

# Effectiveness of Cold Gel Pad Therapy versus Infra Red Light Therapy on Episiotomy Pain and Wound Healing Process among Postnatal Mothers at Selected Hospitals, Madurai

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**Abstract:** *Background of the Study:* Episiotomy is a common surgical procedure performed during second stage of labour. Pain following episiotomy appears to be universal. Other complications arising from episiotomy include greater blood loss in conjunction with delivery and risk of improper wound healing. Emerging research study suggests the potential benefits of Cold gel pad therapy on episiotomy pain and wound healing process. *Objectives:* 1. To assess the level of episiotomy pain and wound healing process among postnatal mothers before the application of Cold gel pad therapy in experimental group I and Infra red light therapy in experimental group II. 2. To evaluate the effectiveness of Cold gel pad therapy in experimental group I and Infra red light therapy in experimental group II on episiotomy pain and wound healing process among postnatal mothers. 3. To compare the effectiveness of Cold gel pad therapy versus Infra red light therapy on episiotomy pain and wound healing process among postnatal mothers in experimental group I and experimental group II. 4. To find out the association between the pretest scores of episiotomy pain and wound healing process with selected demographic variables and obstetrical variables among postnatal mothers in experimental group I and experimental group II. *Hypotheses:* 1. There will be a significant difference in the level of episiotomy pain and wound healing process before and after the application of Cold gel pad therapy in experimental group I and Infra red light therapy in experimental group II. 2. There will be a significant difference in the level of episiotomy pain and wound healing process between the application of Cold gel pad therapy in experimental group I and Infra red light therapy in experimental group II. 3. There will be a significant association between the pre test scores of episiotomy pain and wound healing process with selected demographic variables and obstetrical variables in experimental group I and experimental group II. *Methodology:* An evaluatory and comparative research approach, Quasi Experimental and Non equivalent two group pre test and post test design was used. Using non-probability purposive sampling technique 30 post natal mothers from selected hospitals, Madurai were selected of which 15 mothers were assigned in experimental group I and another 15 mothers were in experimental group II. Application of Cold gel pad therapy was done for experimental group I and Infra red light therapy was done for experimental group II for three days and four observations were made using numerical pain rating scale and REEDA scale on episiotomy pain and wound healing process. *Results:* The overall mean post-test numerical pain rating scale score in the experimental group I was 5.8 with a SD of 1.47, and in the experimental group II was 6.13 with a SD of 0.10. The calculated 't' value was 6.56 which was highly significant at 0.05 level when compared to table value 2.05. The overall mean post-test REEDA scale score in the experimental group I was 7 with a SD of 0.92, and in the experimental group II was 7.6 with a SD of 1.70. The calculated 't' value was 2.40 which was significant at 0.05 level when compared to table value 2.05. The result shows that there is a significant improvement in the level of pain and wound healing process after the application of Cold gel pad therapy when compared to Infra red light therapy. *Conclusion:* The study concluded that the application of Cold gel pad therapy was found to be an effective measure in reducing episiotomy pain and improving the wound healing process and was also cost effective.

**Keywords:** Cold gel pad therapy, Infra red light therapy, Episiotomy pain, Wound healing process, Postnatal mothers.

## 1. Introduction

Motherhood is one of life's greatest blessings. Motherhood can bring joy greater than anything. But the mother also has to go through enormous pain during this process of transition from a woman to a mother. There are number of discomforts of the puerperium. Mothers however suffer much distress after child due to a painful perineum following episiotomy.

An episiotomy is a surgical incision through the perineum made to enlarge the vagina and assist childbirth. Episiotomy is a common surgical procedure performed during second stage of labour. The first performance of episiotomy was done in 1742, when perineal incisions were used to facilitate deliveries. (Stys et al, 1986) The worldwide episiotomy rate was 27%; 54% in nulliparous and 6% multiparous women. (WHO, 2003) A search of medline (2006) found a study in Botswana, where one in three mothers having a normal

delivery had an episiotomy. Care of episiotomy wound begins immediately after delivery and should be included in a combination of local wound care and pain management.

