



INTERNATIONAL JOURNAL OF ADVANCE RESEARCH, IDEAS AND INNOVATIONS IN TECHNOLOGY

ISSN: 2454-132X

Impact factor: 4.295

(Volume 5, Issue 3)

Available online at: www.ijariit.com

A study to evaluate the effect of coconut oil massage on weight gain among low birth weight term neonates admitted in special newborn care unit of IGMCH, Shimla, Himachal Pradesh

Kiran Thakur

thakur.arki.kiran@gmail.com

Eternal University, Sirmour, Himachal Pradesh

Isha Thakur Dharni

ishadharni88@gmail.com

Eternal University, Sirmour, Himachal Pradesh

ABSTRACT

Introduction: Birth of the newborn is one of the most emotional events that occur in one's lifetime. LBW is a major problem in developing countries which lead to child morbidity and mortality. Massage therapy is being used in some intensive care unit for its potential effects on the health of the neonates. **Objective:** Study was aimed to enhance the health of low birth weight neonates through the massaging technique with coconut oil. **Methods:** Study design is pretest-post-test control group, 17 low birth weight term neonates in experimental and 17 in control group) admitted in Special Newborn Care Unit of IGMCH, Shimla (H.P) were selected as study participants. Data was collected regarding background information. **Results:** Data analysis was done with descriptive and inferential statistics. The findings of the study showed that in experimental group weight gain mean score was 0.02 and in control group was 0.01. The mean difference was 0.013 which shows that there is a significant difference in the weight gain between the experimental and control group. **Discussion:** The results of the suggest that study showed that there was significant weight gain in low birth weight term neonates after coconut oil massage in the experimental group and it shows that coconut oil improved the weight gain among the low birth weight term neonates. It is important to need to focus on complementary therapies which can be used to improve growth and development parameters among low birth weight neonates.

Keywords— Low birth weight, neonates, weight gain

INTRODUCTION

“Touching is the first communication a baby receives and the first language of its development is through the skin.”

-Frederick Leboyer

1. 1 Introduction and background

Low birth weight is one of the main determinants of neonatal and postnatal morbidity. Low birth weight infants are admitted in the Neonatal Intensive Care Unit because they are at risk of various complications like poor weight gain, hypothermia, breathing problems¹.

Low birth weight is defined by the World Health Organization as a birth weight of infant of 2,499 g or less, regardless of gestational age². The subcategories include very low birth weight less than 1500 g (3 pounds 5 ounces), and extremely low birth weight less than 1000 g (2 pounds 3 ounces). Normal weigh at term delivery is 2500–4200 g (5 pounds 8 ounces – 9 pounds 4 ounces) in India³.

Indian form of newborn massage is a treasure and very popular all over the world. Massage with oil is more beneficial as compared to massage without oil. By using the oil for massage helps to prevent friction and abrasions on the skin. The oil we select for massage should be non-occlusive so that it does not block the skin pores and allows the skin to breathe freely⁴.

1.2 Need and significance of the study

LBW is a term used to describe babies who are born with birth weight < 2500gms and it is a major public health problem in the developing countries, and frequently related to child morbidity and mortality⁵. LBW is associated with multiple problems such as fetal and neonatal mortality or morbidity. The estimated proportion of LBW infants in India is 7.8%⁶. A report in 2015, according to National Centre of Health Statistics, globally 320,869 babies born with LWB (less than 2500 grams), 8.07% born extremely low birth weight, 1.40% born very low birth weight⁷.

1.3 Conceptual framework

Conceptual frame work is a group of concepts and a set of propositions that spells out the relationship between them. The conceptual framework selected for the study was based on Erenstine Wiedenbach’s “The helping Art of Clinical Nursing”. The conceptualization of nursing practice according to this theory consists of 3 steps as follows:

Step 1: Identifying the need for help.

Step 2: Ministering the need for help.

Step3: Validating that the need for help was met.

