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Effectiveness of Coconut Oil Massage on Weight Gain among Low Birth Weight Newborns

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Abstract:

The birth of newborn is one of the most awe inspiring and emotional events that can occur in one's life time. Infants born at term or post term may weigh less than 2500gms is considered to be low birth weight babies. Approximately 80% of neonatal deaths and 50% of infant deaths are related to low birth weight.

Aim: *The aim of this study was to assess the effectiveness of coconut oil massage on weight gain among low birth weight newborns.*

Method: *After-only with control group experimental design was adopted. Total sample size was sixty newborns. Thirty new born in experimental group and remaining thirty of them in control group. Using convenient sampling technique newborns with the birth weight of 2000 to 2500gms and the age between 8-28days were included in the study. The procedure was 20 ml of coconut oil applied to the entire body of the newborns for 2 times a day with the duration of 15 minutes to the experimental group for five days. The control group was not received the oil massage. Weight gain was assessed by electronic infant weighing scale. The data were analyzed using descriptive and inferential statistics.*

Results: *The mean value was 4.5 with a standard deviation of 3.65 in experimental group and 2.03 mean with the standard deviation of 0.7 in the control group and the calculated't' value was 3.21 which shows that there was significant difference between experimental and control group at P< 0.01 level.*

Conclusion: *The findings of the study revealed that there was a significant weight gain among low birth weight newborns who were received coconut oil massage.*

Keywords: ***Low Birth Weight Newborns; Coconut Oil; Massage; Weight Gain***

Introduction

The miracle of human life begins at conception and continues throughout the life. According to WHO "Low birth weight is defined as one that birth weight is 2500 grams or less irrespective of the gestational age". The baby with less weight is more vulnerable and need special care. About 10% of all low birth weight babies require admission to the special care nursery (Parul Datta, 2007).

Low birth weight babies are more prone to develop the complications like malnutrition, infections, neuro developmental handicapped conditions, impaired immune function and increased risk of diseases. They are more vulnerable to get hypertension, diabetes mellitus, and coronary artery diseases in adult life. They also tend to have reduced muscle strength, cognitive disabilities, lower intelligent level in school and their job opportunities as adult (Susan & James, 2010).

Prevention and reduction in incidence of low birth weight babies is the most important strategy to reduce perinatal, natal and infant mortality rates and improve the quality of life among those who survive. Breast feeding, expressed breast feeding, spoon or paladai feeding and intravenous dextrose solution can be given to low birth weight babies for gaining their weight. But these interventions take longer time to gain weight.

(Dr. Anjali Kulkarini, 2010) Neonatal and Infant massage was first introduced in China in 2nd century BC. Massaging the newborn has been a tradition in India and other Asian countries since time immemorial. Massage therapy is the manipulation of soft tissues. The word "massage" derived from the latin word 'massa' or 'green massein' or ' masso'. Massage therapy is a natural and almost instructive way of care. By lightly touching and rubbing the entire body causes comfort both physically and mentally. The practice of neonatal massage helps to improve the growth and development of low birth weight neonates. Various oil-based preparations have been used depending on the regional availability.

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As evidenced in recent years coconut oil massage to low birth weight babies' skin can be absorbed systematically and serve nutritional purposes. Serum triglycerides level were significantly raised in the blood, thus improves weight gain among low birth weight babies who received coconut oil application (Field et al 2003).

Another study was conducted on compare the effect of massage with coconut oil versus mineral oil and placebo on growth velocity. The open randamized controlled trial was conducted in neonatal care unit and the post-natal ward of a major tertiary care centre in a metropolitan city. A total of 224 babies (112 preterm and 112 term babies) were enrolled. The researchers observed that weight in the coconut oil group was significantly higher as compared to the mineral oil and placebo group. The weight gain was 9.19 +/- 1.55 gms/kg/day in term neonate group who applied coconut oil. They concluded that the weight gain velocity was significantly higher in the coconut oil group as compared to the other subgroups and the difference was statistically significant. (Sankaranarayanan et al 2003)

(Dr. D. R. Dabi and Usha Kothari, 2009) evaluated the effect of coconut oil massage on low birth weight neonates. 26 matched neonates served as controls. 15 minutes of oil massage was carried out two times a day for 5 days, starting from 8th day to 12th day after birth. The results shown that weight gain was there when compared with control group. And the researchers concluded coconut oil massage stimulates growth velocity.

