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.

Reg.No: 301221751

A DISSERTATION SUBMITTED TO THE TAMILNADU DR.M.G.R. MEDICAL UNIVERSITY, CHENNAI, IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTER OF SCIENCE IN NURSING

MARCH 2014

CERTIFICATE

This is to certify that the dissertation titled **"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"** is submitted to the faculty ofNursing, **The Tamilnadu Dr. M.G.R Medical University,Chennai,** by **Mrs.A.G.L.Cindiya**in partial fulfilment of the requirement for the degree ofMaster of Science in Nursing. It is the bonafide work done by her and the conclusions are herown. It is further certified that this dissertation (or) any part thereof has not formed the basis for award of any degree, diploma (or) any title.

Prof.G.Thilagavathy,M.Sc(N),M.B.A.,Ph.D.,

Principal,

RASS Academy College of Nursing,

Poovanthi,

SivagangaiDist-630611.

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.

APPROVED BY THE DISSERTATION COMMITTEE ON MARCH 2013

1. RESEARCH GUIDE :_____

Prof.G.THILAGAVATHY, M.Sc(N), M.B.A,Ph.D.,
Principal,
RASS Academy College of Nursing,
Poovanthi,
Sivagangai Dist-630611.

2. CLINICAL GUIDE : _____

Asso.Prof.Ms.AMALA NAMBIKKAI, M.Sc(N).,
HOD of Obstetrics &Gynaecological Nursing,
RASS Academy College of Nursing,
Poovanthi,
Sivagangai Dist-630611.

3. MEDICAL EXPERT :_____

Dr.INDIRA RAJA,DGO, FAMS.,
Infant Jesus Hospital,
Madurai-625001.

A DISSERTATION SUBMITTED TO THE TAMILNADU DR.M.G.R. MEDICAL UNIVERSITY, CHENNAI, IN PARTIAL FULFILMENT OF REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN NURSING

MARCH 2014

ACKNOWLEDGEMENT

I praise and thank **God** for the opportunity he gave me and the blessings he bestowed on me throughout the course of my study.

A **Thanks** is such a small word but it contains a heartful of gratitude. The gratitude expressed is not a result of formality but is birthed from within. It is an appreciation to all those who motivated, guided and encouraged me throughout my study.

I would like to extend my sincere thanks to **Mr.C.Ravisankar,** Chairman, RASS Academy College of Nursing, Poovanthi for his support and for providing the required facilities for the successful completion of this study.

I extend my heartful and sincere thanks to my research guide **Prof.G.Thilagavathi,M.sc(N),M.B.A.,Ph.D.**, Principal, RASS Academy college of Nursing, Poovanthi for a deniable work, interest, cheerful approach, always with never ending willingness to provide expert guidance and suggestion to mould this study to the present form.

I wish to express my special and sincere heartful thanks to **Dr.Indira Raja,DGO,FAMS.,**Infant Jesus Hospital, Madurai for granting permission to conduct this study.

I offer my earnest gratitude to my guide **Asso.Prof.Ms.AmalaNambikkai, M.Sc(N).,** HOD of Obstetrics &Gynaecological Nursing, RASS AcademyCollege of Nursing, Poovanthi for her expert opinion, guidance, hard work, effort, interest and valuable suggestions and untiring help to mould this study in a successful way.

I extend my warmest thanks to**Asso.Prof.Mrs.UmmulHapipa, M.Sc(N).,**Vice-Principal, RASS Academy college of Nursing for her expert

guidance, valuable suggestions to bring this study in a successful way.

I sincerely express my warmest thanks to **Asso.Prof.R.Sutha, M.Sc(N).,(Department of Obstetrical and Gynecological Nursing)**, **Asso.Prof.Sangeetha, M.Sc(N).,(Department of Mental health Nursing)**for the support and assistance given by them in all possible manners to complete this study.

My deep sense of gratitude to**Asso.Prof.R.N.K.Vasugi, M.Sc(N),MBA., HOD of Medical-Surgical Nursing,Asso.Prof.Ms.PremaSathyamoorthy, M.Sc(N), MBA., HOD of Pediatric Nursing, Asso.Prof.RuthRani, M.Sc(N)., HOD of Mental health Nursing, Asso.Prof.UmaMaheshwari, M.Sc(N).,Community Health Nursing,Mrs.Saranya, M.Sc(N).,(Lecturer Department of Obstetrical and Gynecological Nursing)** RASS Academy College of Nursing for their cheerful approach, and never ending willingness to provide guidance and suggestions.

My sincere thanks to **Dr.Varadharajan,M.Sc,M.Phil,M.Ed,Ph.D(Edn)., Professor of Psychology**, RASS Academy College of Nursing, Poovanthi for his help in the statistical analysis of the data which is the core of the study.

I am thankful to **Mrs.Brindha**, **M.Sc,M.Li.Sc,M.Phil**., Librarian, RASS Academy College of Nursing, for extending helpful support throughout the project.

My sincere thanks to all **Teaching and Non teaching staffs** of RASS Academy College of Nursing for their continuous help in finishing this work successfully.

I extended my special thanks to **all Post-natal mothers** who had participated in the study.

I express my lovable thanks to my **Elder sisters (2011-2013 batch),Friends (2012-2014 batch),** and **BSc(N) students** who joined my hands in the pathway of

research.

I convey my special thanks to my **Brothers A.GunaCipris, BE(Aero)., and V.Praveen, BE(Civil).,** and all my **Family members** who helped me in the successful completion of this study.

Finally I dedicate this study to my beloved **Parents Mr.G.R.Amala King and Mrs. A.Jancy Rani** and my lovable **Husband Mr.W.Jobson Wilbert, MBA, MSc.(N).,** for their encouragement, joy, hope and love instilled in me that made this work a reality.

I thank **One and All** who directly and indirectly helped me in the successful completion of this study.