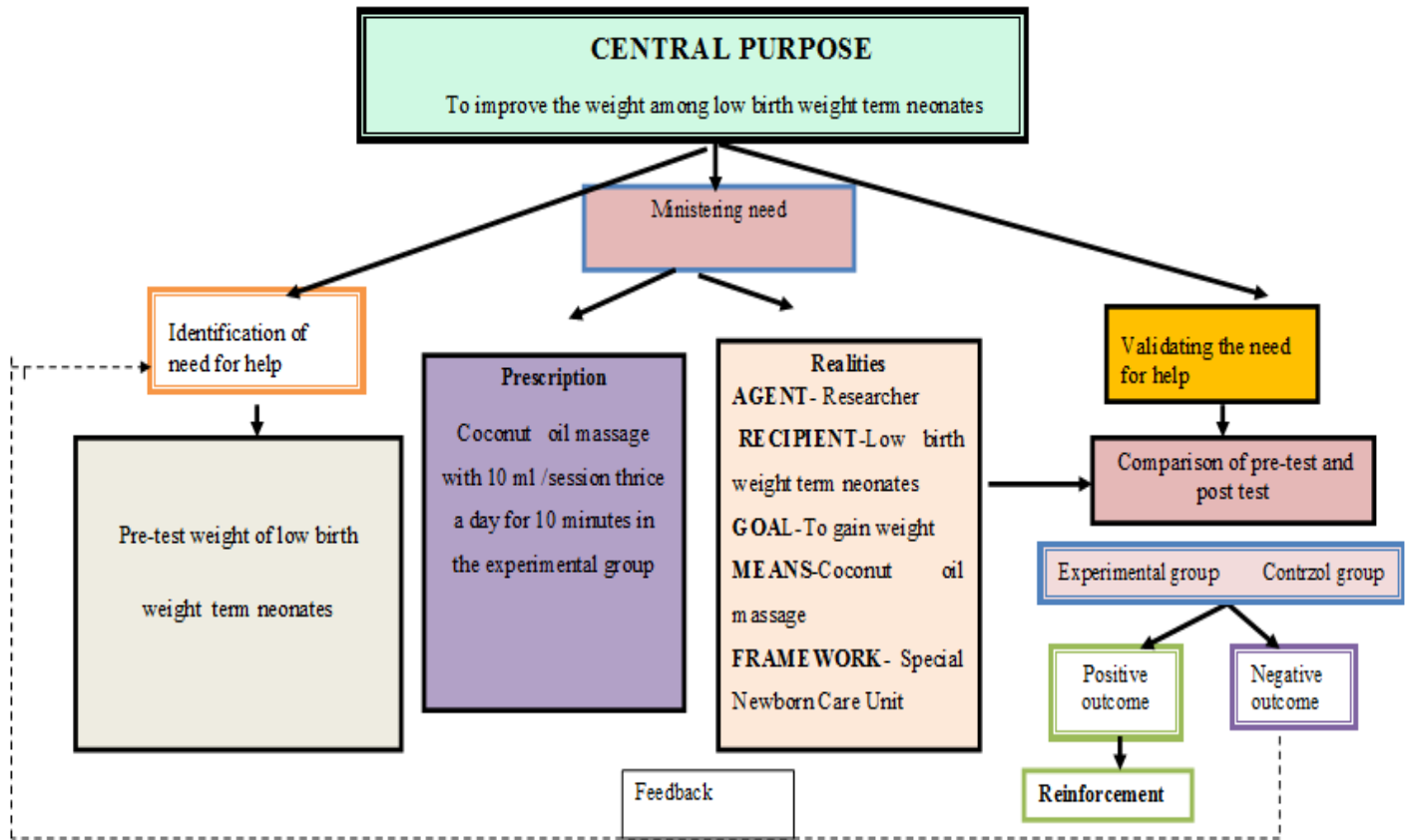


Fig. 1: Conceptual framework of the study based on Erenstine Wiedenbach’s “The Helping Art of Clinical Nursing”

2. REVIEW OF LITERATURE

Review of literature is divided into the following sections:

Section I- Reviews related to prevalence and the factors associated with low birth weight

Section II- Reviews related to the outcome of coconut oil

Section III- Reviews related to massage therapy

Section IV-Reviews related to effects of coconut oil massage on weight gain

3. RESERCH METHODOLOGY

The aim of the study was to assess the effect of coconut oil massage on weight gain among low birth weight term neonates admitted in Special Newborn Care Unit of IGMCH, Shimla . This chapter deals with the research methodology to find out the solution to the problem.

R A N D O M I Z A T I O N	Groups	Sessions of coconut oil massage	Day 1	Day 2	Day 3	Day 4	Day 5
	Expe rime ntal		10 min.	10 min.	10 min.	10 min.	10 min.
		Session 1 (morning)	O1 Rx1	O2 Rx1	O3 Rx1	O4 Rx1	Rx1
		Session 2 (afternoon)	Rx2	Rx2	Rx2	Rx2	Rx2
		Session 3 (evening)	Rx3	Rx3	Rx3	Rx3	Rx3 O5
	Control group		O1	O2	O3	O4	O5

Post test on 5th day

Fig. 2: The symbolic representation of the present study

3.1 Research design notation

E: Experimental group.

C: Control group.

O1: Pre -test observation of weight.

O5: Post- test observation of weight

Rx: Intervention (coconut oil massage)

3.2 Data collection instrument

Tool 1: Structured interview schedule to collect background information

Part –A. Socio-demographic variables of mother

Part–B. Clinical and demographic variables of low birth weight term neonates.

Tool 2: Weighing machine to check the weight of the low birth weight term neonates.

3.3 Description of independent variable- Coconut oil massage

Study objective: To evaluate the effect of coconut oil massage on weight gain among low birth weight term neonates. This objective is attained by giving the interventional protocol.

