

# Effectiveness of Oil Massage on Weight Gain and Selected Physiological Parameters among Preterm Babies in Selected Hospitals

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**Abstract:** *Premature babies experience problems like difficulty in breathing due to immature lungs, difficulty in maintaining body temperature, problems in feeding due to difficulty in sucking or coordinating breathing and swallowing and increased risk of infection. A baby that is born prematurely often has a low birth weight. Premature babies have more difficulty gaining weight because they use the available calories for healing as well as growing. For newborn babies, weight gain is one indicator of health. While most newborn babies initially lose a little weight, Medline Plus advises that most premature infants should start showing signs of weight gain within a few days after birth. Tiny infants may gain only 5g a day, while larger premature babies may see a daily weight gain around 20g. Infant Massage is found to be more useful when some kind of lubricant oil is used. Various oil preparations are used depending on the regional availability; the common oils used are safflower and coconut oil. It has been shown that infant massage accelerates recovery of the skin barrier function, improve weight, improve skin condition and reduce the risk barrier function and neonatal mortality. Methodology: A quasi-experimental-non equivalent control group design was adopted to assess the effectiveness of oil massage on weight gain among preterm babies in selected hospitals, at Nellore, Andhra Pradesh. The sample size was 60 preterm babies and the purposive sampling was used for selection of subjects. Among them 30 preterm babies were assigned to experimental group and 30 to control group. Pre test was done by using Questionnaire to obtain socio demographic data of child and mother and observational checklist to assess physiological parameters and daily weight monitoring. Following the pre test, intervention with infant massage was given to the preterm babies in the experimental group with oil massage with naturally available coconut oil of 15-20ml/kg/body wt/session in 2 phases of tactile and kinaesthetic stimulation for 3 times in a day for 15 mts for 7 days. Post test was done on 8th day for the babies in both experimental and control group with the same electronic weighing machine to assess the effectiveness of oil massage and same observation checklist for assessing selected physiological parameters. Results: The study shows that majority of preterm babies in experimental group, were 20(66.7%) babies had 10-30gms of weight gain, 8(26.6) babies had 31-60gms of weight gain and 2(6.7%) babies had more than 60gms of weight gain after oil massage therapy whereas in control group 29(96.7%) babies had no weight gain and 1(3.3) baby had 10-30gms of weight gain without oil massage therapy. The calculated value of independent 't' test is 1.94 and table value is 1.69 at P=<0.05. The calculated value is greater than the table value, so the null hypothesis is rejected and research hypothesis is accepted. The study shows that there is statistically significant weight gain after massage therapy among preterm babies in experimental group when compared to control group. Conclusion: Oil Massage is found to be more effective in improving the weight of preterm babies.*

**Keywords:** Oil massage, Weight gain, preterm babies, Infant massage, physiological parameters

## 1. Introduction

Regardless of whether labour is long or short, whether it is hard or easy whether a baby is born vaginally or by caesarean, most parents recall the first hours and days after birth as crystal –clear images surrounded by haze. Falling into the normal range for size is a good start for an infant, suggesting good health. But, each baby is different, and even though which fall a bit outside the normal range are usually fine<sup>1</sup>.

Premature babies experience problems like difficulty in breathing due to immature lungs, difficulty in maintaining body temperature, problems in feeding due to difficulty in sucking or coordinating breathing and swallowing, jaundice, and increased risk of infection at birth.<sup>2</sup>

A baby that is born prematurely often has a low birth weight. Premature babies have more difficulty gaining weight because they use the available calories for healing as well as growing. For newborn babies, weight gain is one indicator of health. While most newborn babies initially

lose a little weight, Medline Plus advises that most premature infants should start showing signs of weight gain within a few days after birth. Tiny infants may gain only 5g a day, while larger premature babies may see a daily weight gain around 20g. Much of the weight loss is loss of water because the baby is no longer surrounded by fluid. Sometimes very sick babies gain weight in the first few days. Usually a baby does not regain their birth weight until two or more weeks of age. Factors contributing to this initial loss are the withdrawal of hormones originally obtained from the mother, the low intake of fluid, and the loss of fluid in faeces & urine<sup>3</sup>.