Cold therapy works on the principle of heat exchange. When ice is applied, it lowers the temperature of the damaged tissue through heat exchange and constricts local blood vessels. This slows metabolism and the consumption of oxygen, therefore reducing the rate of cell damage and decreasing fluid build-up. Ice can also numb nerve endings. This stops the transfer of impulses to the brain that register as pain.

In developed countries, cold therapy has been used to reduce the period of inflammation and decrease the soft tissue and helping the patients to return their normal activities faster. (Bleakley, 2004) Studies show that topical cold has clear efficacy in reducing pain without delaying wound healing. (Fernando, 2004).

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The healing power of infrared waves was discovered about two decades ago in China by a team of researchers and doctors. The emitted Infrared Light energy penetrates up to 3½ inches (8.75cm), and releases nitric-oxide into the haemoglobin, stimulating micro-circulation, delivering higher levels of oxygen and nutrients to the injured cells, while eliminating toxins and cellular waste. This begins the healing process as pain is relieved.

Thus considering the above mentioned reviews, the present study was conducted to compare the effect of Cold gel pad therapy on episiotomy pain and wound healing process with Infra red light therapy in postnatal mothers

**Objectives**

- To assess the level of episiotomy pain and wound healing process among postnatal mothers before the application of Cold gel pad therapy in experimental group I and Infra red light therapy in experimental group II.
- To evaluate the effectiveness of Cold gel pad therapy in experimental group I and Infra red light therapy in experimental group II on episiotomy pain and wound healing process among postnatal mothers.
- To compare the effectiveness of Cold gel pad therapy versus Infra red light therapy on episiotomy pain and wound healing process among postnatal mothers in experimental group I and experimental group II.
- To find out the association between the pretest scores of episiotomy pain and wound healing process with selected demographic variables and obstetrical variables among postnatal mothers in experimental group I and experimental group II.

**Hypotheses**

- There will be a significant difference in the level of episiotomy pain and wound healing process before and after the application of Cold gel pad therapy in experimental group I and Infra red light therapy in experimental group II.
- There will be a significant difference in the level of episiotomy pain and wound healing process between the application of Cold gel pad therapy in experimental group I and Infra red light therapy in experimental group II.
- There will be a significant association between the pre test scores of episiotomy pain and wound healing process with selected demographic variables and obstetrical variables in experimental group I and experimental group II.

**2. Methodology**

An evaluatory and comparative research approach was used. A quasi experimental and non equivalent two group pre test and post test design was adopted for this study. The study was conducted in post natal wards at selected Hospitals, Madurai. The study population comprised of post-natal mothers who had undergone normal vaginal delivery with episiotomy. Mothers who had pre-existing medical illnesses, puerperal complications and operative deliveries were excluded for the study. The sample size consisted of 30 post-natal mothers who had undergone normal vaginal delivery with episiotomy. Among them 15 were assigned in experimental group I and 15 were assigned in experimental

group II using non probability purposive sampling technique.

**Tools :** The tools used for this study comprised of 4 sections:

**Section A:** It consists of demographic variables such as age, education, occupation, monthly income, type of family, religion, area of residence and dietary pattern.

**Section B:** It consists of obstetrical variables including type of episiotomy, no. of episiotomy stitches, gravida, para and live births.

**Section C:** It consists of Numerical pain rating scale. The total score is 10. The rating scale has score's such as 0 – None, 1 - 3 Mild, 4 - 6 Moderate, 7 – 10 Severe.

**Section D:** It consists of REEDA scale. The scale has five sections such as Redness, Edema, Ecchymosis, Discharge and Approximation. The total score is 15. The scoring Good = 0, Mild = 1 to 5, Moderate = 6 to 10 and Severe = 11 to 15.

Content validity of the tool was established by sending it to various experts. The split half method was used to establish the reliability of the tool and the reliability of numerical pain rating scale of experimental group I was  $r = 0.98$  and for experimental group II was  $r = 0.81$ . The reliability of REEDA scale of experimental group I was  $r = 0.94$  and for experimental group II was  $r = 0.74$ . Permission for data collection was obtained from the ethical committee of the college, and hospital authority. The purpose of the study was explained to the samples and an informed consent was obtained prior to the study. The data collection procedure was done for 1 month.