3.4 Mechanism of weight gain

Various mechanisms are postulated for the weight gain by neonates who receive the massage. Coconut oil contains oleic acid and it makes the skin more permeable but it is in a less amount (around 5-6% in coconut oil compared to 55% plus in olive oil). Coconut oil made up of lauric acid (around 48%), caprylic acid (9%) and linoleic acid (1-2%). According to Field et al. During the coconut oil massage among the low birth weight babies, skin absorbed the oil systematically and serves nutritional purposes. In the blood serum triglycerides level significantly increased, thus improves weight gain among the low birth weight babies who received the coconut oil massage⁸.

In this study, the massage therapy was given to the experimental group. Daily three massage sessions were performed per day for a period of 5 days in a conducive environment i.e.; a room with soft light, warm temperature, and low noise levels. The massage was given for 10 minutes with 10 ml amount of coconut oil.

3.5 Description of conventional care

Conventional care is the care in which the main focus is on treating the symptoms and the diagnosis. Conventional care includes various diagnostic tests, use of antibiotics, vaccines etc. In this study, conventional care was given for the control group for five days during the study and it includes weight checking, regular medicines or drugs, checking vital signs, breast feeding.

3.6 Pilot study

A pilot study was conducted in the month of January 2018. The pilot study was conducted on six samples which were allocated in two groups i.e. 3 in the experimental group and 3 in the control group in IGMCH, Shimla. After a pilot study in the background information variables were included i.e. route of feeding, a number of feedings per day and variables excluded were resuscitations e.tc.

3.7 Findings of the pilot study

Results of the pilot study show that the mean the difference between experimental and control group is 0.04 but there was no statistically significant difference in weight gain between the experimental and control group at 0.05 level of significance.

4. METHOD OF DATA COLLECTION

4.1 Sample selection

On a daily basis, researcher searched samples and made a pair as one in the experimental group and one in the control group by randomization (simple lottery method). 17 low birth weight term neonates were selected as a control group and 17 as an experimental group who meet the inclusion criteria. In both groups on recruitment, the information was given regarding the research study, its purpose, benefits and additional information related to the intervention was given to the experimental group, and informed written consent was obtained from all the study participants. From parents of participants in both groups, the data was collected regarding their background information.

4.2 Preparation of intervention

Firstly, coconut oil was kept under room temperature (25-29C). Articles collected which were needed. Took a measurable amount of coconut oil (10 ml) in a clean bowl measured by measuring cup.

On the first day, pre-test weight was checked and documented in the documentation sheet. Daily weight documentation was done on documentation sheet before doing the coconut oil massage. The researcher performed coconut oil massage for the experimental group for five consecutively days. Three sessions were performed per day and each session for 10 minutes with an amount of 10 ml coconut oil. Before the application of steps of the interventional protocol, prepared them for coconut oil massage and comfort was provided and put them under the radiant warmer with skin mode of temperature control. In the control group, conventional care was given for five days. On the 5th day post test was conducted for both groups. The documentation of weight was done by the researcher.

