, with or without oil, is not clear, recent studies has proved that massage with essential oils make lipid absorption through the skin, which greatly contribute to weight gain. The aim of this study is to evaluate the effect of massage with coconut oil, on weight gain in LBW neonates in Selected hospitals in Vellore.

The research design selected for this study is Experimental Design. Based on Purposive Sample Technique, 40 Low Birth Weight babies were selected for the study. 20 samples were chosen for the Experimental Group and 20 samples for the Control Group.

The samples were selected based on inclusion and exclusion criteria. Structured questionnaire was used to assess the demographic variables. Physical parameters were assessed by weighing scale and flexible measuring tape.

Findings of the study after oil massage showed that, post-test mean value is higher in the experimental group than in the control group. The post-test mean value of weight is 1.9875. The mean difference of weight is 0.52. The computed 't' value for weight is 15.47, which is higher than the control group.

Similarly, the post-test mean values for all parameters such as length, head circumference and chest circumference is higher than the control group. AS such, it is evident that oil massage is effective in increasing the levels of physical parameter among low birth weight.

The 'chi' square level of mother's age, occupation, maternal history, educational status, and the neonate variables such as gestational age, birth weight and parity were associated with the $P < 0.05$ level. However, other demographic variables were not associated.

The findings of the study shows that there is significant increase in the levels of physical parameters, after oil massage among low birth weight babies.

Therefore it is evident that oil massage is effective method for physical maturity of low birth weight Babies.

Keywords: Oil massage, physical parameters, low birth weight babies

Introduction

Infant massage has been a part of the ancient culture and prevalent in Asia and the Islands of the Pacific. Hug and touch in these cultures, are considered to be healthy both physically and mentally. Massage therapy has been beneficial both to mother and the infant in many ways. It induces a certain bonding between the mother and child. It helps in weight gain and more organized sleep patterns in both normal and premature infants. It even helps in the social development of the premature infant.

Sensory stimuli is one of the basic human needs, that facilitates the overall development of full-term and premature babies and their mothers. Premature babies sometimes may be deprived of tactile stimulation because of relative isolation due to constraints arising from the need for special care. Currently, tactile stimulation is widely considered as an accepted method in the Neonatal Intensive Care Unit (NICU).

Massage is referred to as "a methodological touch intended to stimulate the baby". Current research has proved that Massage Therapy has positive effects on preterm as well as on low birth weight infants.

These positive effects include improved sleep, improved skin integrity, enhanced parent infant bonding and decreased stress apart from weight gain and early discharge from the NICU.

Three Phases of Massages

The first phase of the message comprises of 20 gentle strokes all over the infant’s body, performed twice a day for a span of 28days. The second phase of the massage consists of 5 minutes of tactile stimulation in prone position, followed by 5 minutes of kinesthetic stimulation in supine position and another 5 minutes of tactile stimulation again, in each session of the massage. The third phase involves massaging infants with 1cc of warm coconut oil, motivating blood circulation and improving overall parameters of physiological and neurobehavioural parameters in low birth weight babies.

Although, research material supporting the positive effect of oil massage intervention is not very sparsely available. However, the results of this research indicate that, LBW babies who get oil massage intervention showed increased levels of physiological as well as neurobehavioural parameters.

Objectives

1. To assess the pre-test score of physical parameters among low birth weight (LWB) babies of experimental and control group.
2. To determine the effectiveness of oil massage on physical parameters among LBW babies of experimental group.
3. To associate the post-test score of physical parameters with the selected demographic variables of Experimental and control group.

Hypotheses

H1): There is a significant difference between pre-test and post-test levels of physical parameters among LBW babies in the Experimental Group.

H2): There is a significant association between the post-test score of physical parameters between the Experimental Group and the Control Group.

H3): There is a significant association between the post-test level of physical parameters and selected demographic variables in the Experimental Group.

Methodology

“Quantitative Research with pre and post-test Experimental Design” was used for the study.

O1	X	O2
O3		O4

O1 – Assess the pre-test level of physical parameter among LBW babies in the experimental group before oil massage.