TABLE OF CONTENTS

CHAPTER	TITLE	PAGENO
	ABSTRACT	
I	**INTRODUCTION**	1-11
	Background of the Study	1-4
	Need for the Study	4-6
	Statement of the Problem	6
	Objectives of the Study	6
	Hypotheses	7
	Operational definitions	7-8
	Assumptions	8
	Limitations	8
	Conceptual Framework	9-11
II	**REVIEW OF LITERATURE**	12-20
III	**METHODOLOGY**	21
	Research Approach	21
	Research Design	21-22
	Variables under study	23
	Setting of the Study	23
	Study Population	23
	Sample	23
	Sample Size	23
	Sampling Technique	23
	Criteria for selection of sample	24
	Description of the tool	24-25
	Content Validity	25
	Reliability	25
	Pilot Study	25
	Data Collection Procedure	25-26
	Plan for Data Analysis	26
	Protection of Human Rights	26
IV	**DATA ANALYSIS AND INTERPRETATION**	27-65
V	**DISCUSSION,SUMMARY, CONCLUSION, IMPLICATIONS& RECOMMENDATIONS**	66-74
	REFERENCES	75-78
	APPENDICES	79-99

LIST OF TABLES

TABLE NO	TITLE	PAGE NO
1.	Distribution of the post natal mothers according to demographic variables.	28-29
2.	Distribution of the post natal mothers according to obstetrical variables.	36
3.	Distributionof the post-natal mothers according to Numerical pain rating scale score and REEDA scale score in experimental group I (Cold gel pad).	41
4.	Distributionof the post-natal mothers according to Numerical pain rating and REEDA scale score in experimental group II (Infra red light).	43
5.	Comparison of effectiveness of cold gel pad therapy using pre and post test scores in experimental group I.	45
6.	Comparison of effectiveness of infra red light therapy using pre and post test scores in experimental group II.	47
7.	Comparison of effectiveness of cold gel pad therapy in experimental group I versus infra red light therapyin experimental group II using pre and post test scores.	49
8.	Association of numerical pain rating scale and REEDA scale score with selected demographic variables in experimental group I(Cold gel pad).	52-53
9.	Association of numerical pain rating scale and REEDA scale score with selected obstetrical variables in experimental group I (Cold gel pad).	56
10.	Association of numerical pain rating scale score and REEDA scale score with selected demographic variables in experimental group II (Infra red light)	59-60
11.	Association of numerical pain rating scale score and REEDA scale score with selected obstetrical variables in experimental group II (Infra red light)	63

LIST OF FIGURES

FIGURE NO	TITLE	PAGE NO
1.	Conceptual framework based on Von-Ludwig Bertalanffy-General system theory(1968)	11
2.	Research design	22
3.	Distribution of the post-natal mothers according to Age	32
4.	Distribution of the post-natal mothers according to Education	32
5.	Distribution of the post-natal mothers according to Occupation	33
6.	Distribution of the post-natal mothers according to Monthly income	33
7.	Distribution of the post-natal mothers according to Type of family	34
8.	Distribution of the post-natal mothers according to Religion	34
9.	Distribution of the post-natal mothers according to Area of residence	35
10.	Distribution of the post-natal mothers according to Dietary pattern	35
11.	Distribution of the post-natal mothers according to Type of episiotomy	38
12.	Distribution of the post-natal mothers according to Number of episiotomy stitches	38
13.	Distribution of the post-natal mothers according to Gravida	39
14.	Distribution of the post-natal mothers according to Para	39
15.	Distribution of the post-natal mothers according to Live births	40

16.	Distribution of post-natal mothers according to Numerical pain rating scale score in experimental group I (Cold gel pad)	42
17.	Distribution of post-natal mothers according to REEDA scale score in experimental group I (Cold gel pad)	42
18.	Distribution of post-natal mothers according to Numerical pain rating scale score in experimental group II (Infra red light)	44
19.	Distribution of post-natal mothers according to REEDA scale score in experimental group II (Infra red light)	44
20.	Comparison of effectiveness of cold gel pad therapy in experimental group I using pre and post test scores of numerical pain rating scale	46
21	Comparison of effectiveness of cold gel pad therapy in experimental group I using pre and post test scores of numerical pain rating scale	46
22	Comparison of effectiveness of infra red light therapy in experimental group II using pre and post test scores of numerical pain rating scale	48
23	Comparison of effectiveness of infra red light therapy in experimental group II using pre and post test scores of REEDA scale	48
24	Comparison of effectiveness 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	51
25	Comparison of effectiveness of cold gel pad therapy in experimental group I versus infra red light therapy in experimental group II using post test scores of REEDA scale	51

LIST OF APPENDICES

APPENDIX NO	TITLE	PAGE NO
I	Tool	79-83
II	Letter format for seeking permission to conduct the study	84
III	Copy of letter seeking permission to conduct the study	85
IV	Letter format for seeking experts opinion for Content Validity	86
V	Copy of letter seeking experts opinion for Content Validity	87
VI	Copies of Certification of Content Validity	88-90
VII	Copy of Certification of Instrumental Validity	91
VIII	List of experts consulted for Content Validity	92-93
IX	Photos	94-99

ABSTRACT

STATEMENT OF THE PROBLEM:

The study on **"Effectiveness of cold gel pad therapy versus infra red light therapy on episiotomy pain and wound healing among postnatal mothers at selected hospitals, Madurai"** was undertaken by Reg. No: 301221751 during the year 2013 – 2014 in partial fulfilment of the requirement for the degree of Master of Science in Nursing at RASS Academy College of Nursing, Poovanthi which is affiliated to **Dr. M.G.R. Medical University, Chennai.**

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 pre test 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.

CONCEPTUAL FRAME WORK:

The study was based on**Von-Ludwig Bertalanffy General system theory (1968).**Review of related literature facilitated the investigator to collect relevant information to support the study**.**

RESEARCH APPROACH:

Evaluatoryand **Comparative** research approach was adopted for this study.

RESEARCH DESIGN:

Quasi Experimental and Non-equivalent two group pre test and post test design was adopted for this study.

SETTING:

The study was conducted in post natal wards at **selected Hospitals, Madurai.**

PILOT STUDY:

Pilot study was done on **6 post natal mothers** and the tool was found to be feasible.

SAMPLE SIZE:

The sample size was **30**. Among these **15mothers** were assigned in **experimental group I (Cold gel pad)** and 15 **mothers** were assigned in **experimental group II (Infra red light).**

SAMPLING TECHNIQUE:

The **non-probability purposive sampling technique** was used to assign the post natal mothers.

INTERVENTIONS:

The intervention applied in **experimental group I** was **Cold gel pad therapy** and **experimental group II** was**Infra red light therapy** and four observations including pre test were made for three days.

DATA COLLECTION PROCEDURE:

The **numerical pain rating scale** and **REEDA scale** was used to assess the episiotomy pain and wound healing process. The data collected were tabulated and analyzed by descriptive and inferential statistics.

CONCLUSION:

This study shows that the **cold gel pad therapy is more effective** than the infra red light therapy in reducing episiotomy pain and progress in the process of wound healing. 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.

CHAPTER-I

INTRODUCTION

The moment a child is born, the mother is also born. She never existed before. The woman existed, but the mother, never. A mother is something absolutely new.