Infant Massage therapy consists of 2 phases of tactile and kinaesthetic stimulation. In tactile stimulation first phase, the baby is placed prone and 12 strokes of 5 sec each is provided starting from head, neck, shoulder to buttocks; second phase the baby is placed supine 12 strokes of 5 sec each was given starting from face, cheeks, chest, abdomen, upper limb, lower limb, palms and soles. The phase of kinesthetic stimulation in which alternate flexion and extension movements are performed at major joints like

ankle, knee, elbow and shoulder. Tactile and kinaesthetic stimulation consistently associated with increases in vagal activity and gastric motility that may underlie the effects of massage therapy on preterm infant weight gain, but also a greater increase in serum insulin and IGF-1 levels, suggesting that massage therapy might be prescribed for all growing neonates<sup>4</sup>.

Infant Massage is found to be more useful when some kind of lubricant oil is used. Various oil preparations are used depending on the regional availability; the common oils used are safflower and coconut oil. It has been shown that massage accelerates recovery of the skin barrier function, improve weight, improve skin condition and reduces the risk barrier function, improve weight gain, and improve skin condition and neonatal mortality.

## 2. Statement of the Problem

A study to evaluate the effectiveness of oil Massage on weight gain and selected physiological parameters among preterm babies in selected Hospitals, Nellore, A.P.

## 3. Objectives

1. To assess the physiological parameters weight of preterm babies
2. To evaluate the effectiveness of oil massage on weight gain and physiological parameters of preterm babies in experimental group.
3. To compare the effectiveness of oil massage on weight gain and physiological parameters of preterm babies in experimental group and control group.
4. To associate the effectiveness of oil massage on weight gain of preterm babies with their selected socio demographic variables.

## 4. Hypotheses

**H<sub>0</sub>:** There is no statistically significant difference between the mean pretest and post test weight after the oil massage gain among preterm babies in experimental group and control group.

## 5. Materials and Methods

A quasi-experimental-non equivalent control group design was adopted to assess the effectiveness of oil massage on weight gain among preterm babies in selected hospitals, at Nellore, Andhra Pradesh. The sample size was 60 preterm babies and the purposive sampling was used for selection of subjects. Among them 30 preterm babies were assigned to experimental group and 30 to control group. Pre test was done by using questionnaire to obtain socio demographic data of child and mother and observational checklist to assess physiological parameters and daily weight monitoring. Following the pre-test, intervention with infant massage was given to the preterm babies in the experimental group, i.e., Oil massage was given with naturally available coconut oil of 15-20ml/kg/body wt/session in 2 phases of tactile and kinaesthetic stimulation for 3 times in a day with duration of 15 min,

for 7 days .Post test was done on 8<sup>th</sup> day to assess the effectiveness of oil massage and same observation checklist for assessing selected physiological parameters and daily weight monitoring was done.

## 6. Ethical Clearance

Ethical clearance was obtained from the institutional Ethics Committee.

### Plan for Data Analysis

Data analysis was done using descriptive statistics and inferential statistics.

### Descriptive Statistics

Frequency and percentage distribution: - To assess the frequency and percentage distribution of socio demographic variables of preterm babies and mothers.

### Mean & Standard Deviation

To compare the pre-test and post test scores of weight and selected physiological parameters of preterm babies in experimental and control group.

### Inferential statistics

**Chi-square test:** - To associate the effectiveness of oil massage on weight gain of preterm babies with their socio demographic variables.

**Paired t- test:** - To compare the pretest and post test scores of weight and selected physiological parameters among preterm babies in experimental and control group.

**Independent t- test:**-To compare the post test scores of weight and selected physiological parameters among preterm babies in experimental and control group.