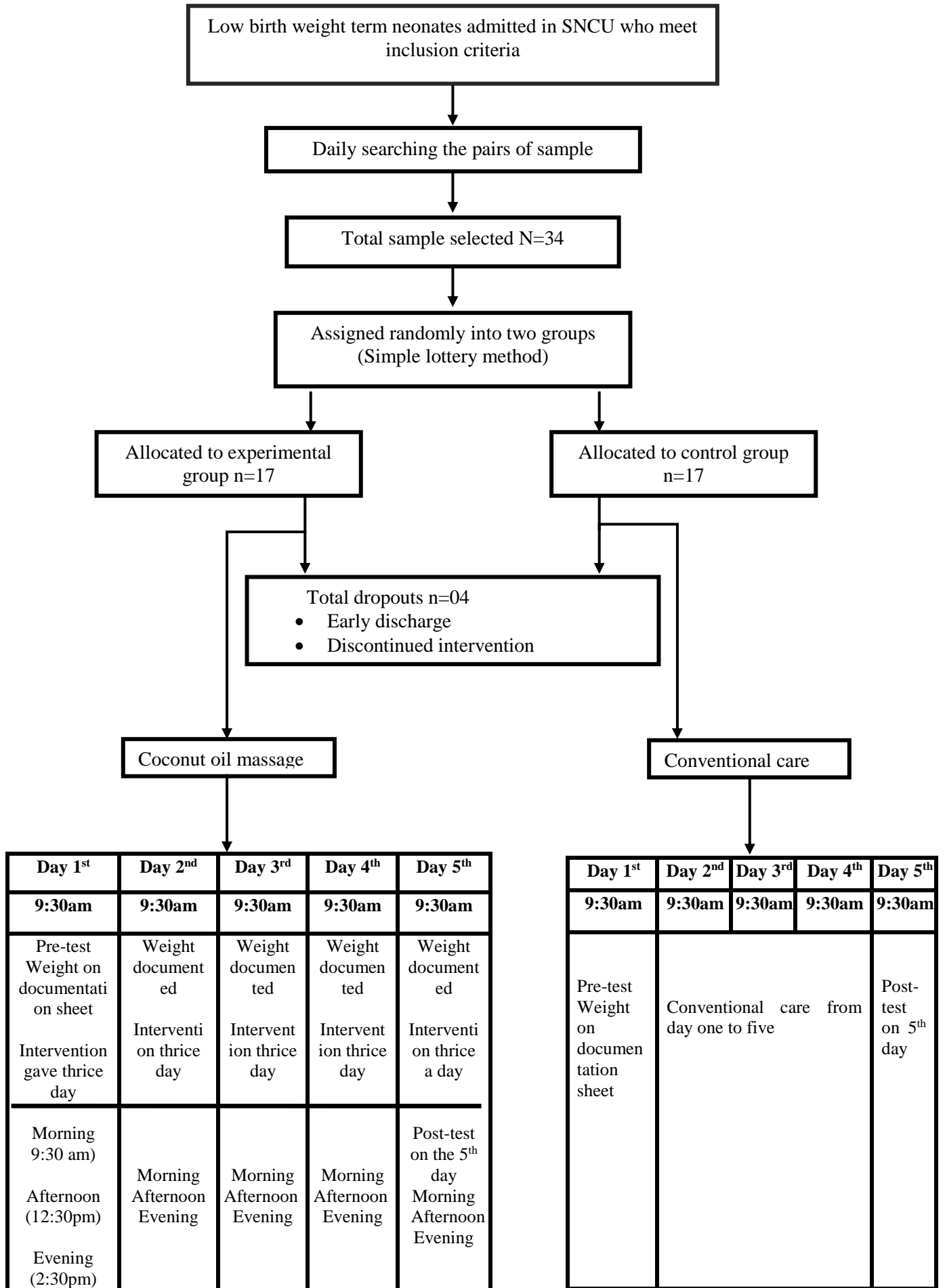


Fig. 3: Clinical Trial Diagram

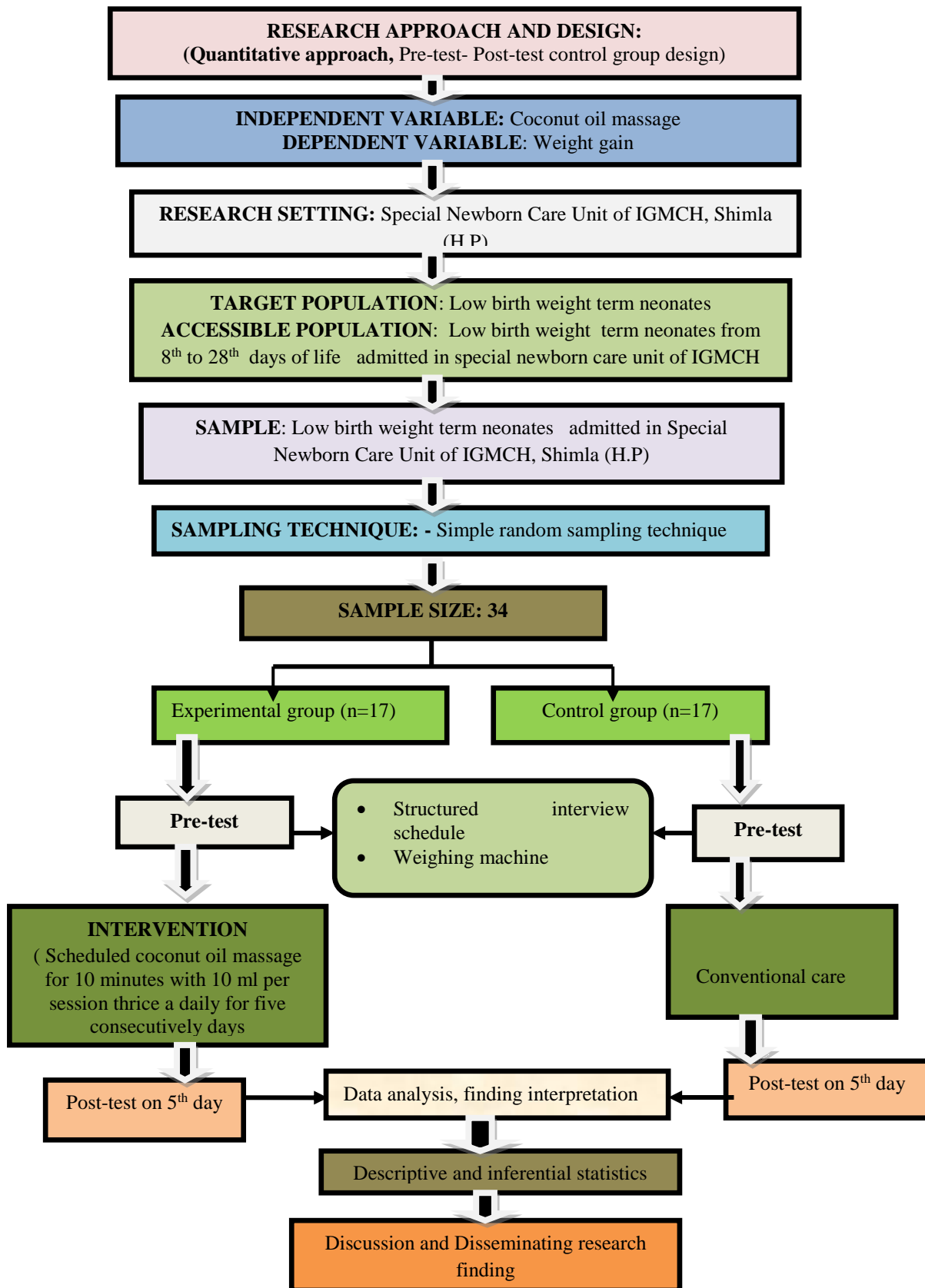


Fig. 4: Schematic diagram of research methodology

5. RESULTS AND DISCUSSION

This chapter presents the results and interpretation along with the discussion of the study findings.

5.1 Background information

The table 1 gives details about the background information

Table 1: Frequency and percentage distribution based on demographic variables of mothers, N= 34

Demographic variables		Exp f (%)	Ctrl f (%)	Chi-square	P value
Maternal Age	19-29years	15 (88)	16 (94)	3.841	0.545
	30-32years	2 (12)	1 (6)		
Type of Family	Nuclear	8 (47)	12 (71)	1.943	0.163
	Joint	9 (53)	5 (29)		
Maternal Education	Primary education	15 (88)	14 (82)	0.234	0.628
	Senior secondary education	2 (12)	3 (18)		
Maternal occupation	Private Employee	3 (18)	7 (41)	2.267	0.132
	Housewife	14 (82)	10 (59)		
Family monthly Income/ month	10.000-20.000	10 (59)	10 (59)	0.000	1.000
	20.000-30,000	7 (41)	7 (41)		
Area of residence	No		1 (6)	1.333	0.513
	Urban	4 (24)	2 (12)		
	Rural	11 (65)	11 (65)		
	Semi-urban	2 (12)	4 (24)		

Table 2: Frequency and percentage distribution based on demographic variables of LBW term neonates, N=34

Demographic variables of neonates		Exp f (%)	Ctrl f (%)	Chi-square	P value
Age on day of massage	8-14 day	8 (47)	6 (35)	0.536	0.765
	15-20day	7 (41)	9 (53)		
	21-28day	2 (12)	2 (12)		
Gender	Male	11 (65)	10 (59)	0.125	0.724

