EFFECTIVENESS OF OIL MASSAGE ON CHANGES IN THE LEVEL OF WEIGHT AMONG LOW BIRTH WEIGHT BABIES ADMITTED IN NICU, OF SELECTED HOSPITALS

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ABSTRACT

Babies born with weight less than 2.5 kg consider as low birth weight babies, having higher chance of morbidity and mortality as their organs were not well develop, so they need special care with special medical team at special care unit. Simple random study was conducted at NICU of KC General Hospital. Forty respondents were selected by lottery method and divided into two groups: Experimental group and Control group who met inclusion criteria. Two of participant excluded one because of worst health condition after 3 days of endorsement and another because of discharge on request after 2 days. Coconut oil of10-15ml was applied in massage therapy to experimental group which was given twice a day 15-20 minutes and weight was measured daily once at morning till 7 days for experimental group however only weight was measured for control group by digital weight machine. Data were plotted and analyzed by using the SPSS program. The study showed that the weight of LBW after intervention was1.91±0.39 (mean± SD) as compared to control group without oil massage 1.79±0.35 (mean± SD)and calculated 't' value was 3.32 shows effectiveness of oil massage at 5%level of significance . Chi square test was done to observe the association between weight of the LBW and demographic variables which was rejected except one variable (weight of baby during birth). Conclusions: Coconut oil massage shows positive effect on weight gain in LBW babies.

Keywords: Oil Massage Therapy; Coconut oil; Low Birth Weight (LBW), Change in level of weight

INTRODUCTION

The birth of a baby is one of life's most wondrous moments for their parent even they are completely depended on others for feeding, warmth and comfort. [1]Every newborn comes with different weights normal birth weight is 2500grm-4200gm where as weight less than 2.5 kg consider as low birth weight babies. [5]The average Indian baby weight is between 2.5kg to 2.9kg when born at full term. .[12]

Low birth weight (LBW) is defined as a birth weight of a live born infant of 2,499 gm or less, regardless of gestational age (WHO); Subcategories into very low birth weight and extremely low birth weight .[9]There are so many reasons of delivery of low birth weight babies which includes age, multiple pregnancies, previous LBW infants, poor nutrition, heart disease , hypertension, drug addiction, alcohol abuse , insufficient prenatal care as well as environmental factors (lead exposure, air pollution etc).[9] The new born baby may be LBW because of prematurity or intrauterine growth retardation (IUGR).[4]There is also evidence that LBW or its determinant factors are associated with a predisposition to higher rates of diabetes, cardiac diseases and other future chronic health problems which includes risk for girls to become mothers of LBW.[6]

Incidence of low birth weight is 15.5 % of all births, or more than 20 million infants worldwide, are born with LBW. More than 95% of low birth weight babies are born in developing countries.[8] India alone

accounts for 40 % of low birth weight births in the developing world and more than half of those in Asia. There are more than 1 million infants born with low birth weight in China and nearly 8 million in India.[10]

Keeping Low birth weight babies alive through the neonatal intensive care unit is expensive so it is better to reduce LBW which decrease in childhood morbidity and mortality. [2]Intensive-care nurses undergo intensive care training and clinical orientation in addition to provide highly specialized care for critical ill neonates. Neonatal care is split into three categories or "levels of care", in India based on weight and gestational age of neonate.[11]

Massage means stimulating the tissues of the body by the hand with or without oil, in order to promote health as well as rejuvenation to the entire body.[3]The Massage therapy technique is gentle structured comforting touch, relaxation method aimed at limiting stress and anxiety in fragile intensive care neonates ·Infant Massage therapy consists of 2 phases, tactile and kinesthetic stimulation[7].Infant Massage is found to be more useful when some kind of lubricant oil is used; the common oils used are sunflower oil, olive oil and coconut oil.[2]Coconut oil is most precious oil as it contains antibacterial, antiviral and anti-fungal proprieties as well as give relax to baby in the time of bed which promote growth and development as well[13]

OBJECTIVES OF THE STUDY
- ➤ To assess the level of weight among low birth weight babies in experimental and control group before intervention.
- ➤ To determine the effectiveness of oil massage, on changes in the level of weight among low birth weight babies after intervention, in experimental group.
- ➤ To compare the changes in the level of weight among low birth weight babies in the experimental group and control group after intervention.
- ➤ To find the association between the changes in the level of weight among low birth weight babies with their selected socio-demographic variables before and after intervention in experimental group.