The subjects were divided into experimental group I and experimental group II. Initially the subjects were interviewed in order to collect demographic data. Then the investigator assessed episiotomy pain by using numerical pain rating scale and wound healing by using REEDA scale both in experimental group I and experimental group II. Experimental group I was given the application of Cold gel pad therapy and experimental group II was given Infra red light therapy for three days every morning. Four observations including pre test was made to assess the pain and wound healing for three days. The obtained data were analyzed using descriptive and inferential statistics.

**3. Results**

**1) Distribution of Post-Natal Mothers according to Demographic Variables**

**Table 1:**

S. No	Demographic variables	Experimental group I (Cold gel pad) (n=15)		Experimental group II (Infra red light) (n=15)	
		f	%	f	%
1	Age (in years)				
	18-21	4	26.6	4	26.6
	22-25	5	33.3	7	46.6
	26-30	6	40	4	26.6
	Above 30	0	0	0	0
2	Education				
	Illiterate	0	0	0	0

	Primary school	0	0	0	0
	High school	0	0	2	13.3
	Higher secondary	6	40	6	40
	Graduate & above	9	60	7	46.6
3	Occupation				
	Housewife	5	33.3	9	60
	Office worker	7	46.6	6	40
	Daily wage	0	0	0	0
	Business	3	20	0	0
	Farmer	0	0	0	0
4	Monthly income				
	Below 5000	0	0	0	0
	5001-10000	1	6.6	2	13.3
	10001-15000	2	13.3	8	53.3
	Above 15000	12	80	5	33.3
5	Type of family				
	Nuclear	13	86.6	12	80
	Extended	2	13.3	3	20
	Others	0	0	0	0
6	Religion				
	Hindu	7	46.6	8	53.3
	Christian	5	33.3	4	26.6
	Muslim	3	20	3	20
	Others	0	0	0	0
7	Area of residence				
	Urban	13	86.6	13	86.6
	Rural	2	13.3	2	13.3
8	Dietary pattern				
	Vegetarian	3	20	3	20
	Non-vegetarian	12	80	12	80
	Ova-vegetarian	0	0	0	0

Table 1 reveals that most of the participants from experimental group I were in the age group of 26-30 years (40%) and experimental group II were in the age group of 22-25 years (46.6%). Majority of them were graduate and above in both experimental group I (60%) and experimental group II (46.6%). Majority of them were office worker in experimental group I (46.6%) and housewife in experimental group II (60%). The monthly income was >15,000 in experimental group I (80%) and in experimental group II was >10,000 (53.3%). Majority belonged to the nuclear family in both experimental group I (86.6%) and experimental group II (80%). Majority of them were hindu in both experimental group I (46.6%) and experimental group II (53.3%). Majority of them reside in urban area in both the groups (86.6%). Majority of them are non-vegetarians in both the groups (80%).

## 2) Distribution of Post-Natal Mothers According to Obstetrical Variables

**Table 2:**

S. No	Obstetrical variables	Experimental group I (Cold gel pad) (n=15)		Experimental group II (Infra red light) (n=15)	
		f	%	f	%
1	<b>Type of episiotomy</b>				
	Mediolateral	15	100	15	100
	Median	0	0	0	0
	Lateral	0	0	0	0

	J - shaped	0	0	0	0
2	<b>Number of episiotomy stitches</b>				
	4	3	20	2	13.3
	5	11	73.3	13	86.6
	6	1	6.6	0	0
	Above 6	0	0	0	0
3	<b>Gravida</b>				
	1	9	60	4	26.6
	2	5	33.3	11	73.3
	3	1	6.6	0	0
	Above 3	0	0	0	0
4	<b>Para</b>				
	1	11	73.3	7	46.6
	2	4	26.6	8	53.3
	3	0	0	0	0
	Above 3	0	0	0	0
5	<b>Live births</b>				
	1	12	80	11	73.3
	2	3	20	4	26.6
	3	0	0	0	0
	Above 3	0	0	0	0

Table 2 reveals that most of the participants had Mediolateral episiotomy in both the groups (100%). Majority of them had 5 episiotomy stitches in experimental group I (73.3%) and experimental group II (86.6%). Majority of them were Gravida 1 in experimental group I (60%) and Gravida 2 in experimental group II (73.3%). Majority of them were Para 1 in experimental group I (73.3%) and Para 2 in experimental group II (53.3%). Majority of them had live births in experimental group I (80%) and experimental group II (73.3%).