-Rajneesh

BACKGROUND OF THE STUDY:

Motherhood is one of life's greatest blessings. It is a lifelong event that forever changes woman into a mother. Motherhood heightens the emotions we feel and explodes the limits of what we think is possible in life. (Shanti Sonu Sam, 2012). 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. (Rebecca Garland, 2004).

Carol McCormick, (2004)stated that the physiological transition from being a pregnant woman to becoming a mother means an enormous change for each woman both physically and psychologically. It is a time when every system in the body is affected and the experience, though unfortunately not joyous for all, represents a major occurrence in a woman's life.

Janula R & John Esther, (2013) stated that childbirth is a thrilling, exciting and life changing experience. Natural childbirth is a profound and powerful human experience which is a mixture of feeling of empowerment, elation and accomplishment. Since each pregnancy and birth are once in a life time events.

According to Dutta D.C, (2009), Labour is defined as a series of events that take place in the genital organs in an effort to expel the viable products of conception out of the womb through the vagina into the outer world.

Joy, (2013) discussed that the events of labour are divided into four stages. From these stages of labour process particularly in the second stage of labour the mother experiences one of the most profound changes in their lives. During second stage (pushing) the perineum plays a vital role in the birth of the baby.

Mohamed Hoda Abed El-Azim et al, (2012) observed that as the perineum distends, a decision to undertake an episiotomy may very occasionally be necessary. This is a surgical incision through the perineal tissue that is designed to enlarge the vulval outlet during delivery and to minimize the risk of severe spontaneous, maternal trauma and to expedite the birth when there is evidence of fetal compromise.

Mohamed Hoda Abed El-Azim et al, (2012) illustrated that approximately 70% of women who have a vaginal birth will experience some degree of damage to the perineum, due to a tear or cut (episiotomy), and will need stitches. This damage may result in perineal pain during the two weeks after the birth, and some women experience long-term pain and discomfort during sexual intercourse.

According to NimaBhaskar, (2012) 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 Botswanna, where one in three mothers having a normal delivery had an episiotomy.

There are number of discomforts of the puerperium. They are after-births pains, perineal pain, breast engorgement, etc. Mothers however suffer much distress after child due to a painful perineum following episiotomy. (Annama Jacob, 2008) Pain following episiotomy appears to be universal. 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.

Care of episiotomy wound begins immediately after delivery and should be included in a combination of local wound care and pain management.The general treatment and care for the episiotomy wound in postnatal wards are routine perineal care, vulval toileting and administration of analgesics for pain. (Juby Mary Chacko, 2013) A variety of interventions are found to aid the healing process, which include

cleanliness, application of ice pack, topical application by dry heat (infra red therapy), sitz bath and performance of Kegel's exercise.(Venkadalakshmi. et al, 2010).

Cold therapy works on the principle of heat exchange. This occurs when a cooler object comes in direct contact with an object of warmer temperature. The cooler object will absorb the heat of the warmer object. After an inflammation or injury blood vessels that deliver oxygen and nutrients to cells are damaged. The cells around the site increase their metabolism in an effort to consume more oxygen. When all of the oxygen is used up, the cells die. Also, the damaged blood vessels cannot remove waste. Blood cells and fluid seep into spaces around the muscle, resulting in swelling and bruising. 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).

Cold compresses or packs containing gels that retain cold temperature for a long period of time. These devices typically consist of compact plastic or fabric bags or pads containing pliable silica gels that can retain cold for a long time and are capable of conforming to the contour of the body; they are typically cooled by placing in cold water, a refrigerator, or a freezer. Gel cold compresses/packs are intended to apply cold therapy to a specific body surface; they are used mainly to reduce pain, swelling, bruising, and bleeding.

According to TNAI, (2005) the infra red lamp supplies radiant heat or infra-red rays. It is used to provide heat to a localized area of the body. Infra red radiation penetrates 3mm of tissue at the most.Thus, it provides surface heat only.

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.

NEED FOR THE STUDY:

"Of all the rights of women, the greatest is to be a mother"

-Lin Yutang

Perineal trauma is a frequent complication to vaginal delivery, and more than 90% of primiparous women in developing countries sustain episiotomy. (Morhee et al, 2004) In India episiotomy is done in more than 90 percent of deliveries.(NavvabiRigi SH. et al, 2011)

Episiotomy's pain and discomfort have been related to difficulties in women's daily activities in postpartum, such as sitting, walking and lifting the baby.(Albers et al, 1999).The perineal pain resulting from episiotomy is a stressful factor in mothers, which interferes with their ability of nursing and doing their duties as a mother and may interfere with urination and defecation.(Fernand, 2000).The episiotomy pain cannot be estimated and women suffer silently because of pain. (NavvabiRigiSH. et al, 2011)

Episiotomy, incision of the perineum at the time of vaginal childbirth, is a common surgical procedure experienced by women in the United States. Based on national hospital discharge data for 1999, just over 35 percent of women who gave birth vaginally had an episiotomy performed; the figure was approximately 33 percent in 2000.(Viswanathan M, 2005) Around the world the episiotomy rates ranged from 9.7% (northern Europe-Sweden) to 96.2% (South Africa) with the lowest episiotomy rates in English-speaking countries (North America-Canada: 23.8% and United states 32.7%) and it remained very high in many countries (centered south-America like Brazil: 94.2%, South Africa-63.3% and Asia like China 82%). (Graham. et al., 2005)

Episiotomy was performed in 97.3% of 510 primiparouswomen who had vaginal delivery in Tehran.(Shojaei et al, 2009) Cooling for short time has been used for relieving pain of localized tissue trauma for many years.(East et al, 2007).

Droegemueller conducted an experiment study by letting postpartum women take an ice cold sitz bath every six hours during a 24-hour period after delivery. Postpartum women took a sitting in a tub of tap water for 20-30 minutes and slowly lower the temperature by adding ice cubes floating on the surface, continued this method periodically and stopped it until the perineal pain was relieved. The mechanism of relieving perineal pain was thought to be the result of the muscle contraction and ice-sitting could decrease these stretch muscles.

Ramler and Robert did a comparison study of relieving the perineal pain of postpartum women between the cold sitz baths at 15.6-18.3 degrees. celsius first and warm sitz baths at 36.7-44.4 degrees Celsius six hour later. Treatment began during the second 24 hours after delivery and lasted for 20 minutes. The study was done with 40 mothers and it was found that the cold sitz bath could relieve the perineal pain better than the warm sitz bath.

A study by SujintanaPhanklaconcluded that about alternating the cold compression with the hot compression for post natal mothers 12-18 hours after delivery found that the cold compression could relieve the pain better than the hot one.

