



## EFFECTIVENESS OF INFRA RED LIGHT THERAPY ON POST OPERATIVE WOUND HEALING AND PAIN AMONG ABDOMINAL HYSTERECTOMY WOMEN AT SELECTED HOSPITAL, BANGALORE

\*<sup>1</sup>Marine Gladina Soren and <sup>2</sup>Sangeetha, C.

<sup>1</sup>II Year Msc. Nursing Student, Narayana Hrudayalaya College of Nursing.

<sup>2</sup>Professor & HOD, Department of Obstetrics and Gynaecological Nursing, Narayana Hrudayalaya College of Nursing, Bangalore, India

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### ABSTRACT

**Background of the study:** Pain is considered as important vital signs. 1 Open wound have potential for serious bacterial wound infection Surrounding the relationship between stress, pain and delayed healing of acute and chronic wound healing process is a complex one. 2. Infra red light felt as Gentle heat, and improves blood circulation (by 400% within a few minutes!), hydration and oxygenation in the area. This supercharge blood flow brings pain relieving and healing components and speeds up recovery from any injury in the tissues or skin. 3. The true experimental study was conducted to assess the effectiveness of infra red light therapy on post operative wound healing and pain among 60 abdominal hysterectomies who were allotted randomly into both experimental and control group. Modified Southampton grading scale for wound healing and Numerical pain scale were used to measure the wound healing and pain in order to get objective data. The result evidenced that the infra red therapy was effective on wound healing (2.810.p>0.05, 3.91.p>0.00) and pain (5.03.p>0.00, 4.82 p>0.00) among abdominal hysterectomy women within experimental group on 2nd and 3rd post operative days respectively. Comparison between the groups evidenced that pain that on 2nd postoperative day (Friedman value 88.54 p>0.000) and 3rd post operative day (Friedman value 87.45 p>0.000). There was no significant association found between wound healing and pain with selected baseline variable. so the current finding evidenced that use of infra red therapy among post abdominal hysterectomy women is effective in reducing pain and there was no significant difference found in wound healing between the experimental and control group.

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### INTRODUCTION

The uterus is where a baby grows when a woman is pregnant. During the surgery the Whole uterus is usually removed. Hysterectomy is the second most frequent surgery performed by women of reproductive age, surpassed by caesarean section Surgery is often physically and psychologically stressful and in the postoperative period, many women experience significant amounts of pain and discomfort.

\*Corresponding author: MS. Marine Gladina Soren,  
Department of Obstetrics and Gynaecological Nursing, Narayana Hrudayalaya College of Nursing, Bangalore, India.

The International Association for the study of pain defines, Pain as "an unpleasant sensory and emotional experience associated with actual or potential damage, or described in terms of such damage<sup>1</sup>" also considered as important vital signs (Mark A Lumley *et al.*, 2011). Pain is more than just a sensation of minor to extreme discomfort. To get rid of pain has been one of the primary reasons for development of health care. The goal of postoperative pain management is to reduce or eliminate pain and discomfort. Postoperative pain relief must reflect the need of each patient. The effective relief of pain is paramount importance to anyone treating patients undergoing surgery. Infrared light therapy provides a unique healing process where infrared rays are used for treatment of diseases (Maria Duenas *et al.*, 2016). In this process, the injury

sites are exposed to in Infrared light is an electromagnetic radiation whose wavelength is longer than visible light and shorter than radio waves. It improves blood circulation to the affected area. As a result, more blood can reach the injured tissue, which in turn, increases the supply of oxygen and valuable nutrients to it. These essential components of the body speed up the healing process and Provide comfort to the patient. Hence, the investigator felt the need of infrared therapy among post operative wound healing and reduction of pain among abdominal hysterectomy women.

### Objective of the study

- To assess the pre interventional level of wound healing and pain among post hysterectomy women.
- To assess the effectiveness of infrared light therapy on level of wound healing and pain among post abdominal hysterectomy women.
- To determine the association between pre interventional level of wound Healing and pain with selected baseline variable.