X – Oil Massage.

O2 – Assess the post-test score of physical parameter among LBW babies after oil massage in the experimental group.

O3 – Assess the pre-test score of physical parameter among LBW babies in the control group.

O4 – Assess the post-test score of physical parameter among LBW in the control group.

Dependent Variable: Physical parameters

Independent Variable: Oil massage

Demographic Variables

Variables of mothers such as age, educational status, occupation, mode of delivery, area of residence and abnormal maternal history and parity.

Variables of newborns with LBW babies which includes weight at birth, gestational age, sex and Apgar score.

The study was conducted in selected hospitals in Vellore. The setting is chosen on the basis of feasibility and availability of adequate sample.

The population selected for the study consisted of 40 LBW babies weighing between 1200gms -1800gms, The purposive sampling technique was used. In this study 20 samples were in the experimental group and 20 samples were in the control group.

Criteria for Sample Selection

Inclusion Criteria

1. Babies admitted to the NICU on their first day of life.
2. Preterm LBW babies – Babies born less than 37 weeks of gestational age.
3. Babies’ birth weights were appropriate for gestational age (AGA).
4. Weight loss of 10% to 13% of birth weight during the first week.
5. Weight of the babies between 1200gms – 1800gms
6. Babies who are generally stable

Exclusion Criteria

1. Term babies (37 to 41 days or 6/7 weeks’ GA).
2. Post term babies (42 weeks or more GA).
3. Small for GA (whose birth weight is lower than the 10th percentile).
4. Babies who start gaining weight before Day 8.
5. Babies who lost less than 10% or more than 13% of birth weight in the first week.
6. Babies who are not stable (did not meet the previous criteria) before enrollment or during the observation period.
7. Babies with congenital anomalies, hypoxic ischemic encephalopathy, central nervous system (CNS) impairment, neonatal sepsis, urinary tract infection, or one of twins or higher order multiples.

Description of the Tool

Section-A: It deals with:

- a) Demographic Variables of mothers such as age, educational status, occupation, altered maternal history mode of delivery, area of residence and parity.
- b) Demographic variables of newborns with low birth weight babies which includes weight at birth, gestational age, sex and Apgar score and parity.

Section-B

Tool for Measurement of Physical Parameters

It includes Weight (kg), length (cm), Head and Chest circumference (cm) measured from each group.

Weight: The weight of the baby is taken through beam balance.

Height: The height was measured by using Infanto meter.

Head & Chest Circumference: The head and chest circumference is measured by using flexible measuring tape.

Data Collection Procedure

Ethical clearance was obtained from the members of the institutional research committee and written permission from head of institution to conduct the research at the selected hospitals in Vellore. Samples were selected based on inclusion criteria and the parents of infants were informed about the proposed study, well before the research and written consent was also obtained.

In this study the samples were divided in to two groups, 20 samples were in the Experimental Group, and 20 samples were in the Control Group. First the demographic variables of mothers and neonates were assessed by using check list in both the groups. Then Physical parameters were assessed for experimental group and control group before the intervention.

The babies assigned to experimental group were given oil massage daily 2 times a day using coconut oil. After 28 days, post - test was done for the experimental group and control group by recording anthropometry for physical parameters.

Plan for Data Analysis

Distribution of demographic variables is analyzed by descriptive statistics (mean, standard deviation). To find out the effectiveness of oil massage, inferential statistics (paired 't' test) is used. To find out the association between post-test levels of physical parameter and selected demographic variables, inferential statistics (chi square) was used.

Results and Discussion

With regards to age of the mother, 12 mothers i.e. 60% are between 18-25 years of age, 4 mothers i.e. 20% are between 26-35 years of age, 4 mothers i.e. 20% are between 36-45 years of age, in the experimental group. Whereas in the Control Group, 5 mothers i.e. 25% are between 18-25 years of age, 6 mothers i.e. 30% are between 26-35 years of age and 9 mothers i.e. 45% are between 36-45 years of age.