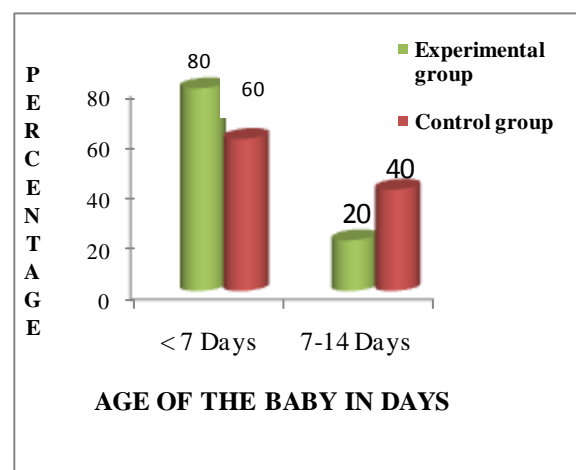


Figure 1: Percentage distribution of preterm babies Based on Age

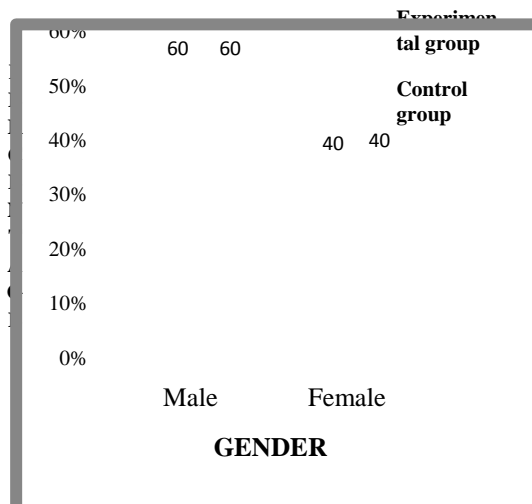


Figure 2: Percentage distribution of preterm babies Based on gender

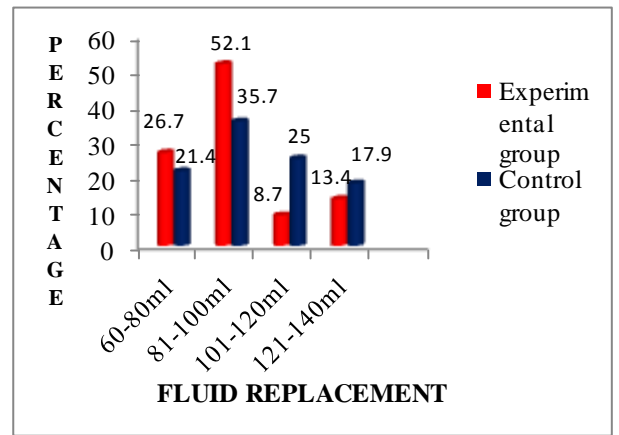


Figure 5: Percentage distribution of preterm babies based on fluid replacement

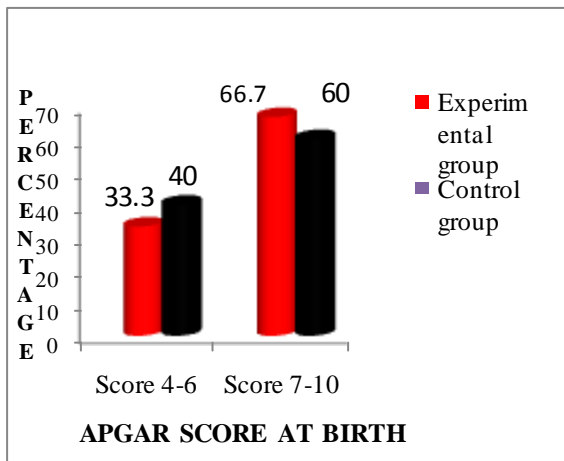


Figure 3: Percentage distribution of preterm babies based on APGAR score at birth