KaurNavdeep. et al, (2013) assessed the effectiveness of a warm versus cold sitz bath in relieving post episiotomy pain. Sensation, distress, edema, and hematoma ratings were obtained pre and post treatments. Both therapies were found comparable, with the exception that the cold bath was significantly more effective in reducing edema.Thestudy identified the effect of sitz bath on intensity of pain at episiotomy site among postnatal mothers and results showed significant difference in mean pain score between control and experimental group as p value was <0.001.A study was done to assess the comparison of an ice bag versus heat lamp was done to assess the perineal discomfort after vaginal delivery. Study revealed that ice bag was significantly more effective in relieving perineal discomfort than heat lamp.

Researcher suggested that nurses should provide women with adequate information about the use of ice bag and encourage to apply ice bag instead of heat lamp after episiotomy in order to promote the relief of perineal discomfort and the healing of perineal wound.

According to Venkadalakshmi and coworkers, infrared therapy reduces episiotomy pain and enhances wound healing in postnatal mothers. It is a suitable alternative of intervention for those with episiotomy wound.

So theresearcher intended to do further research to find out among these two applications (Cold gel pad and Infra red light) which is the application more effective in reducing episiotomy pain and improving wound healing process.

STATEMENT OF THE PROBLEM:

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.

OBJECTIVES:

1) To assess the level of episiotomy pain and wound healing process among postnatal mothersbefore the application of cold gel pad therapy in experimental group Iand infra red light therapy in experimental group II.
2) To evaluate the effectiveness of cold gel pad therapyin 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 thepretest 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:

H1:-

There will be a significant difference in the level of episiotomy pain and wound healing processbefore and after the application of cold gel pad therapy in experimental group Iand infra red light therapy in experimental group II.

H2:-

There will be asignificant differencein 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.

H3:-

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 groupI and experimental group II.

OPERATIONAL DEFINITIONS:

Effectiveness:-

In this study effectiveness refers to the significant difference gained in the pre and post testlevel ofepisiotomy pain and wound healing process among postnatal mothers after the application of cold gel pad therapy in experimental group I and infra red light therapyin experimental group II. The level of pain is measured by using numerical pain rating scale and REEDA scale is used for assessing the wound healing process of the episiotomy wound.

Cold gel pad therapy:-

In this study it refers topads made up of fabric bags containing pliable silica gels. The pads are chilled below 12degree celsiusand it remains cold for upto 30 minutes. The size of the cold gel pad used is 10.5 cm x 12.5 cm. It is wrapped using sterile gauze pad and is placed on episiotomy wound forupto10 minutes every morningfor 3 days.

Infra red light therapy:-

In this study it refers to light that supplies radiant heat or infra-red rays to produce heatto the episiotomy wound. It is placed at 45 cm distance towards episiotomy wound for upto10 minutes every morningfor 3 days.

Episiotomy pain:-

In this study it refers to the unpleasant sensory and emotional feeling experienced by the mother because of surgical incision made on the perineum to enlarge the vagina and to assist the childbirth process. The level of pain is measured by using numerical pain rating scale.

Wound healing process:-

In this study it refers to the regeneration of the tissues at the episiotomy wound site after the application of cold gel pad therapy and infra red light therapy. The healing process is assessed by using REEDA scale.

Postnatal mothers:-.

In this study it refers to the mothers who had undergone normal vaginal delivery with episiotomy.

ASSUMPTIONS:

The study assumes that:

1. The level of pain in perineal region will be more during first 72 hours following episiotomy among postnatal mothers.
2. The level of perineal pain following episiotomy may be reduced by the application of cold gel pad therapyand infra red light therapy on the episiotomy wound.
3. Cold application lowers the temperature of underlying tissues and causes vasoconstriction and promotes effective wound healing.
4. Hot application reduces the inflammation, pain & promotesproper metabolism.

LIMITATIONS :

The study is limited to: -

1. The mothers episiotomy wound pain can be assessed only for 3 days.
2. Postnatal mothers who had vaginal delivery with episiotomy.
3. Postnatal mothers who are admitted at selected hospitals in Madurai.
4. Those who are willing to participate in this study.

CONCEPTUAL FRAMEWORK:

The conceptual framework selected for this study is based on the general system theory developed by Von-Ludwig Bertalanffy. General system theory is useful in breaking the whole process in to sequential task to ensure goal – realization. The four major aspects of system are:

1. Input
2. Through put
3. Output
4. Feed back

Input is any type of information, energy material that enters the system from environment through its boundaries. Through put is a process that allows the input to be changed. So that it is useful to the system. Output is any information, energy, material & material that leads the system and enters the environment through the system's boundaries. Feedback allows this system to monitor the internal function. So that it can either restrict or increase its input and its output.

INPUT:

In this study, the input includes demographic variables such as age, education, occupation, monthly income, type of family, religion, area of residence and dietary pattern and obstetrical variables types of episiotomy, number of episiotomy stitches, gravida, para and live birthspost-natal mothers who had undergone episiotomy.

THROUGH PUT:

In this study, through put includes pre and post test assessment of episiotomy pain and wound healing process by numerical pain rating scale and REEDA scale and application of cold gel pad therapy and infra red light therapy.

OUTPUT:

In this study, theoutput includesfinding out the effectiveness of cold gel pad therapy and infra red light therapy by experiencing less pain and appropriate wound healing among the post-natal mothers.

FEEDBACK:

In this study, the feedback includes decreased pain and progress in the process of wound healing.