Considering the educational status, 8 mothers i.e. 40% are illiterate, 3 mothers i.e. 15% are Primary, 9 mothers i.e. 45% are High School and none of them are graduates in the Experimental Group. Whereas in the Control Group, 7 mothers i.e. 35% are illiterate, 4 mothers i.e. 20% are Primary, 9 mothers i.e. 45% are High School and none of them are graduates.

In relation to occupation, 12 mothers i.e. 60% are House wives, 5 mothers i.e. 25% are unskilled workers, 3 mothers i.e. 15% are Professionals in the Experimental Group. Whereas in the Control Group, 11 mothers i.e. 55% are

House wives, 6 mothers i.e. 30% are unskilled workers, 3 mothers i.e. 15% are Professionals.

Regarding abnormal maternal history 8 mothers i.e. 40% had nil maternal history, 12 mothers i.e. 60% had other type of maternal illness in the experimental group. In the control group 8 mothers 40% had no abnormal history, 2 mothers i.e. 10% of mothers had PIH and 10 mothers i.e. 50% had other type of maternal illness.

Regarding mode of delivery 35 mothers i.e. 70% had normal delivery, 15 mothers i.e. 30% had LSCS in the experimental group. In the control group 30 mothers i.e. 60% had normal delivery, 20 mothers i.e. 40% had LSCS. None of them had instrumental delivery in both the groups.

Regarding Residence in the experimental group 11 mothers i.e. 55% belong to Urban and 9 mothers i.e. 45% belong to Rural. Whereas in the control group 8 mothers i.e. 40% belong to Urban and 12 mothers i.e. 60% belong to Rural.

With reference to Parity, 4 mothers i.e. 20% belong to Primi, 6 mothers i.e. 30% belong to Second Gravida and 10 mothers i.e. 30% belong to third Gravida and more in the experimental group. Whereas in the control group 8 mothers i.e. 40% belong to Primi, 8 mothers i.e. 40% belong to Second Gravida and 4 mothers i.e. 20% belong to Third Gravida and more.

In relation to the Demographic Variables of the Neonates 13 neonates i.e. 60% are male and 6 neonates i.e. 35% are female in the experimental group. Whereas in the control group 14 i.e. 70% are male and 6 neonates i.e. 30% Neonates are female.

With reference to Gestational Age of Babies 6 neonates i.e. 30% belong to 30 to 33 weeks and 14 neonates i.e. 70% belong to 34 to 37 weeks. Whereas in the control group 11 neonates i.e. 55% belong to 30 to 33 weeks and 9 neonates i.e. 45% belong to 34 to 37 weeks.

Regarding Birth Weight 8 neonates i.e. 40% belong to 1200 to 1400 gms, 7 neonates i.e. 35% belong to 1401 to 1600 gms and 5 neonates i.e. 25% belong to 1601 to 1800 gms in the experimental Group. Whereas in the Control Group 5 neonates i.e. 25% belong to 1200 to 1400 gms, 5 neonates i.e. 25% belong to 1401 to 1600 and 10 neonates i.e. 50% belong to 1601 to 1800 gms.

In relation to Apgar Score, 9 neonates i.e. 45% had a score of 7/10, 3 i.e. 15% neonates had a score of 8/10, and 8 neonates i.e. 40% had a score of 9/10, 4 neonates i.e. 20% had a score of 8/10, and 4 neonates i.e. 20% had a score of 9/10.

With reference to Parity, 4 neonates i.e. 20% belong to Primi, 6 neonates i.e. 30% belong to Second Gravida and 10 neonates i.e. 30% belong to Third Gravida and more in the experimental group. Whereas in the control group 8 neonates i.e. 40% belong to Primi, 8 neonates i.e. 40% belong to Second Gravida and 4 neonates i.e. 20% belong to Third Gravida and more.

Table 1: Mean, Mean difference, SD, t-value of experimental group.