HYPOTHESIS

- ➤ **H1:** There will be a statistically significant difference in changes in the level of weight among low birth weight babies in the experimental group before and after the intervention.
- ➤ **H2:** There will be a statistically significant association between changes in the level of weight with their socio-demographic variable before and after intervention in experimental group

METHODOLOGY:

POPULATION

Study design: Experimental design
Study area: NICU OFKC General Hospital, # 89, 5th Cross Road behind Police Station, Malleswaram Srirampura, Bangalore, Karnataka 560003, and India.
Study Population

Target population: low birth weight babies admitted at NICU in KC General Hospital

Accessible populations: Low birth weight babies who are having weight 1000 grams to < 2.5 kg as well as fulfill the inclusion and exclusion criteria admitted at NICU in KC General Hospital, Bangalore.
Inclusion Criteria
- a. Admitted the time of data collection
- b. Low birth weight babies weighing 1000-2500gms
- c. Willing to participate in the study

Exclusion Criteria
   a. Critically ill and severe complication
   b. Who are in incubator
   c. Special procedures (like exchange transfuse, intensive phototherapy, jejunostomy feeding etc.)

SAMPLING TECHNIQUE

The samples were selected by using probability sampling Technique. In this study Simple Random Sampling Technique's Lottery method was used.

Samples size:

  A number of research studies use the Slovin's (or sometimes Sloven's) formula for obtaining the sample size. Denoting by n the sample size, Slovin's formula is given by $n = N / (1 + Ne^2)$ where N is the population size and e is the margin of error (see Almeda, Caplstrano, Sarte, 2010). Researchers are inclined to use this formula because of its simplicity (The Philippine Statistician, 2012).[54]

If the total population is

If N=population,   n= Sample size   e=margin of error

$n = N / (1 + Ne^2)$

$n = 45 / [1 + 45(0.05)^2]$

$n = 45 / [1 + 45(0.0025)]$

$n = 45 / [1 + 0.1125]$

$n = 45 / 1.1125$

$n = 45 / 1.11$

$n = 40$

Study period: 26th December 2017 – 10th January 2018
Study tool:
Part 1: Demographic Variables which consist of Age Group, Sex, Birth weight, Apgar Score and Weeks of gestation

Part 2: The weight of low birth weight babies measured before oil massage as well as after, till 7 days by using digitals neonate weight machine and recorded.

Weight Gain by Child

Weight of baby before oil massage:

Times of oil massage: 2times a day　　　　　　8am morning and 3pm afternoon

Weight gain after giving oil massage

Days	Weight of the baby every morning (8am)
1	
2	

Intervention given: Oil massage therapy was given to LBW (experimental group) by researcher(having experience of 3years work)15-20 minutes twice a day (morning and afternoon) using coconut oil for 7 consecutive days and weighted by digital weighing machine every morning. Tactile and Kinetic stimulation was given during oil massage therapy. Conversely, observation and weight were taken to control group.

Data analysis: Data were tabulated and analyzed by excel and SPSS version 19.To determine the effect of oil massage among low birth weight babies "t" test were used. To find out the association between the demographic variable and weight gain Chi square test were used**.**

Ethical clearance:
Authorization for the research was obtained from the thesis review committee **of Karnataka College of Nursing, Directorate General of Health Service of Karnataka** and **K.C. General Hospital.**
The importance of the study was explained to the Parents of LBW. Full confidentiality and participants Rights were maintained.