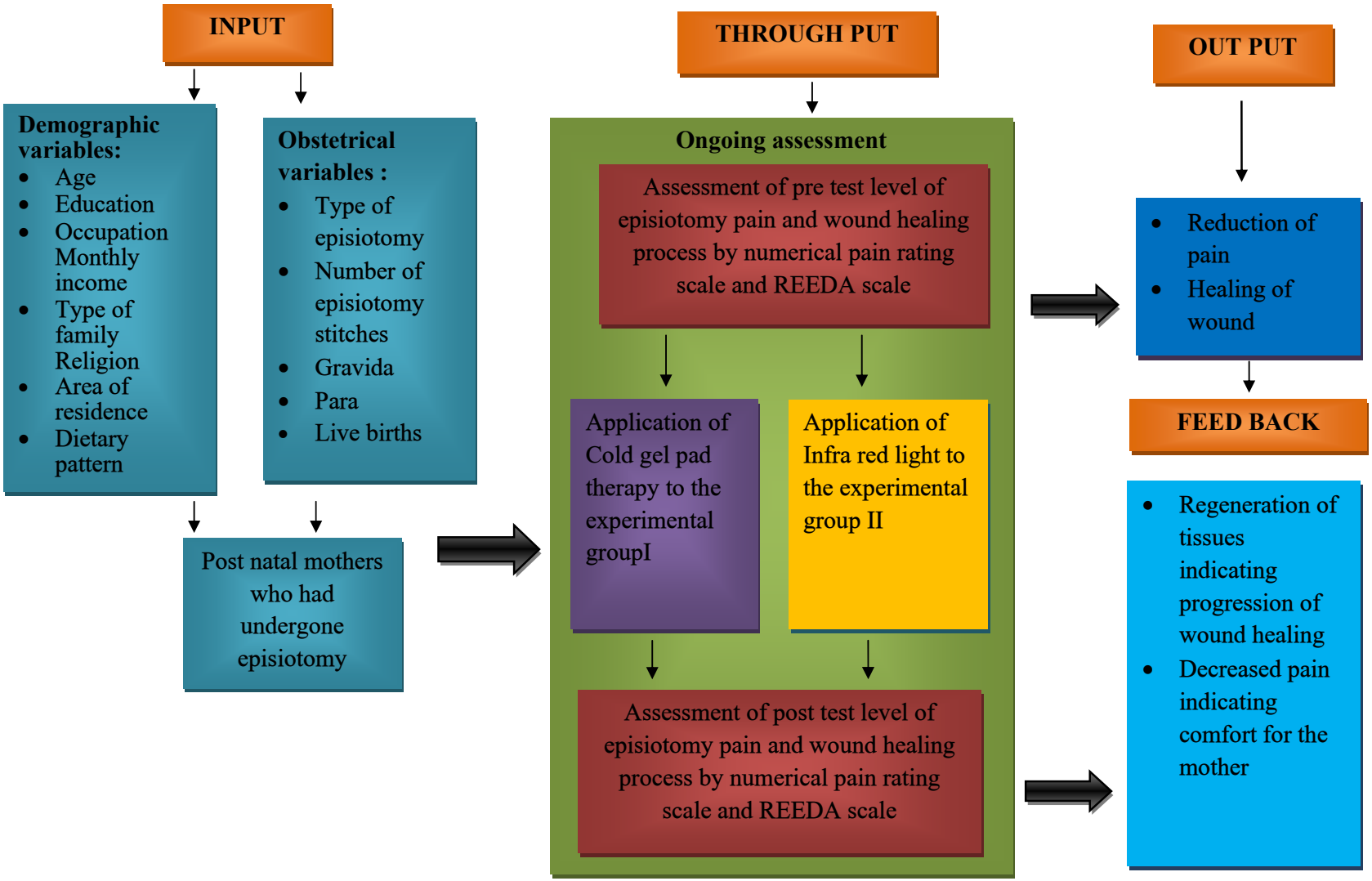


Figure 1: Conceptual framework of Modified Von-Ludwig Bertalanffy General system theory (1968)

CHAPTER-II

REVIEW OF LITERATURE

The review of literature is done to convey to the readers about the work already done and the knowledge and ideas that have been already established on this particular topic of research. Review of literature is done from published articles, textbooks, journals and net search. Existing studies helps the investigator to focus on a particular problem and to formulate suitable research process.

The available literature and studies are organized under the following headings :

I. Studies related to episiotomy pain and wound healing.
II. Studies related to application of cold gel pad therapy on episiotomy wound.
III. Studies related to application of infra red lamp therapy on episiotomy wound.
IV. Studies related to other interventions for episiotomy wound.

Studies related to episiotomy pain and wound healing:

East E. Christine et al, (2012)conducted a study to establish the prevalence of perineal pain, the effects of pain on postnatal recovery, analgesia used to relieve pain and the perceived effectiveness of such analgesia among 215 women in the postnatal ward within 72 hours of a vaginal birth at the Royal Women's Hospital, Victoria, Australia. Study reported that the structured interviews revealed that 90% of women reported some perineal pain, with 37% reporting moderate or severe pain. The degree of perineal trauma predicted women's ratings of perineal pain on a visual analogue scale, with more severe trauma related to higher pain scores. Over a third of women experienced moderate or severe perineal pain, particularly when walking (33%) or sitting (39%), while 45% noted that pain interfered with their ability to sleep. Women reported moderate or severe perineal pain when they undertook activities involving feeding their infant (12%) or caring for their infant (12%). Women used a range of analgesia, including a combination of ice packs (69%), oral analgesia (75%), narcotic analgesia (4%) and anti-inflammatory suppositories (25%). The majority of women rated these forms of analgesia as effective and identified very few side effects. This study concluded that following vaginal birth, women

commonly reported pain from perineal trauma. This pain affected women's ability to mobilise and was relieved by a variety of agents. Side effects from analgesia were rare.

Manjula,P.et al, (2012)conducted a descriptive study was conducted to examine the factors influencing episiotomy wound healing among 60 postnatal women in Government Taluk Hospital, Kundapura. Purposive sampling technique was used to select the sample. The study concludes that episiotomy wound healing is influenced by parity, frequency of self perineal care, length of episiotomy wound and no of episiotomy sutures present.

Pitangui Ana Carolina Rodarti et al,(2009)conducted a study to characterize and measure perineal pain in puerperal primiparous undergoing episiotomy among 40 puerperal primiparous who underwent normal childbirth with episiotomy. The design adopted was descriptive design. The mean pain level of 4.2, and the words that better characterized perineal pain were: sore; hurting, discomfort, annoying, burning, stinging, throbbing, and pressing. It concluded that the intensity of perineal pain was reported to be moderate. The pain characteristics most reported consisted of the sensorial dimension. The findings of this study suggest the need for identification of both the qualitative and quantitative aspects of pain in obstetric services.

Macarthur AJ & Macarthur C, (2004)conducted a prospective cohort study to determine the frequency of perineal pain in the 6 weeks after vaginal delivery and to assess the association between perineal trauma and perineal pain among four hundred forty-four women in an academic tertiary obstetric unit in Toronto, Canada. They reported that perineal trauma was more common among primiparous women, those with operative vaginal deliveries, and those with epidural analgesia during the second stage of labor. The incidence of perineal pain among the groups during the first week was intact perineum 75% (day 1) and 38% (day 7); first-/second-degree tears 95% and 60%; episiotomies 97% and 71%; and third-/fourth-degree tears 100% and 91%. By 6 weeks, the frequency of perineal pain was not statistically different between trauma groups. This study concluded that acute postpartum perineal pain is

common among all women. However, perineal pain was more frequent and severe for women with increased perineal trauma.