(Uvnas-Moberg, 1987) reported that coconut oil massage might promote growth of the newborn. The mechanism by which coconut oil massage increased vagal activity and secretion of insulin and gastrin improving the absorption of food.

(Stance equine, 2011) Physical properties of coconut oil contain predominantly medium chain triglycerides with roughly 92% saturated fatty acids, 6% of monounsaturated fatty acids and 2% of poly unsaturated fatty acids. Coconut oil is primarily 44.6% lauric acid, 16.8 % of myristic acid, 8.2% palmitic acid and 8% of caprylic acid.

Coconut oil is light, non – greasy liquid oil. It consists of more than 90% of saturated fats. But it will not harmful as it happens in case of other vegetable oils. It does not increase the low density lipoprotein level. Most of them are medium chain triglycerides. These triglycerides provide better weight gain. Coconut oil is less pricey and easily available.

The other benefits of the coconut oil massage includes stimulation of circulatory system, less stress behavior, neurological and neuromotor development, improved sleep, thermoregulation, improved skin condition and barrier function, resulting in reduced loss of transepidermal water and transcutaneous absorption of fatty acids contributing to improved nutrition and better somatic growth.

During the clinical experience the researcher observed that the low birth weight babies getting admission in NICU took long time to gain weight inspite of proving interventions like expressed breast feeding or breast feeding, putting the baby under warmer and giving kangaroo care. This lead to a lengthier hospital stay, high expenses and the chance of getting nasocomial infection.

Thus the researcher interested in doing a study regarding coconut oil massage on weight gain which is cheaper, non-invasive, has no side effects and traditionally acceptable.

Methodology

Research design adopted for this study was after-only with control group experimental design. Newborns with the birth weight between 2000 to 2500gms who were admitted in the NICU and pediatric ward were selected by using of convenient sampling technique. Newborn who has skin infection and under ventilator support were excluded in this study. Total sample size was sixty newborns. Among thirty of them in experimental group and remaining thirty new born in control group.

Description of Tool

It consists of three sections includes Section- A Background data of mother (age of the mother, type of family, income of the family, mode of delivery and weight gain by the mother during pregnancy) Section-B Background data of newborn (age of the newborn, sex of the newborn, birth weight of the newborn, gestational age, type of feeding, health status of the newborn and congenital anomalies) and Section-C Electronic Infant Weighing Scale. Electronic Infant Weighing Scale especially adapted for use as a pediatric or infant scale which was invented by TUSHMUT and WALTER.P. The tool was standardized, universally acceptable and reliable.

Newborns with low birth weight were selected by using convenient sampling method according to the inclusive criteria after obtaining the consent from the mother of the newborns. The researcher collected the newborns demographic data from the medical records. The procedure was 20 ml of coconut oil applied to the entire body of the newborns for 2 times a day with duration of 15 minutes to the experimental group. The control group was not received the oil massage. After 5 days of coconut oil massage assessed the newborns weight with Electronic infant weighing scale.

Results

The data has been tabulated and organized as follows:

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Table 1: Frequency and Percentage distribution of demographic variables of mothers

Sl. No	Demographic variable	Variables	Experimental group		Control group	
			N	%	N	%
1	Age	15 -25 yrs	14	46.6	19	63.3
		26 -35 yrs	16	53.3	11	36.6
2	Type of family	Nuclear	13	43.3	12	40
		Joint	17	56.6	18	60
3	Family income	< Rs 6000	7	23.3	9	30
		> Rs 6000	23	76.6	21	70
4	Mode of delivery	Vaginal	9	30	10	33.3
		LSCS	21	70	20	66.6
5	Weight gain during pregnancy	1 -6 kg	0	0	1	3.3
		7 – 12 kg	30	100	29	96.6