Regarding, age on day of massage, 8(47%) were having age between 8-14 days and in control group, 9(53%) were having age between 15-20 days .In gender, mostly low birth weight term neonates were male in experimental (11(65%) and in control group 10(59%).

Table 3: Frequency and percentage distribution based on obstetrical variables of LBW term neonates, N=34

Obstetrical variables		Exp f (%)	Ctrl f (%)	Chi-square	P value
Type of birth	Normal vaginal delivery	15 (88)	15 (88)	1.333	0.513
	Scheduled cesarean delivery	2 (12)	1 (6)		
	Cesarean section	-	1 (6)		
Fetation	Single	17 (100)	17 (100)	NA	NA
Birth Order	One	15 (88)	11 (65)	2.615	0.106
	Two	2 (12)	6 (35)		
Parity	Primary Gravida	13 (76)	11 (65)	0.452	0.567
	Multi Gravida	4 (24)	6 (35)		
History of complication	Premature rupture of membrane	-	1 (6)	2.034	0.362
	No	14 (82)	15 (88)		
Parents Consanguinity	Others	3 (18)	1 (6)	NA	NA
	No	17 (100)	17 (100)		
Iron supplements	Yes	17 (100)	16 (94)	1.030	0.310
	No	-	1 (6)		

Table 4: Frequency and percentage distribution based on clinical variables, N=34

Clinical Values		Exp f (%)	Ctrl f (%)	Chi-square	P value
Apgar score (at 5 minutes)	7-10	17 (100)	17 (100)	NA	NA
	1500-1700	4 (24)	1 (6)		
Birth Weight	1700-2000	2 (12)	1 (6)	28.61	0.414
	2000-2300	9 (53)	13 (76)		
	2300-2500	2 (12)	2 (12)		

In both experimental group and control group, Apgar score within 5 minutes was between 7 and 10 and in experimental and control group birth weight of term neonates was between 2000-2300 grams.