GinekolAkushGinekol, (2004)conducted a prospective study among 33 early puerperal women. It reportd that for a period of 5 years the mean rate of entirely open episiotomy is 1.07%. According to our data the process of episiotomy healing is not influence by: age of me women, parity, duration of labor, the weight of the neonate. For the episiotomy outcome is important the experience of the obstetrician. The shorter time between ROM during labor and delivery and use of cat-gut stitches on the skin of the perineum show tendency of poor healing of the episiotomy.

Sule.S.T et al, (2003)conducted a prospective cohort study to establish the epidemiological variables associated with episiotomies and their puerperal complications at Ahmadu Bello University Teaching Hospital Zaria, Nigeria. The episiotomy rate was 35.6% of all vaginal deliveries. Episiotomies were significantly associated with primigravidity being performed in 88.5% of all primigravidae. The mean delivery-repair interval was 60.5 minutes. The most common puerperal complication of episiotomies was perineal pain that lasted an average of 5.5 days. Other complications included asymmetry (32.9%), infection (23.7%),partial dehiscence (14.5%), skin tags (7.9%), haemorrhage (5.3%) and extension of the incision (1.3%). The complications were not significantly associated with any potential risk factor. This study concluded that in view of the very high episiotomy rate among primigravidae, it is recommended that the episiotomy rate among primigravidae be reduced by re-acquainting accoucheurs with the indications for episiotomy. Attention needs to be given to adequate pain relief for all women who have had an episiotomy and the delivery-repair interval in this unit should be reduced by provision of materials for episiotomy repair in the delivery suite.

Studies related to application of cold gel pad therapy on episiotomy wound

FereshteJahdi, et al, (2010)conducted a single-blind clinical trial to investigate the effect of cooling gel pad on the intensity of perineal pain following episiotomy among 60 primiparous women in Kamali Hospital of Karaj. Study reported the two groups did not show any significant differences in demographic features and other intervening variables. In terms of reduction in pain intensity, there

were significant differences between the two groups 4 hours (p=0.002), 12 hours (p=0.009), and 5 days (p=0.000) after episiotomy. Analgesics usage, five days after delivery, in gel pad group was significantly lower than the control group (p<0.001). This study concluded that using gel pad reduces the perineal pain intensity following episiotomy and decreases the need for using analgesics.

PunasundriThangaraju, (2008)conducted a study to compare the effectiveness of perineal cold gel pad versus oral analgesics in post partumperineal pain relief among 220 patients who delivered their first or second baby by normal vaginal delivery or assisted vaginal delivery with an episiotomy in Singapore General Hospital. Study reported that pain score for the cold gel group was statistically significant, p< 002 after 3 hours of pain relief to p< 000 at 6 hrs. 19.1% to 27 % of patients in the oral analgesic group experienced no pain compared to 26.4% to 49.1 % in the cold gel pad group. Due to reduction in pain, patients in the cold gel pad were able to ambulate, manage and breast feed their babies early. A total of 97.3% of patients were satisfied with the cold gel pads for its effectiveness in absorbing the lochia. This study concluded that the use of the cold gel pads as an alternative method of pain relief was as effective in reducing perineal pain as oral analgesics.

AbedianZahra et al, (2008)conducted a randomized controlled trial to determine the effect of two cooling devices (gel pad and ice pack) on the intensity of perineal pain and to compare its effects with no localised treatment regime (control) among 121 women who gave birth at HazratOmmolbanin University Maternity Hospital in Mashhad –Iran. Study reported that there was a statistically significant difference in the intensity of perineal pain in three groups at 4 hours (p=0.003) and on the day 10 (p= 0.044), after episiotomy, which was in favour of the maternity gel pad group. A considerable variation, observed in the reduced necessity for medication and satisfactory treatment, among three groups. This study concluded that maternity gel pads are effective in reducing the perineal pain intensity, and the need for medication. Therefore, cooling gel pads are suggested as a safe and adequate method of perineal pain relief, which is applicable both at hospital and home.

YusamranChaweewan et al, (2007) conducted a randomized control trial to relief perineal pain after perineorrhaphy by cold gel pack pad among 250 mothers. Study reported that no difference was found in pain scores before and after relieving by cold gel pack pad for 15, 30, 45, 60minutes and before leaving each unit ($p>.05$). In addition, the study found that taking analgesic was significantly correlated with compression ($p<.01$). It also showed that the scores of reduced redness and swelling of perineum before and after compression found statistically significant difference ($p<.05$). Postpartum women were also found to be more significantly satisfied by relieving the pain by cold gel pack pad than by gel pack pad ($p<.05$). This study concluded that cold gel pack pad was effective on reducing swelling better than perineal pain. Therefore, this method should be further promoted and implemented as a routine use in all women following episiotomy.

Dr Steen Mary, (1999)conducted a randomized controlled trial to evaluate the effectiveness of a new cooling device (gel pad) with a standard regimen (ice pack) and compare these with a no localised treatment regimen (control) among 450 women who had undergone either a normal or an instrumental delivery that required suturing of an episiotomy or second degree tear at Midwifery Unit in the North of England and then in women's own homes. Study reported that 316 (71%) of completed questionnaires were returned. A significant reduction in the levels of oedema was observed in favour of using cooling treatments at Day 2 and Day 5 $p=0.016$, $p=0.018$ and there was a significant reduction in bruising at Day 10 $p=0.01$, (using the Kruskal Wallis test). Self reported pain was less in the cooling gel pad group. A significant reduction in pain was demonstrated at Day 5, Day 10 and Day 14, $p =0.023$, $p=0.007$, $p=0.058$ (Kruskal Wallis test). A reduction in pain was reported earlier on Day 2, Day 3 and Day 5 when making a binary comparison of moderate or severe pain, with none or mild, $p=0.0038$, $p=0.037$, $p=0.017$ chi square test. Maternal satisfaction in the cooling gel pad group was rated highly significantly when compared to the other two groups, $p=0.0001$, (Kruskal Wallis test). There was no clinical significant differences monitored between groups when assessing healing. This study concluded that this clinical trial confirms earlier findings in a previous study and provides evidence that the use of a specifically designed cooling gel pad is a safe and effective localised method to alleviate perineal trauma without any adverse effects on healing.