Table 2: Frequency and Percentage distribution of demographic variables of newborns

S. No	Demographic variable	Variable	Experimental group		Control group	
			N	%	N	%
1	Age	8 - 18 days	18	60	19	63.3
		19 – 28 days	12	40	11	36.6
2	Sex	Male	12	40	12	40
		Female	18	60	18	60
3	Birth weight	2000 -2250 gms	16	53.3	19	63.3
		2251 -2500 gms	14	46.6	11	36.6
4	Gestational age	37 -38 weeks	17	56.6	22	73.3
		39 -40 weeks	13	43.3	8	26.6
5	Type of feeding	Breast feeding	26	86.6	26	86.6
		Formula feeding	4	13.3	4	13.3
6	Health status	Healthy	27	90	21	70
		Unhealthy	3	10	9	30
7	Congenital anomalies	Present	0	0	0	0
		Absent	30	100	30	100

Table 3 Comparison of weight gain between the experimental and control group n=30+30

S. No	Group	Post intervention score			't' value	P-value
		Mean	S.D.	Mean difference		
1	Experimental group	4.5	3.65	2.47	3.21**	2.56
2	Control group	2.03	0.7			

**P<0.05, **P<0.01, ***P<0.001 S: Significant*

Association of weight gain of the experimental and control group with demographic variables of the mother

In experimental group, the calculated chi –square value was 0.587, 0.134, 0.184, 0.156 and in control group was 0.271, 0.191, 0.878, 0.136, 0.087 respectively which showed that there was no association between demographic variables of the mother and weight gain at p<0.05 level.

Association of weight gain of the experimental group and control group with demographic variables of the Newborn

In experimental group, the calculated chi –square value was 0.555, 8.886, 2.142, 0.134, 0.368 and in control group was 0.282, 0.432, 0.348, 1.273, 0.577, 0.047 respectively which showed that there was no association between demographic variables of the newborn and weight gain at p<0.05 level except sex of the newborn in experimental group.

Discussion

Birth weight is the single most important criterion for determining the neonatal and infant survival. In India 30 – 35% babies are born with low birth weight. WHO estimates that 30 million low-birth-weight babies born annually

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(23.8% of all births) often face severe short- and long-term health consequences. Low birth weight is a major determinant of mortality, morbidity and disability in infancy and childhood and also has a long-term impact on health outcomes in adult life.

The present study results revealed that the low birth weight newborns who were received coconut oil massage had a significant weight gain compared to the low birth weight newborns who were not received coconut oil massage. **Javadifar N (2008)** the above result was supported by a study that the effectiveness of massage with coconut oil on weight gain of low birth weight newborns. The study is a clinical trial which was carried out on 72 healthy low birth weight neonates. This study showed that massage with coconut oil is an effective and valuable method in weight gain in low birth weight neonate.

Arora J (2005) the randomized controlled trial was stated about the effect of coconut oil massage on growth in low birth weight infants. The study was conducted in tertiary level neonatal unit of a teaching hospital. The subjects were infants with birth weight of less than 2500 grams. Eligible neonates were randomized to one of the three groups such as massage with coconut oil, massage without oil and no massage. Weight, length, head circumference and triceps skin fold thickness were measured in three groups at regular intervals. Serum triglycerides levels were measured at enrolment and at completion. The results shown that weight gain in the coconut oil massage group was higher compared to the only massage group and no massage group. The researcher concluded that coconut oil massage have a potential to improve weight gain among low birth weight infants.

In summary, based on the findings of the present study the following recommendations are made: Similar study can be replicated on a large sample, study can be conducted in pre – term newborns and study can be conducted to assess the effectiveness of coconut oil massage on less stress behavior, neuro motor development, infant parent bonding and improved sleep. A potential limitation of the study is that the study was limited to the small sample size. Generalization could be better if large samples are included. Further comparative study can be conducted by using coconut oil versus other different oils to weight gain.

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