Table 5: Frequency and percentage distribution based feeding pattern, N=34

Variables		Exp f(%)	Ctrl f (%)	Chi-square	P value
No. of feedings per day	5-8 times	15 (88)	17 (100)	2.125	0.145
	9-12times	2 (12)	-		
Type of Feeding	Exclusive breast feeding	6 (35)	9 (53)	27.11	0.438
	Lactogen feed		1 (6)		
	A and B	6 (35)	3 (18)		
Route of Feeding	A and C	5 (29)	4 (24)	1.943	0.163
	Breast feed	5 (29)	9 (53)		
	Katori spoon feeding	12 (71)	8 (47)		

5.2 Comparison in the pre-test and post-test weight among the experimental group

Objective: To compare pre-test and post-test weight among the experimental group.

The research hypothesis tested for this objective was

H1: There will be a statistically significant difference in pre-test and post-test weight among the experimental group at 0.05 level of significance.

Table 6: Comparison in the pre-test and post-test weight within the groups, N=34

Weight	Pre-test Mean ± S.D	Post-test Mean ± S.D	Mean difference	t-value	df	P value
Experimental group	2.08±0.349	2.10±0.348	0.02	5.339	16	<0.0001**
Control group	2.20±0.187	2.21±0.190	0.01	2.911	16	0.01*

Significant at p<0.001

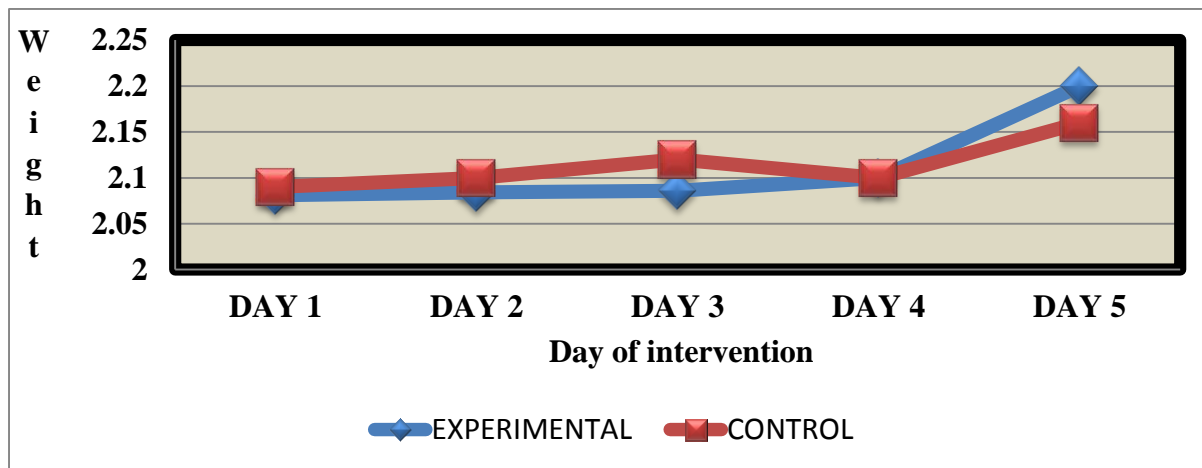


Fig. 5: Line diagram showing the weight of experimental and control group on each day N=34

Table 7: Comparison of weight between the experimental and control group, N=34

Days	EXPERIMENTAL	CONTROL	Mean difference	t value	P value
	Mean ±SD	Mean ±SD			
Day1	2.08±0.349	2.20±0.187	0.11	1.208	0.2359
Day 2	2.08±0.352	2.20±0.189	0.11	1.149	0.2591
Day 3	2.09±0.350	2.20±0.189	0.11	1.189	0.2431
Day 4	2.10±0.451	2.21 ± 0.193	0.11	1.905	0.0658
Day 5	2.10±0.348	2.21±0.190	0.10	1.067	0.2938

5.3 Comparison of mean gain in weight between experimental and control group.

Objective: To compare weight gain between the experimental and control group.

Research hypothesis tested for this objective was

H2: There will be a statistically significant difference in weight gain between the experimental and control group in the experimental group and control group at 0.05 level of significance.

Table.no.4.8: Comparison of mean weight gain between the experimental and control group, N=34

WEIGHT GAIN	Groups	Mean score	SD	Mean difference	t value	P value
	Experimental group	0.02	0.018	0.013	2.447	0.020*
Control group	0.01	0.014				

Significant

5.4 Association of weight gain of the experimental group with their selected demographic variables

Objective: To find out association between weight gain in experimental group with their selected socio demographic variables.