Studies related to application of infra red light therapy on episiotomy wound

Chacko Juby Mary et al., (2013)conducted a single-blind randomized control trialto assess the intensity of pain experienced by postnatal mothers due to episiotomy wound before and after infrared lamp therapy and to evaluate the effectiveness of use of infrared lamp on reducing pain and inflammation among one hundred and twenty postnatal mothers selected from maternity wards of K.L.E.S Dr. PrabhakarKore Charitable hospital, Belgaum.The study involves evaluative approach. Study reported that the intensity of pain experienced by postnatal mothers before and after infrared lamp on day 1 and day 3 was 8.3 and 0 respectively whereas the intensity of inflammation due to episiotomy wound before infrared lamp therapy on day 1 was 9 and after infrared lamp therapy on day 3 was 0.32. The pain and inflammation was significantly low ($p<0.05$) with infrared lamp therapy and is an effective intervention for reduction of episiotomy wound pain and inflammation.

SahooSucharita, (2013) conducted a quasi experimental to assess the effect of infrared therapy on episiotomy pain and wound healing among 40 post natal mothers with episiotomy who are admitted in the ward for 7 days after delivery in SUM hospital, Bhubaneswar. The samples were selected using convenient sampling technique. Study reported that on 3rd day 60% mothers of control group and 10% mother of experimental group had mild pain. In 85% women in experimental group and 10% in control group, the wound was healed on 7th day. The sociodemographic variables were not associated with level of pain & wound healing. This study concluded that the infrared therapy is effective in reducing episiotomy pain and promotes early wound healing and reduces the chance of infection in post-natal mother.

BaruahBudhi, (2012)conducted a quasi experimental study to assess the effect of infrared radiation in the healing of episiotomy wound among 50 postnatal mothers at AcharyaVinobaBhave Rural Hospital, Sawangi, in Wardha district. Purposive sampling technique was used. It reported that Paired 't' test showed that there was significant difference in episiotomy wound healing between infrared radiation application and control group.Chi-square test revealed that there was no significant association between episiotomy wound healing and age, parity, body weight, Hb% level and episiotomy reasons of postnatal mothers.

Venkadalakshmi. et al., (2010)conducted an experimental study to assess the effectiveness of infrared therapy upon episiotomy pain and wound healingamong postnatal mothers at selected Hospitals in Kovilpatti, Tamil Nadu. The design adopted was pre-test, post-test design. Study reported thatthe mean episiotomy pain score of the control group participants was high on all three days in comparison with the experimental group. The difference was found to be statistically significant ($p<0.001$). It was found that 10% of the participants in the control group developed mild infection whereas none of the participants in the experimental group developed any infection at the episiotomy site on the third day of observation.

Dhanalakshmi V, (2010)conducted a study to assess the effect of infrared light therapy and sitzbath on the perineum after episiotomy among 30 samples at selected corporation centre of Coimbatore. The design used was matched group experimental design. Study reported that infrared light therapy and sitzbath were found to effect in the healing of episiotomy. Mothers who had undergone the treatment of infrared light therapy expressed decreased pain intensity compared to mothers who had undergone the treatment of sitzbath.

Studies related to other interventions for episiotomy wound

SuhrabiZainab, et al, (2013) conducted a study to compare the effectiveness of two analgesics for the management of perineal pain caused by episiotomy among 170 nulliparous women who gave birth vaginally with episiotomy. Study reported that the two groups had no significant differences regarding demographic characteristics, maternal, neonatal, and post-delivery factors, and mean premedication pain severity. Means of pain severity were different between the two groups as patients in the celecoxib group had lower means than the other group at 1,2,4,8 and 12 hours (4.01 ± 1.8 vs. 4.46 ± 1.9, 3.17 ± 1.9 vs. 3.79 ± 1.7, 2.89 ± 1.3 vs. 2.96 ± 1.5, 2.19 ± 1.8 vs. 2.55 ± 1.4, and 1.98 ± 1.1 vs. 2.45 ± 1.2, respectively) after administration of analgesics. This study concluded that patients who received celecoxib had lower VAS in comparison with others. Although these differences were not significant, as celecoxib has longer half-life, fewer upper GI symptoms, and is better tolerated based on the previous studies, and this study is in favor of using it.

Jahdie F, et al, (2011)conducted a randomized control trial to investigate the effects of calendula ointment on pain relief of episiotomy wounds among 74 primiparous women admitted in Lolagar hospital of Tehran. Study reported that there was no statistical difference in pain intensity score in two groups before the intervention (p=0/731), 4 hours (p=0/351) and 8 hours (p= 0/143) after the intervention. But there were statistical differences in pain intensity score five days after episiotomy (p= 0.000). This study concluded that the results of this study, it seems that calendula ointment can be used in episiotomy wound care instead of povidone-iodine solution.

Aissaoui Y. et al, (2008) conducted a randomized double-blind, controlled trial to investigate the efficacy of nerve stimulator-guided unilateral pudendal nerve block for pain relief after episiotomy among forty women who gave birth vaginally with mediolateral episiotomy. Study reported that demographic and obstetric characteristics were not different between groups. Successful pudendal nerve stimulation was achieved in all patients. Patients in the pudendal group reported significantly lower pain scores at rest than those in the control group at 3, 6, 12, 24, and 48 h after delivery ($P < 0.05$). They also reported better analgesia while sitting and walking ($P < 0.05$). Additional analgesia was required by three patients (15%) in the pudendal group versus 17 patients (85%) in the placebo group ($P < 0.001$). This study concluded that nerve stimulator-guided unilateral pudendal nerve block with ropivacaine 7.5 mg/mL is associated with decreased pain and need for additional analgesics during the first 48 h postepisiotomy.

Kafali H, et al, (2008)conducted a randomized control study to investigate the efficacy of placing bupivacaine-soaked spongostan among women with mediolateral episiotomy in University medical school. Study reported that in all, 48 women were randomized to group I (local lignocaine alone) and 51 women to group II (local lignocaine plus Spongostan). The Spongostan and control groups were similar with respect to maternal age, parity, gestational age, maternal weight, and neonatal birth weight (p >.05; CI for difference: -2.6/10, 0.1/0.3, 0.3/0.7, 6.9/1.7, and -7/1.9, respectively). Episiotomy length (both vaginal and perineal) and episiotomy depth were higher in Spongostan group than control group (p <.05; 95% CI: -0.9/0, -0.8/-0.1, and -0.6/0, respectively). However, episiotomy reconstruction time of both

groups was similar (p >.05; CI: 1.7/6.2). The pain score of Spongostan group was lower than control group and it was statistically significant at all time intervals (0, 1, 1.5, 2, 6, and 24 hours) between the Spongostan and control groups (p <.05; CI: 0.6/1.9, 1.1/2.4, 1.0/2.5, 0.9/2.4, 0.3/1.9, and 0.5/1.8, respectively). Postpartum total analgesic requirement (mg/person) again was significantly lower in the Spongostan group than control group (p <.01; CI: 0.1/0.4). This study concluded that placement of bupivacaine-soaked spongostan into the episiotomy bed resulted in decreased postpartum pain and drug requirement. It may be attributed to a higher drug concentration at episiotomy bed and prolonged drug effect.