## 3) Effect of Cold Gel Pad Therapy in Experimental Group I Using Pre and Post Test Scores of Numerical Pain Rating Scale and Reeda Scale

**Table 3:**  
N=15

S.No	Scale	Pre test		Post test		t value
		Mean	S.D	Mean	S.D	
1	Pain scale	8.46	1.47	5.8	0.97	7.07*
2	REEDA scale	9.73	0.92	7	0.77	30.3***

\*Significance at the level of 0.05

Table 3 represents the effect of Cold gel pad therapy in experimental group I using pre and post test scores of numerical pain rating scale and REEDA scale. The mean pre test score of Numerical pain rating scale was 8.46 and the mean post test score was 5.8 and the obtained "t" value was 7.07 which was significant at 0.05 level when compared to table value 2.15. The mean pre test score of REEDA scale was 9.73 and the mean post test score was 7 and the obtained "t" value was 30.3 which was significant at 0.05 level when compared to table value 2.15. This shows the effectiveness of Cold gel pad therapy in reducing episiotomy pain and in improving the wound healing process.

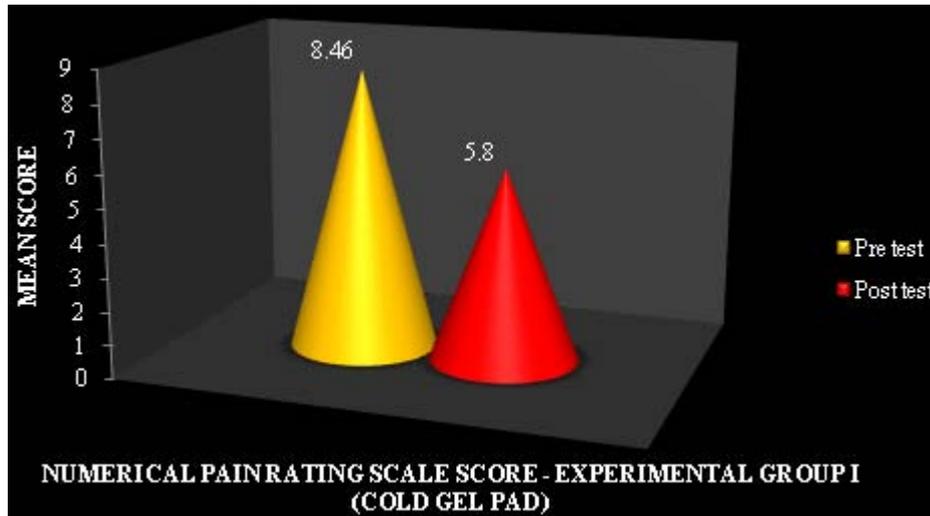


Figure 1: Comparison between the pre and post test scores of Numerical pain rating scale in experimental group I (Cold gel pad)