Table .9: Association of weight gain of experimental group with selected demographic variables, N=17

Experimental group Variables	WEIGHT GAIN						
	Mean	SD	N	df	F Test	P Value	
Maternal Age	19-29years	0.02	0.02	15	3/13	1.412	0.284
	30-32years	0.01	0.00	2			

Maternal occupation	Private Employee	0.03	0.03	3	3/13	0.464	0.712
	Housewife	0.02	0.02	14			
Family Monthly Income	10.000-20.000	0.02	0.01	10	3/13	0.736	0.549
	20.000-30,000	0.03	0.02	7			
Type of birth	Normal vaginal delivery	0.02	0.01	15	3/13	7.883	0.003
	Scheduled cesarean delivery	0.06	0.01	2			
No. of Feedings	5-8 Times	0.02	0.02	15	2/14	1.208	0.328
	9-12 times	0.04	0.02	2			
Birth Order	One	0.02	0.02	15	3/13	1.412	0.284
	Two	0.01	0.00	2			
Parity	Primary Gravida	0.03	0.02	13	2/14	1.032	0.382
	Multi Gravida	0.02	0.02	4			
	Others	0.04		3			

5.5 Others findings

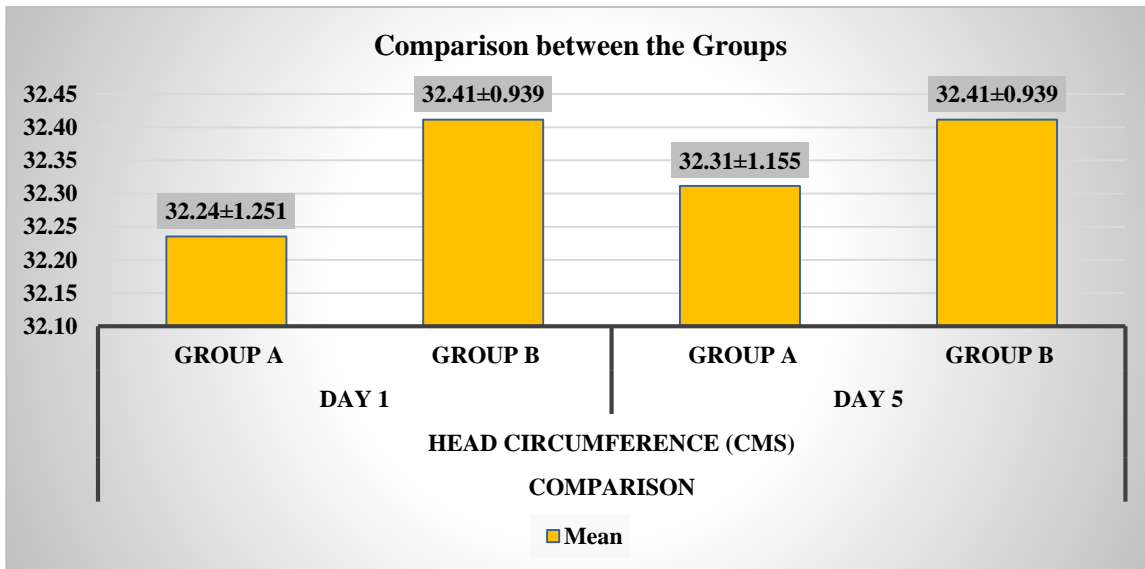


Fig. 6: Comparison of head circumference among the experimental and control group N=34

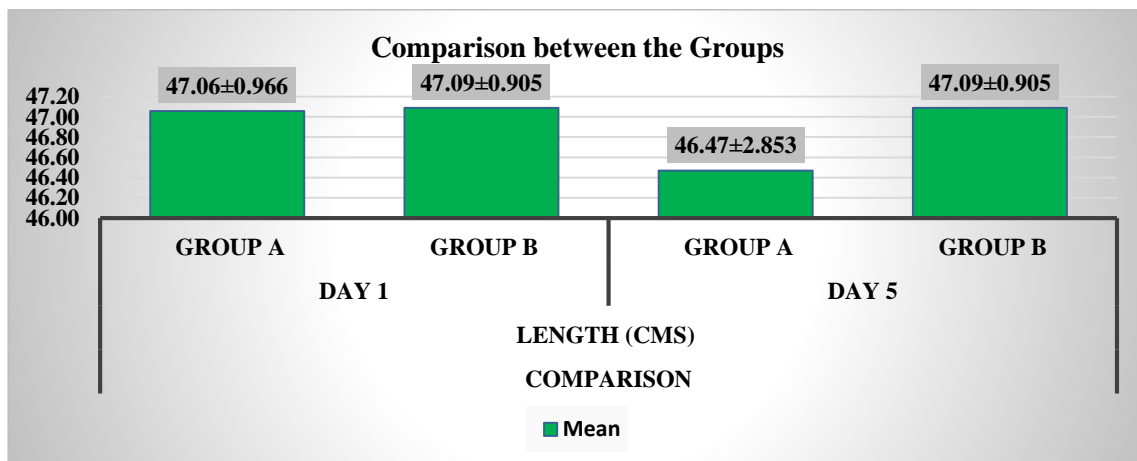


Fig. 7: Comparison of length among the experimental and control Group, N=34

5.6 Major findings

Objective 2: To compare the pre-test and post-test weight among the experimental group: In the experimental group, the pre-test post-test (n=17) mean score of weight was 2.08 ± 0.349 , 2.10 ± 0.348 respectively. The mean difference between the pre-test and post-test weight was significantly higher than the control group (calculated $t = 5.339$, $df = 16$) at $p < 0.05$.