RESULTS:

The study finding shows that the majority of LBW babies 15(75.0%) in control group belongs to 0-5 days of age group, and less 1 (5%) belongs to 18-23days of age group whereas in experimental group12 (60.0%) belongs to 0-5 days of age group and 2(10.0%) belongs to 6-12days of age group as well as 12-7days of age group. In the context of Gender it was observed that the number of LBW babies in control groups were in Male 8(40.0%) and were in Females were 12 (60%) which is opposite in experimental group majority of LBW 12(560.0%) were Males, 8 (40.0%) were Females. The majority of LBW belongs to between7-10 class of Apgar score 15 (75.0%), and minority in less than 3 i.e.2 (10.0%) in control group uniformly in experimental group majority of LBW belongs to between 7-10 class of Apgar score 15(75.0%), and minority in less than 3i.e. 2 (10.0%)**.**The proportion of distribution of LBW in experimental group according to weight of baby during birth in 2001gm -2500gm was higher 10 (50.0%) and low percentage of distribution in 1000gm-1500gm group i.e.3 (15.0%) as well as the proportion of distribution of LBW in control group according to weight of baby during birth in 2001gm-2500gm was 10 (50.0%), and less in 1000gm-1500gm was 1(5%).Just above the half of LBW 11(55.0%) were in breastfeeding after delivery where as other three groups I/V feeding, supplementary and other consisted 3 (15.0%) of respondents in each in experimental group where as seven in ten in control group14 (70.0%) were in breastfeeding, 4 (20%.0) were in I/V fluids, 1 (5.0%) were in supplementary. In control group two-third of the participant 13(65.0%) were in 8-12 times of feeds per day where as very less (5 %) in 4-7 times of feeds per day in the same way there was higher LBW 15(75.0%) were in 8-12 times of feeds per day where as very less (5 %) in 4-7 times of feeds .There was three level of maturity of neonates , preterm consist 20%, post term consist 10% where as full term consist 70% which is the highest value in control group and in experimental group highest proportion was in preterm 10 (50.0%), in full term 9 (45.0%) and very less in post term 1(5.0%).On the basis of LBW distribution in gestation at birth was higher in Above 36 group i.e.16(80.0%) where as in others four groups has 1 (5.0%) in each, in control group closely in experimental group also had higher LBW 12(60%) and very less 1(5%) in less than27 and 28-30 group each.

Table no: 1. Distribution of respondent on the basis of demographic variables   **N=40**

Demographic variables	Experimental Group		Control Group	
Age	**Frequency**	**Percent**	**Frequency**	**Percent**
0-5	12	60%	15	75%
6-12	2	10%	2	10%
12-17	2	10%	2	10%
18-23	4	20%	1	5%
Gender				

Male	12	60%	8	40%
Female	8	40%	12	60%
Apgar Score				
Less than 3	2	10%	1	5%
4-6	3	15%	3	15%
7-10	15	75%	16	80%
WOB				
1000gms-1500gms	3	15%	1	5%
1501gms-2000gms	7	35%	9	45%
2001gms-2500gms	10	50%	10	50%
Feeding After Delivery				
I/V	3	15%	4	20%
Breast Feeding	11	55%	14	70%
Supplementary	3	15%	1	5%
Others	3	15%	1	5%
No. of. Feeding				
No oral feeds	3	15%	4	20%
Less than 3 times	1	5%	2	10%
4-7 times	1	5%	1	5%
8-12 times	15	75%	13	65%
Level Of Maturity				
Preterm	10	50%	4	20%
Full term	9	45%	14	70%
Post term	1	5%	2	10%
Week Of Gestation				
Less than 27	1	5%	1	5%
28-30	1	5%	1	5%
31-33	3	15%	1	5%
34-36	3	15%	1	5%
Above 36	12	60%	16	80%

Table No. 2:- Mean and Standard deviation of LBW of experimental group before and after oil massage   N=20

Experimental group	Mean	SD	t-value	Degree of freedom	Significance
Before	1.79 gm	0.35	3.32	19	0.004*
After	1.91gm	0.39			

*Level of significant 5%

The above table shows mean weight before oil massage is   1.79 gm (SD=0.35) whereas 1.91gm (SD=0.39) is after doing oil massage, t-test =3.32 was done with level of significant of 5% and degree of freedom 19.The study depicts that there is statistically significant in gain in weight of low birth weight babies after doing oil massage.