### Hypothesis

**H 1:** There will be significant difference between the post interventional wound Healing and pain scores among experimental and control group.

**H 2:** There will be significant association between pre interventional levels of Wound healing and pain score with selected baseline variables.

## MATERIALS AND METHODS

**Research approach:** A quantitative approach was adopted for this study.

**Research design:** Research design selected for the present study was True experimental, pre test posttest design.

### Population

Women underwent total abdominal hysterectomy in a selected tertiary care hospital, Bangalore.

**Sample Size:** A total sample of 60 women were selected, 30 in experimental and 30 in Control group.

### Sampling and sampling technique

The mothers who met the inclusion criteria were selected using simple random technique.

### Sampling Criteria

#### Inclusion criteria

- Women underwent abdominal hysterectomy and in the 2<sup>nd</sup> postoperative period.
- Age group  $\geq 35$  to  $\leq 56$  years.

#### Exclusion criteria

- Women who underwent Laparoscopic and Robotic Abdominal hysterectomy.

- Women who had post operative complication such as bleeding at the wound site.

### Ethical consideration

The study was approved by the institutional ethical committee Informed consent obtained from the participants by assuring the confidentiality.

### Description of tool

#### The investigator

- Section I:- Consisted of baseline data such such as age, education , marital status , type of work , occupation and parity.
- Section II:- Modified Southampton scoring system was used which included 0-1 score normal healing score of 1-2 minor complication. Score 3 indicate wound infection. Score 4-5 indicate Major complication.
- Section III:- Numerical pain scale.

### Procedure for data collection technique

A prior permission was obtained from the hospital authority for conducting the study. A written consent was obtained from the subjects assuring confidentiality of information. The purpose was well explained before getting the consent. After the sample selection, baseline variables were collected from both the sample group. Pre interventional level of wound and pain was measured by using Modified Southampton wound grading score and pain scale. The post therapy wound healing grade was assessed immediately after the infra red light therapy among the experimental group. The wound healing and pain level was assessed in the control group where they have undergone the routine care according to hospital policy. The data was collected in 2 consecutive days' on 2<sup>nd</sup> and 3<sup>rd</sup> post operative day.

### Major findings

The result depicts the description of baseline variable among women undergoing abdominal hysterectomy, regarding the age majority 33.3% were between 41-45years for both groups and in experimental group and 40% on control group. Considering education 23.3% were have achieve intermediate for both the group. Regarding type of work, 60.0% in experimental group and 66.6% in control group were moderate workers. Most the subject were both groups 96.7% and 93.3% of women in experimental group and control group were married. Majority of the women in the both group had more the one pregnancy. Table 1 shows that in relation to wound healing the mean post interventional score (1.10, 0.43) is lower than the mean pre interventional score (1.47, 1.10) with the p-value 0.005 on 2<sup>nd</sup> and 3<sup>rd</sup> post operative day within experimental group. Table 2 shows the importance of pain reduction mean Post interventional pain score (6.10,1.93) is lower than pre interventional pain score (7.70,4.97) there was statistical signification reduction evidenced after the intervention with the  $p < .000$  on 2<sup>nd</sup> post and 3<sup>rd</sup> operative day within the experimental group. Table 3 shows effect of infrared therapy on posttest wound healing between Experimental group mean (1.10, 0.43) and control mean (1.57, 1.57) P value 0.000.