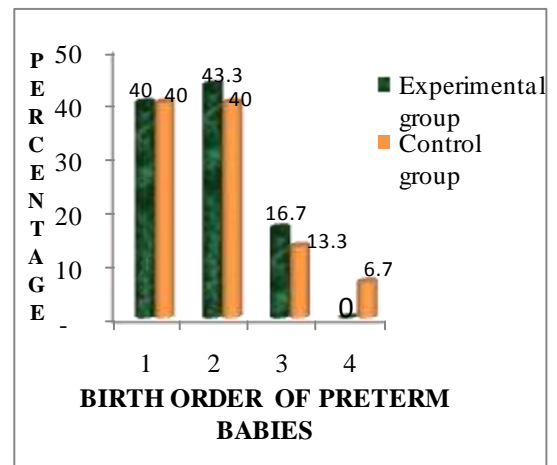


Figure 6: Percentage distribution of preterm babies based on birth order

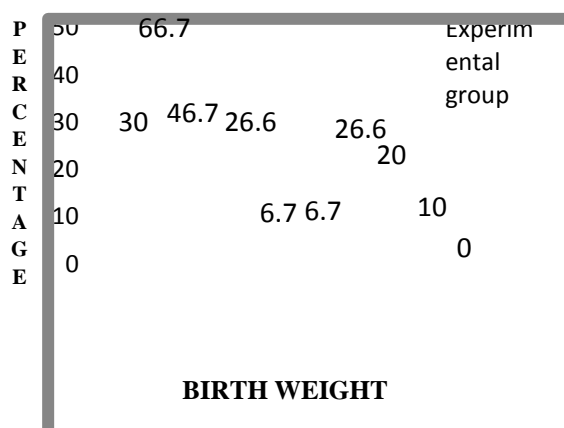


Figure 4: Percentage distribution of preterm babies based on birth weight

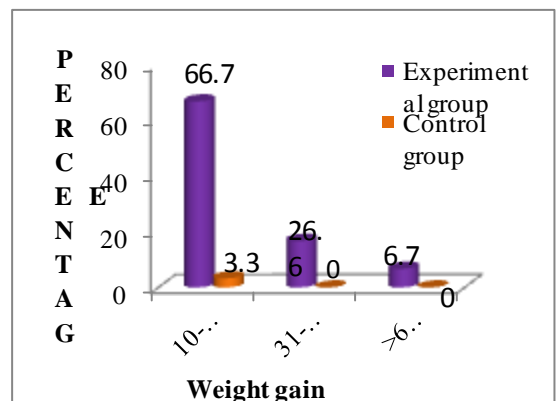


Figure 7: Percentage distribution based on weight gain of preterm babies

**Table 1:** Comparison of mean and standard deviation of pre test and post test scores of physiological parameters of preterm babies in experimental group

| S. n | Physiological parameters | Pretest |      | Post test |      | Paired 't' value        |
|------|--------------------------|---------|------|-----------|------|-------------------------|
|      |                          | Mean    | SD   | Mean      | SD   |                         |
| 1    | Temperature              | 98.8    | 0.36 | 98.83     | 0.42 | 0.37 (NS)               |
| 2    | Pulse                    | 145.6   | 5.77 | 146.13    | 22.8 | 2.11 (S <sup>**</sup> ) |
| 3    | Respiration              | 45      | 4.18 | 42.26     | 4.86 | 2.24 (S <sup>**</sup> ) |

S<sup>\*\*</sup> significant at  $p < 0.01$ ,  $df_{(n-1)} = 29$   
 NS - Non Significant at  $p < 0.05$ ,  $df_{(n-1)} = 29$

## 7. Discussion

### Description of Demographic Variables of Preterm Babies

Among 60 samples majority of babies with regard to age in experimental group 24 (80%) babies were less than 7 days and in control group 18 (60%) babies were less than 7 days.

With regard to gender in experimental group and control group 18(60%) were male babies and 12(40%) are female babies respectively. With regard to APGAR score at birth, in experimental group, 20 (66.7%) babies had score between 7-10 and in control group, 18 (60%) babies had score between 7-10.