Table 2.1. Assessment of the level of weight/day of low birth weight babies in experimental group after intervention   N=20

Days	1	2	3	4	5	6	7
Weight gain in day wise during oil massage period (in Grams)	1.82	1.85	1.93	1.90	1.93	1.96	2.01

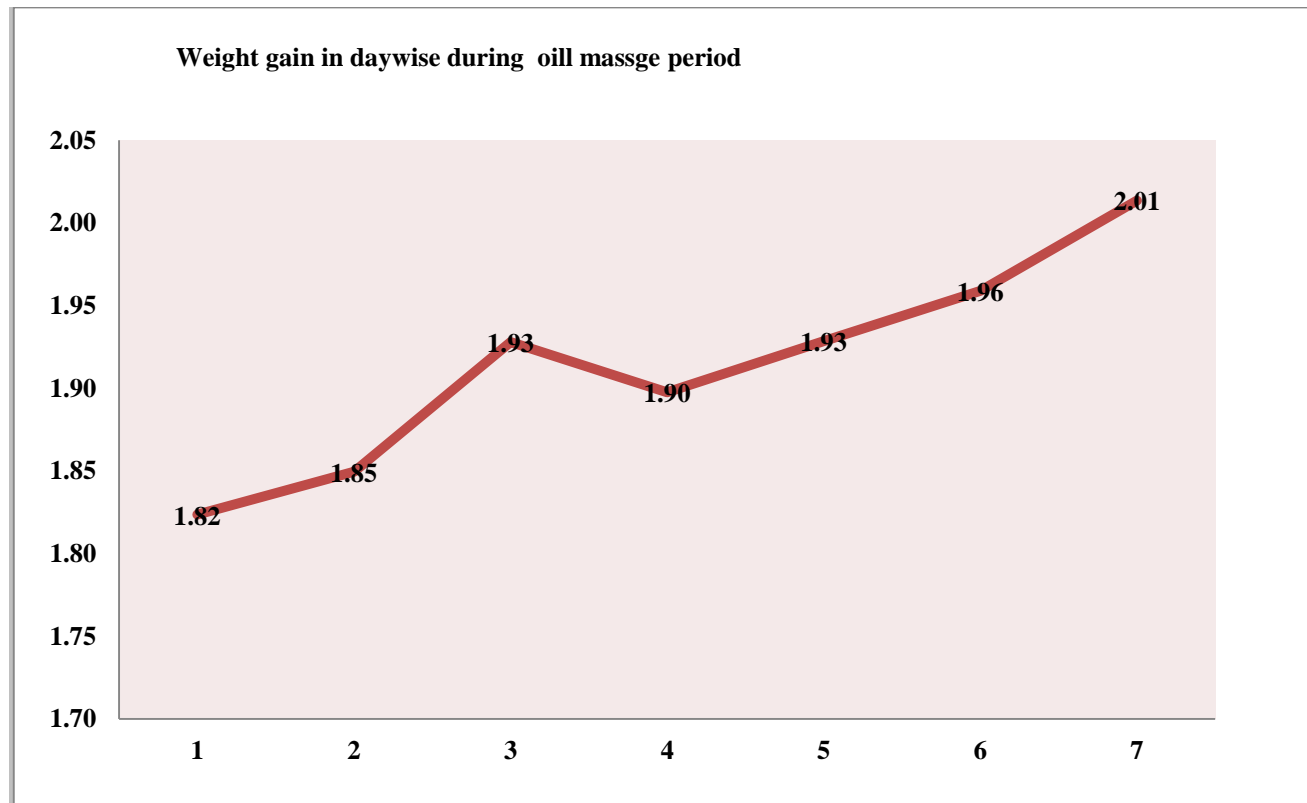The above table illustrate that there is good improvement in weight gain of LBW after getting oil massage therapy except day 4.

Weight gain in daywise during oill massge period

Fig: No.1:- Average weight gain per day after giving oil massage therapy

Table No.4:- Mean, Standard deviation and average weight, of LBW before and after intervention in experimental and control group   N=40

	Gain in weight for Experimental Group		*Gain in Weight for Control Group*		*Samples*
	Before	*After*	*Before*	*After*	
Mean	1.79gms	1.91gm	2.01 gm	1.79 gm	20
SD	0.35	0.39	0.38	0.35	20

The above table depicts the mean weight of experimental group and control group is 1.79gms (SD=0.35) and 2.01gms (SD=0.38) respectively which is high in control group .Whereas after intervention the weight of experimental group has higher weight 1.91gm (SD=0.39) than that of control group 1.79gm (SD=0.35).