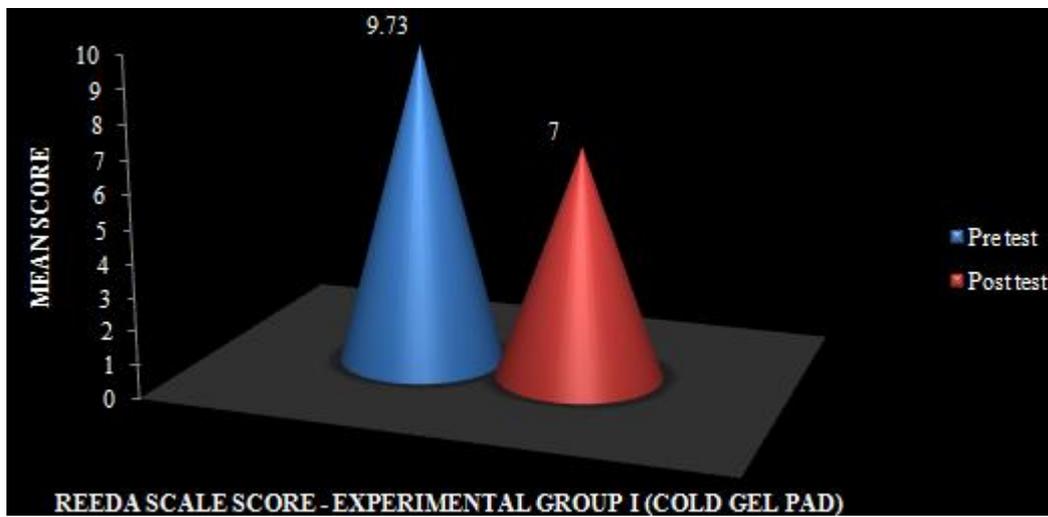


Figure 2: Comparison between the pre and post test scores of REEDA scale in experimental group I (Cold gel pad)

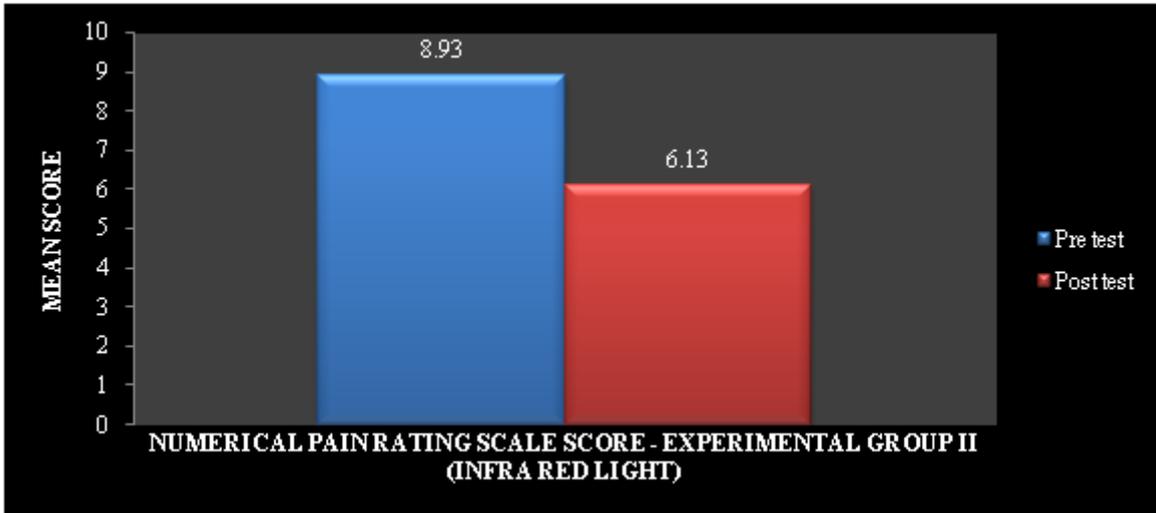
4) Effect of Infra Red Light Therapy in Experimental Group II Using Pre and Post Test Scores of Numerical Pain Rating Scale and Reeda Scale.