With regard to the birth weight of child 9 (30%) weighed between 1701-1900gms. And in control group 14 (46.7%) weighed between 1500-1700gm.

With regard to type of feeding, in experimental group 17(56.7%) were on breastfeeding. In control group 16 (53.4%) were on breast feeding.

With regard to fluid replacement 12 (52.1%) received 81-100ml. In control group 10 (35.7%) received 81-100ml.

With regard to birth order of child, in experimental group, 13 (43.3%) were 2<sup>nd</sup> born and in control group 12 (40%) were 1<sup>st</sup> born 12 (40%) were 2<sup>nd</sup> born.

### Findings related to weight gain of preterm babies

In experimental group 20(66.7%) babies gained 10-30gms of weight, 8(26.6) babies gained 31-60gms of weight and 2(6.7%) babies gained more than 60gms of weight after oil massage therapy.

In control group 29(96.7%) babies had no weight gain and 1(3.3) baby gained 10-30gms of weight gain without oil massage therapy.

### Findings related to effectiveness of oil massage on weight gain of preterm babies in experimental group

In experimental group the pre test mean is 1.91 with standard deviation of 0.3. The post test mean is 1.95 with Standard deviation of 0.3. The calculated value of paired 't' test is 9.7 and table value is 2.46 at  $p < 0.01$ . The calculated value is greater than the table value, so the null hypothesis is rejected and research hypothesis is accepted.

### Comparison of post test weight between preterm babies in experimental group and control group

In experimental group the mean was 1.92 with SD of 0.29 where as in control group the mean was 1.82 with SD of 0.21. The calculated value of independent 't' test was 1.94 and table value is 1.69 at  $P < 0.05$ . The calculated value is greater than the table value, so the null hypothesis is rejected and research hypothesis is accepted. The study shows that there is statistically significant weight gain among preterm babies in both experimental group compared to control group.

**Findings are consistent with randomised controlled trial conducted by Kumar J, Upadhyay** to find the effect of oil massage on growth in preterm babies less than 1800g. Neonates with birth weight < 1800 g, gestation < 35 wk of age at enrolment were included in the studies. Eligible neonates were randomized to one of the two groups (a) Oil massage along with standard care of low birth weight (b) Standard care of low birth weight without massage. Results of this study reveal that Mean (SD) weight of babies in the two groups was  $1466.4 \pm 226.8$  g in oil massage group and  $1416.6 \pm 229.9$  g in the control group. At 28 d, weight gain in the oil massage group ( $476.76 \pm 47.9$  g) was higher compared to the control group ( $334.96 \pm 46.4$  g) ( $p < 0.05$ ). At 7 d, less weight loss ( $7.80 \pm 9.8$  g) was observed in babies in oil massage group compared to control group ( $21.52 \pm 19.4$  g) ( $p = 0.003$ ). The study concluded that oil application has a potential to improve weight gain and cause less weight loss in first 7 days in low birth weight neonates.

### Association of effectiveness of oil massage on weight gain of preterm babies with their selected socio demographic variables:

There was significant association between the effectiveness of oil massage on weight gain among preterm babies with their socio demographic variables like age of the baby, and APGAR score at 5<sup>th</sup> minute of birth.

## 8. Recommendations for Further Research

1. A similar study can be replicated on large sample size, in different settings.
2. A study can be conducted to compare the effectiveness of coconut oil versus mineral oil among preterm babies.
3. Structured teaching programme can be conducted on knowledge and practices regarding oil massage among mothers of infants various health settings.
4. A true experimental study can be conducted to assess the effectiveness massage on neuro behavioral responses among pre term babies.

## 9. Conclusion

Massage seems to be a promising solution to improve the growth and development of preterm babies. It is beneficial in many ways, such as increase skin integrity, shorten hospital stay, weight gain, and prevent hypothermia, enhances bonding between parent and child and also

prevents complications. Numerous studies and also present research scholar suggest that oil massage is safe and beneficial practice. From the evidence present in this paper, it is clear that, oil massage would be a safe, cost effective.

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