	Control Group	*Experimental Group*
Average Gain in weight in gm	-0.07 gm (Loss Weight)	0.13 gm (Gain weight)
Standard deviation	0.07	0.17

Here, it is observed that there is a consistent level of gain in weight in low birth babies with oil massage therapy 0.13gm average weight gain as compared to control group -0.07gm average weight loss without oil massage.

Table No.5: Association between level of weight among LBW and demographical variables of experimental group in pre-intervention   N =40

Demographic variable	*Category*	*Sample*	*Level of weight less than average weight*		*Level of weight more than average weight*		$\chi 2$	*P*
			N	*%*	*N*	*%*		
1.Age at enrollment	0-5	12	6	50.00%	6	50.00%	1.82	0.61
	6-11	2	1	50.00%	1	50.00%		
	12-17	2	2	100.00%	0	0.00%		
	18-23	4	2	50.00%	2	50.00%		
2.Gender	Male	12	7	58.33%	5	41.67%	0.13	0.71
	Female	8	4	50.00%	4	50.00%		
3.Apgar Score during birth	Less than 3	2	2	100.00%	0	0.00%	2.22	0.33
	4-6 score	3	1	33.33%	2	66.67%		
	7-10 score	15	8	53.33%	7	46.67%		
4.Weight of Baby during birth	**1000 gms-1500gms**	**3**	**3**	**100.00%**	**0**	**0.00%**	**16.36***	**0.00**
	1501gms-2000gms	**7**	**7**	**100.00%**	**0**	**0.00%**		
	2001gms-2500gms	**10**	**1**	**10.00%**	**9**	**90.00%**		
5.Feeding	I/Vfluids	3	2	66.67%	1	33.33%	3.59	0.46

After Delivery	Breast feeding	11	6	54.55%	5	45.45%		
	Supplementary	3	1	33.33%	2	66.67%		
	Others	3	2	66.67%	1	33.33%		
6.No.of feeds per day	No oral feeds	3	3	100.00%	0	0.00%	4.92	0.17
	Less than 3 times	1	1	100.00%	0	0.00%		
	4-7 times	1	0	0.00%	1	100.00%		
	8-12 times	15	7	46.67%	8	53.33%		
7.Level Of Maturity	Preterm	10	6	60.00%	4	40.00%	1.32	0.52
	Full term	9	4	44.44%	5	55.56%		
	Post term	1	1	100.00%	0	0.00%		
8.Week Of Gestation	Less than 27	1	1	100.00%	0	0.00%	5.18	0.26
	28-30	1	0	0.00%	1	100.00%		
	31-33	3	3	100.00%	0	0.00%		
	34-36	3	2	66.67%	1	33.33%		
	Above 36	12	6	50.00%	6	50.00%		

Table No.6: Association between levels of weight among LBW and demographic variables of experimental group in post intervention   N =40

Demographic variable	Category	Sample	Level of weight less than average weight		Level of weight more than average weight		χ 2	P
			N	%	N	%		
1.Age at enrollment	0-5	12	5	41.67%	7	58.33%	2.33	0.50
	6-11	2	1	50.00%	1	50.00%		
	13-17	2	2	100.00%	0	0.00%		
	18-23	4	2	50.00%	2	50.00%		
2.Gender	Male	12	6	50.00%	6	50.00%	0.00	1.00
	Female	8	4	50.00%	4	50.00%		
3.Apgar Score during birth	Less than 3	2	2	100.00%	0	0.00%	2.4	0.30
	4-6 score	3	1	33.33%	2	66.67%		
	7-10 score	15	7	46.67%	8	53.33%		
4.Weight of Baby during birth	**1000 gms-1500gms**	**3**	**3**	**100.00%**	**0**	**0.00%**	**20.00***	**0.00**
	1501gms-2000gms	**7**	**7**	**100.00%**	**0**	**0.00%**		
	2001gms-2500gms	**10**	**0**	**0.00%**	**10**	**100.00%**		
5.Feeding After Delivery	I/V fluids	3	2	66.67%	1	33.33%	3.75	0.44
	Breast feeding	11	5	45.45%	6	54.55%		
	Supplementary	3	1	33.33%	2	66.67%		
	Others	3	2	66.67%	1	33.33%		
6.No. of Feeds per day	No oral feeds	3	3	100.00%	0	0.00%	5.60	0.133
	Less than 3 times	1	1	100.00%	0	0.00%		
	4-7 times	1	0	0.00%	1	100.00%		
	8-12 times	15	6	40.00%	9	60.00%		
7.Level Of Maturity	Preterm	10	6	60.00%	4	40.00%	2.4	0.301
	Full term	9	3	33.33%	6	66.67%		
	Post term	1	1	100.00%	0	0.00%		
8.Week Of	Less than 27	1	0	0.00%	1	100.00%	5.67	0.22