Table 4:  
N=15

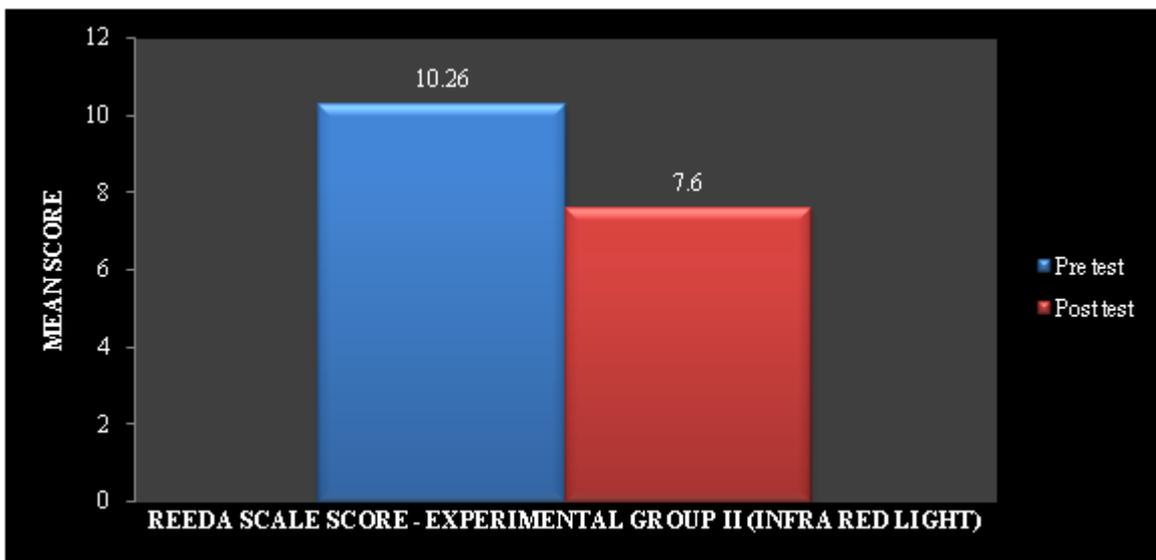
S.No	Scale	Pre test		Post test		t value
		Mean	S.D	Mean	S.D	
1	Pain scale	8.93	0.24	6.13	0.1	28**
2	REEDA scale	10.26	1.34	7.6	1.7	8.52**

Table 4 represents the effect of Infra red light therapy in experimental group II using pre and post test scores of

numerical pain rating scale and REEDA scale. The mean pre test score of Numerical pain rating scale was 8.93 and the mean post test score was 6.13 and the obtained “t” value was 28 which was significant at 0.05 level when compared to table value 2.15. The mean pre test score of REEDA scale was 10.26 and the mean post test score of was 7.6 and the obtained “t” value was 8.52 which was significant at 0.05 level when compared to table value 2.15. This shows the effectiveness of Infra red light therapy in reducing episiotomy pain and in improving the wound healing process.



**Figure 3:** Comparison between the pre and post test scores of Numerical pain rating scale in experimental group II (Infra red light)



**Figure 4:** Comparison between the pre and post test scores of REEDA scale in experimental group II (Infra red light)

**Effect of Cold Gel Pad Therapy in Experimental Group I Versus Infra Red Light Therapy in Experimental Group II Using Post Test Scores of Numerical Pain Rating Scale and Reeda Scale**

**Table 5:**  
N=15

S.No	Scale	Post test score for experimental group I (Cold gel pad therapy)		Post test score for experimental group II (Infra red light therapy)		t value
		Mean	S.D	Mean	S.D	
1	Pain scale	5.8	0.97	6.13	0.1	6.56***
2	REEDA scale	7	0.77	7.6	1.7	2.40**

Table 5 represents the effect of Cold gel pad therapy in experimental group I versus Infra red light therapy in experimental group II using post test scores of numerical pain rating scale and REEDA scale. The mean post test score of Numerical pain rating scale in experimental group I was 5.8 and the mean post test score in the experimental group II was 6.13 and the obtained “t” value was 6.56 which was significant at 0.05 level when compared to table value 2.05. The mean post test score of REEDA scale in experimental group I was 7 and the mean post test score in the experimental group II was 7.6 and the obtained “t” value was 2.40 which was significant at 0.05 level when compared to table value 2.05. This shows that the Cold gel pad therapy is more effective than the Infra red light therapy in reducing episiotomy pain and in improving the wound healing process.