**Table 1. Comparison of Mean and standard deviation of pre and post interventional level of wound healing post hysterectomy women in experimental group n1=30**

Day	Test	Mean	Standard Deviation	Wilcoxon Signed test	P-value
Day1(2 <sup>nd</sup> postoperative Day)	Pre interventional level of wound healing	1.47	0.629	2.810	0.005
	Post intervention level of wound healing	1.10	0.305		
Day 2(3 <sup>rd</sup> postoperative Day)	Pre interventional level of wound healing	1.10	0.305	3.911	0.000
	Post interventional level of wound healing	0.43	0.568		

**Table 2. Comparison of Mean, Standard deviation of pre and post interventional pain score among post hysterectomy women in experimental group N2=30**

Day	Test	Mean	Standard Deviation	Wilcoxon Signed test	P-value
Day1(2 <sup>nd</sup> postoperative Day)	Pre interventional level of pain score	7.07	0.740	5.038	0.000
	Post intervention level of pain score	6.10	0.960		
Day 2(3 <sup>rd</sup> postoperative Day)	Pre interventional level of pain score	4.97	0.964	4.822	0.000
	Post interventional level of pain score	1.93	0.828		

**Table 3 Comparing experimental and control group posttest mean and standard deviation of post interventional level of wound healing among post hysterectomy women**

Day	Group	Mean	Standard Deviation	Fried man test	P-value
Day1(2 <sup>nd</sup> postoperative Day)	Experimental	1.10	0.305	51.265	0.000
	Control	1.57	0.626		
Day 2(3 <sup>rd</sup> postoperative Day)	Experimental	0.43	0.568	9.000	0.029

**Table 4. Comparing experimental and control groups mean, standard deviation of post interventional level of pain among post hysterectomy women**

Day	Group	Mean	Standard Deviation	Fried man test	P-value
Day1(2 <sup>nd</sup> postoperative Day)	Experimental	7.07	0.740	88.546	0.000
	Control	1.10	0.960		
Day 2(3 <sup>rd</sup> postoperative Day)	Experimental	4.97	0.964	87.452	0.000

There was statistical significant. In experimental group with the  $p < .000$ . whereas in control group its constant. Table 4 shows the result of pain score between Experimental group mean (7.07, 4.97) and control mean (7.10, 5.17)  $p$  value of 0.000. There was statistical significant pain reduction between the group with  $p < 0.000$  on 2<sup>nd</sup> post and 3<sup>rd</sup> post operative day.

## DISCUSSION

The current study evidenced that infra red therapy is effective in wound healing and reducing postoperative pain among post abdominal hysterectomy women. There is statistical significant difference found between 2<sup>nd</sup> and 3<sup>rd</sup> post operative day on wound healing and postoperative pain ( $p$ -value.000). Finding of the present study was similar to finding of another study conducted to assess the effectiveness of infrared radiation therapy on episiotomy wound healing twice a day for 3 days among postnatal mother in a selected hospital. Study concluded that infrared therapy is effective in wound healing in comparing experimental and control group where as there was no significant difference found in wound healing within the group. Finding of the present study was similar to assess the effectiveness of Infrared rays on wound healing and pain level among 100 caesarean section mothers. Pre & post-test mean wound healing scores in experimental group was  $2.1 \pm 1.446$  &  $1.26 \pm 0.828$  respectively with 't' value 4.365 ( $p < 0.05$ ). Similarly the mean pain level scores was  $3.90 \pm 0.303$  &  $1.94 \pm 0.424$  with the 't' value 28 ( $p < 0.05$ ) found statistically significant and showed there was a Positive correlation between the wound healing and pain.

There is no association found between the pre intervention level of wound healing and pain score with selected baseline variable at 0.05 level of significance ( $p < 0.05$ ).

## Recommendation

- The study can be replicated in different settings with larger samples.
- Future studies can be done on use of infra red therapy to improve the sleep.
- Similar study can be performed among patients with pain with different reasons.
- A comparative study can be done with infrared therapy and other alternate pain relief techniques.

## Limitation

The study is limited to abdominal hysterectomy women in selected hospital.

## Conclusion

The pain and wound healing are considered to be significant parameters in treating postoperative patients. It becomes difficult for health professional to handle the post operative on these aspects. Incorporating infra red therapy as alternative for pain relief improves patient comfort as well as enhances the quality of care. Since the therapy effective in wound healing and improves good sleep. Nursing is profession which incorporates the alternative therapies to meet the patient care and to maintain the standard of nursing care.

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