Gestation	28-30	1	0	0.00%	1	100.00%		
	31-33	3	3	100.00%	0	0.00%		
	34-36	3	2	66.67%	1	33.33%		
	Above 36	12	5	41.67%	7	58.33%		

DISCUSSION

The table.2.illustrated that there was more weight gain in LBW above 2000gms-less than 2500gms where as there was moderate weight gain above 1000gms-less than 2000gms weight LBW. The study depicted mean weight before oil massage was 1.79gm whereas after oil massage was 1.91 gm, t-test was done which calculated value was 3.32 with level of significant of 5% and degree of freedom was 19. The study shows that there is statistically significant in weight gain of low birth weight babies after doing oil massage. Similarly, table 2.1 shows there was steady increase in weight on daily basis except day 4. These findings are supported with studies from other alumni Oraban Raga Bayomi and Nahed Saied EI- Nagger; Effect of applying massage therapy on physical, physiological and behavioral states of premature; in which onset weight of the neonate was 2.09 ± 0.17 kg (mean$\pm$ SD) and after oil massage was 2.56 ± 0.73 kg. It shows remarkable differences between pre and post application of massage[17].Similarly, the study conducted by John N I Dieter, Tiffany M. and et al suggest that the weight gain by massage group was 53% greater than the control group daily [18].There are several studies which depicts similar result like study conducted in Sudan illustrate weight as well as less stay of hospital for those group getting oil massage.

Table no.4 showed that the mean weight of experimental group before was 1.79gm (SD=0.35) which is less than that of LBW 2.01gm (SD=0.38) but after doing intervention there was weight gain in experimental group i.e. 1.91gm (SD=0.39) and there was weight loss in control group i.e.1.79 gm (SD=0.35). The average mean weight gain by LBW after oil massage therapy was 0.13gm (SD=0.17) and average weight loss by control group was 0.07gm (0.07).

Hence, the above result is supported by the study on the effect of massage with medium-chain Triglyceride oil on weight gain in low birth premature Neonate was conducted among 121 stable low birth preterm neonates in NICU of Qaem Educational Hospital, Mashhad, Iran in which sample was divided into three groups: oil massage, massages alone, and control groups as well as compared on the basis of weight gain within a week. The mean weight gain on the 7th day in the oil massage group was 105 ± 1.3gm and 52 ± 0.1gm in the massage group; whereas 54 ± 1.3gm weight loss was observed in the control group.[15]

The study showed there is no any significance difference between demographic variable in weight gain of LBW except weight of baby during birth in with 5% level of significance in different p value as well as degree of freedom before and after intervention which is given in table no.5 and 6.

The above result is supported by an experimental study on the effectiveness of coconut oil massage on weight gain among low birth weight newborns was conducted in NICU and pediatric ward at tertiary level hospital at metro city which consist 60 samples. Coconut oil applied to the LBW for 2 times a day with the duration of 15 minutes to the experimental group for 5 days where as control group did not received. The study showed that there was no any association between demographic variables of the new born and weight gain at p<0.05 level except sex of the new born in experimental group.[16]

CONCLUSION

Based on the result of this study, the evidence-based approach was strongly recommended to provide the care of LBW babies in gaining weight. The study strongly support that oil massage therapy is safe non medical care and effective strategy to improve the LBW growth and development.

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