Objective 3: To compare mean weight gain between the experimental and control group: In experimental group mean score was 0.02 and in control group was 0.01 and SD for both groups was 0.018, 0.014. The difference in the mean score was 0.013 and calculated p value was 0.020 which shows a statistical significant difference in the weight gain score between experimental and control group at $p > 0.05$.

5.6.1 Secondary objective

Objective 1: To associate weight gain with their selected sociodemographic variables: No association was found between weight gain with selected sociodemographic variables of mothers like age, type of family, education, occupation, economic status,

no. of feedings, fetation, birth order, parity, history of complications, parents consanguinity, area of residence, iron supplements except with the type of birth (chi-square 7.8883 , $p < 0.05$). The only type of birth is having a significant association with the weight gain amount the LBW term neonates.

No association was found between the weight gain with selected sociodemographic variables of low birth weight term neonates like age on the day of massage, gender, apgar score (at 5 minutes), birth weight, type of feeding, route of feeding.

5.7 Others findings

There was no significant difference in post-test score after coconut oil massage in the head circumference and length as compared between the experimental and control group.

5.8 Nursing implications

The findings of the study have implications in different branches of nursing practice, nursing education, nursing research, nursing administration.

5.9 Nursing practice

Nurses can use this type of procedure as an effective measure among low birth weight in neonates. Coconut oil can be used massage can be used in the hospital to improve the growth and development of low birth weight neonates. Massage therapy can be performed as an effective intervention to promote the health parameters of low birth weight neonates.

5.10 Nursing education.

The nurse educator must be focused on a wide aspect of transcultural nursing, cultural aspects regarding infant massage and impinge the attitude towards touch and massage in infants. Student can be taught regarding the types of massage therapy in low birth weight neonates.

5.11 Nursing administration:

The nurse administrator should take more responsibilities to incorporate the importance of holistic care in neonate care. The nurse administrator should motivate the staff nurses to incorporate various simple, cost effective and culturally acceptable forms of complementary therapies like coconut oil massage therapy along with the routine neonatal care. The nursing administrator should organize in a service education programme on various complementary and alternative therapies for nurses.

5.12 Nursing research

The nursing researcher should be aware of various innovative methods to promote the health of low birth weight term neonates. More emphasis should be laid in the area of cost effective routine care for newborn to improve the growth and development and to practice the evidenced based nursing to maximize the optimum care.

6. RECOMMENDATIONS

In the light of the above findings and personal experience of the investigator following recommendations can be offered.

- A similar study can be conducted in a large group of low birth weight term neonates.
- A longer period of intervention can be studied for more reliability and effectiveness.
- Massage therapy can be practiced in community settings and other hospital settings.
- Teaching programme can be conducted regarding the coconut oil massage.

7. CONCLUSION

The present study was aimed to assess the effect of coconut oil massage on weight gain among low birth weight term neonates admitted in Special Newborn Care Unit, IGMCH, and Shimla. The study shows that coconut oil massage therapy improved weight gain in the experimental group within five days but it is not highly significant and there was no association of weight gain with selected demographic variables. So there is a need to focus to continue the days of intervention for more days and also on other alternative therapies which can be used to improve growth and development parameters among low birth weight neonate.

8. REFERENCES

- [1] Islami Z, Fallah R, Mosavian T, Pahlavanzadeh MR. Growth parameters of NICU admitted low birth weight preterm neonates at corrected ages of 6 and 12 months. *Iran J Reprod Med.* 2012;10:459–464. [PubMed] Available from <https://www.ncbi.nlm.nih.gov/pubmed/25246912>
- [2] <http://www.who.int/whosis/whostat2006/NewbornsLowBirthWeight.pdf>
- [3] Jump up^ "eMedicine - Extremely Low Birth Weight Infant: Article by KN Siva Subramanian, MD". retrieved 2007-11-28.
- [4] Oyasis A.M. Effectiveness of oil massage on selected behavioral responses among normal newborns in selected urban areas, salem; april –2011. Available form -repository-tnmgrmu.ac.in/4704/1/3003217anithamaryoyasisa.pdf
- [5] Mahumud R.M, Sultana M, Sarker A.R. Distribution and Determinants of Low Birth Weight in Developing Countries. *J Prev Med Public Health.* 2017 Jan; 50(1): 18–28. Available from -<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5327679/>
- [6] Balaji K, Sankar S, Nandagopal B. Low Birth Weight of Newborns: Magnitude of the Problem Seen in a 100 Bed Hospital of a Rural Area in Vellore District, Tamil Nadu (India). *Indian J Community Med.* 2010 Apr; 35(2): 362–364. Available from -- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2940207/>
- [7] <https://www.cdc.gov/nchs/fastats/birthweight.html>
- [8] Sally E. effectiveness of coconut oil massage on weight gain among low birth weight newborns. April 2017.