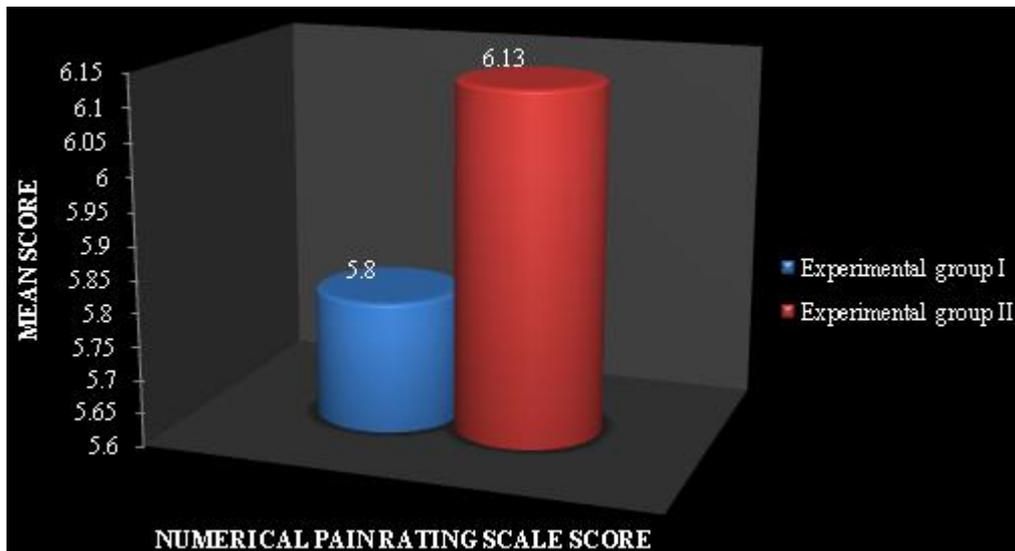


Figure 5: Comparison of post test scores of Numerical pain rating scale in experimental group I (Cold gel pad ) versus experimental group II (Infra red light)

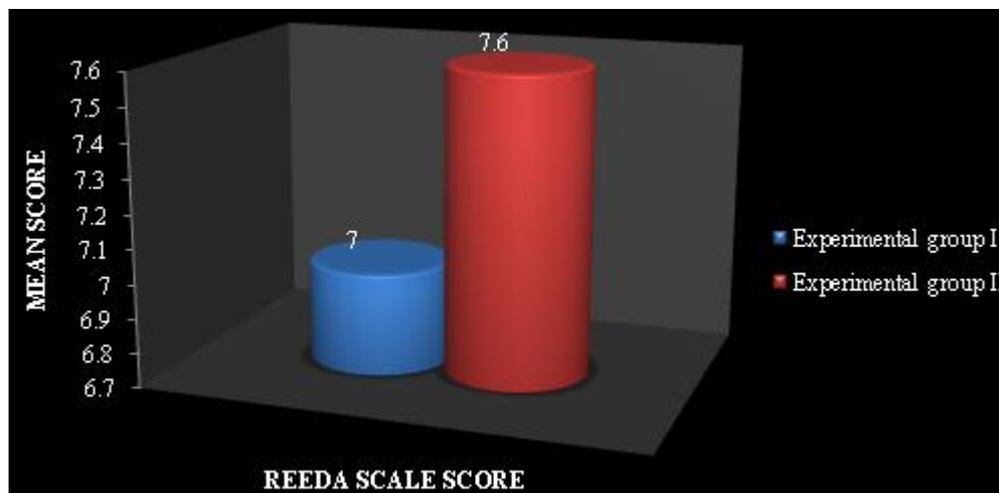


Figure 6: Comparison of post test scores of REEDA scale in experimental group I (Cold gel pad ) versus experimental group II (Infra red light)

#### 4. Discussion

The mean post test Numerical pain rating scale score of experimental group I was 5.8 and in the experimental group II was 6.13 and the obtained “t” value was 6.56 which was significant at 0.05 level when compared to table value 2.05. The mean post test REEDA scale score of experimental group I was 7 and experimental group II was 7.6 and the obtained “t” value was 2.40 which was significant at 0.05 level when compared to table value 2.05. Hence Cold gel pad therapy was more effective than Infra red light therapy in reducing episiotomy pain and in improving the wound healing process.

#### 5. Conclusion

The study findings provide the statistical evidence which clearly indicates that Cold gel pad therapy and Infra red light therapy can be used to reduce episiotomy pain and improve the wound healing process. But Cold gel pad therapy is more effective than Infra red light therapy to reduce episiotomy pain and improve the wound healing process. Therefore with technological advances and ever growing challenges nurses

should update their knowledge in the latest innovation and should take initiative to implement Cold gel pad therapy in postnatal mothers.

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