Paired Samples Statistics (Experimental Group)						
		Mean	Mean Difference	N	Std. Deviation	t Value
Pair 1	Wt Pre	1.62755	0.35	20	.15727	15.47
	Wt Post	1.9875		20	.09506	
Pair 2	Lgth Pre	38.9650	2.02	20	3.28369	10.48
	Lgth Post	50.2492		20	2.62366	
Pair 3	Hd Cir Pre	27.18300	3.23	20	1.35017	5.84
	Hd Cir Post	30.1424		20	1.46342	
Pair 4	Chst Cir Pre	26.8300	2.11	20	1.06952	12.94
	Chst Cir Post	29.4998		20	.87865	

The above table shows the mean pre-test and post-test score, mean difference, standard deviation, t- value of experimental group.

Table 2: Mean, Mean difference, SD, t-value of experimental group.

Paired Samples Statistics Control Group						
		Mean	Mean Difference	N	Std. Deviation	T value
Pair 1	Wt Pre	1.45723	0.21	20	.12105	8.243
	Wt Post	1.7520		20	.085649	
Pair 2	Lgth Pre	38.231	1.48	20	2.28220	5.812
	Lgth Post	39.2517		20	2.07263	
Pair 3	Hd Cir Pre	27.8291	1.12	20	1.18511	1.872
	Hd Cir Post	28.9365		20	2.75645	
Pair 4	Chst Cir Pre	25.213	1.02	20	1.28707	12.53
	Chst Cir Post	26..8245		20	1.13614	

The above table shows the mean pre-test and post-test score, mean difference, standard deviation,t- value of control group.

Table 3: Comparison of Mean, Mean Difference SD, t Value between Experimental Group and Control Group

Post Test					
Groups	Para Meters	Mean	Mean Difference	Sd	T Value
Experimental Group	Weight	1.9875	0.52	0.17	15.47
	Length	50.24	4.10	3.62	9.82
	Head circumference	30.14	1.92	2.20	5.21
	Chest circumference	29.49	1.75	1.52	12.90
Control Group	Weight	1.7520	0.27	0.08	9.10
	Length	39.25	1.81	2.90	6.70
	Head circumference	28.9	1.01	2.11	3.45
	Chest circumference	26.82	1.09	0.87	11.10

The above table shows the mean pre-test and post-test score, mean difference, standard deviation, t- value of experimental group and control group.

The above table shows that with regards to the weight of the neonate in the experimental group the mean post -test value is 1.9875(md-0.52) which is higher than that of the post-test mean value 1.7520 (md-0.27) in the control group. The calculated t value of experimental group is t- 15.47 which is greater than the control group t-9.10.

Regarding the Length of the neonate in the experimental group the mean post-test value is 50.4(md- 4.10) which is higher than that of the post-test mean value 39.25(md- 1.81) in the control group. The calculated t value of experimental group is t- 9.82 which is greater than the control group t- 6.70.

Regarding the Head Circumference of the neonate in the experimental group the mean post-test value is 30.14(md-1.92) which is higher than that of the post-test mean value 28.92(md- 1.01) in the control group. The calculated t value of experimental group is t- 5.21 which is greater than the control group t- 3.45.

Regarding the Chest Circumference of the neonate in the experimental group the mean post-test value is 29.49(md-1.75) which is higher than that of the post-test mean value 26.82 (md- 1.09) in the control group. The calculated t value of experimental group is t- 12.90 which is greater than the control group t- 11.10.

The 'chi' square level of maternal age, occupation, maternal history, educational status, and neonates variables such as gestational age at birth weight and parity were associated at $P < 0.05$ level and other demographic variables are not associated.

Hence it is interpreted that the difference in mean score was true difference and not by chance and hence hypothesis H_3 was accepted.

Conclusion

The present study assessed the effectiveness of oil massage among Low Birth Weight babies. The mean post test score of physical parameters was high in the experimental group than in the control group. It was found that there was an increase in the levels of physical parameters in the group who had oil massage. It shows that the oil massage improves growth and reduces morbidities in low birth weight infants. It is simple, acceptable to mothers and can be continued at home.

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