KymplovaJaroslava, et al (2004)conducted a study to consider the possible benefits of phototherapy implemented with therapeutic laser or possibly polarized light in treating episiotomy, which is the most frequent obstetric intervention among 2,436 women. Study reported that the work demonstrated high healing effects with minimum secondary complications in the treatment of episiotomies using a therapeutic laser at an energy density of 2 J/cm^2. The application of polarized light at an energy density of 5 J/cm^2 also exerted favorable therapeutic effects.

CHAPTER-III

RESEARCH METHODOLOGY

This chapter deals with the methodology adopted by the investigator to assess the effectiveness of cold gel pad therapy versus infra-red light therapy on episiotomy pain and wound healing among postnatal mothers at selected hospitals, Madurai. It deals with research approach, research design, setting of the study, population, sample, sample size, sampling technique, criteria for sample selection, development and description of tool, pilot study, testing of tool, procedure for data collection, plan for data analysis and protection of human rights.

RESEARCH APPROACH:

An Evaluatoryand Comparative research approach was adopted by the investigator to assess the effectiveness of cold gel pad therapy versus infra-red light therapy on episiotomy pain and wound healing among postnatal mothers.

RESEARCH DESIGN:

Quasi-experimental and Non-equivalent two group pre test and post test design was adoptedfor this study.

The diagrammatic representation of the research design is given below

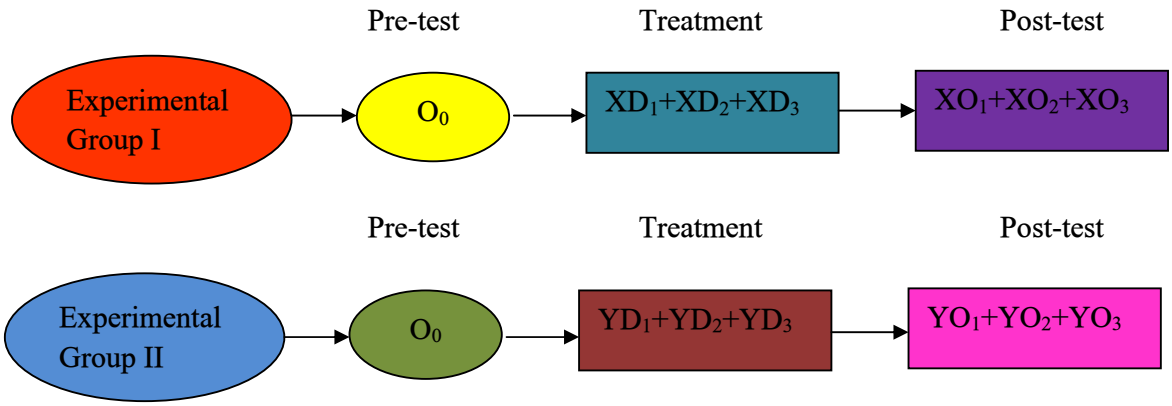


Fig.2.Research Design

O_0- Pre test observation of level of episiotomy pain and wound healing process in experimental group I.

O_0 - Pre test observation of level of episiotomy pain and wound healing process inexperimental group II.

X- Cold gel pad therapy.

XD_1,XD_2AND XD_3–Application of cold gel pad therapy in experimental group I for three days.

XO_1, XO_2 and XD_3–Post test observations of episiotomy pain and healing process after cold gel pad therapy in experimental group I

Y - Infra red light therapy.

YD_1, YD_2,&YD_3- Application of infra red therapy in experimental group II for three days.

YO_1, YO_2,&YO_3- Post test observations of episiotomy pain and healing process in after infra red light therapy in experimental group II.

VARIABLES UNDER STUDY:

1. **Independent variable:**

   Cold gel pad therapy and infra red light therapy were the independent variables under this study.

2. **Dependent variable:**

   Episiotomy pain and wound healing were the dependent variables under this study.

SETTING OF THE STUDY:

The study setting was post-natal ward of Infant Jesus hospital, Madurai. It is a 25 bedded hospital. Approximately 70 to 80 mothers were admitted per month. Among this 1-2 mothers were undergoing normal delivery with episiotomy per day. It is 23 kms away from our parent institution.

POPULATION:

The study population comprised of post-natal mothers who had undergone normal vaginal delivery with episiotomy.

SAMPLE:

Post-natal mothers who had undergone normal vaginal delivery with episiotomy and are fulfilling the inclusion criteria was considered as a sample.

SAMPLE SIZE:

Sample size was 30 post-natal mothers who had undergone normal vaginal delivery with episiotomy. Among them 15were assigned in experimental groupI and 15were assigned in experimental group II

SAMPLING TECHNIQUE:

Non probability purposive sampling technique was used to select the samples for this study.

CRITERA FOR SELECTION OF SAMPLE:

The sample was selected based on the following inclusion and exclusion criteria:-

Inclusion criteria

- Post-natal mothers who had undergone normal vaginal delivery with episiotomy.
- Post-natal mothers who are not receiving any hospital routine for episiotomy wound healing.
- Post-natal mothers who are willing to participate.

Exclusion criteria

- Mothers who had pre-existing medical illnesses such as diabetes mellitus, hypertension etc.
- Mothers who had puerperal complications such as sepsis, hematoma, pyrexia etc.
- Mothers who had undergone operative deliveries.

DEVELOPMENT AND DESCRIPTION OF THE TOOL:

The tool was developed by referring the related literature.Thetool consist of four 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 includingtype of episiotomy, no. of episiotomy stitches, gravid, 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 = 1to 5, Moderate = 6 to 10 and Severe = 11 to 15.

CONTENT VALIDITY:

Tool was given to experts in the field of nursing for content validity. Suggestions were considered and appropriate changes were done to make the tool to be valid.

INSTRUMENTAL VALIDITY:

The instrumental validity of cold gel pad and infra red light was obtained from Dr.Indira Raja, DGO, FAMS., Infant Jesus Hospital, Madurai.

RELIABILITY:

The data were collected from 6 samples to find out the reliability. The split half method was used to establish the reliability of the tool and the reliability of numerical pain rating scale of experimental group was r = 0.98 and for control group was r= 0.81. The reliability of REEDA scale of experimental group was r= 0.94 and for control group was r = 0.74.

PILOT STUDY:

Pilot study was conducted in Madurai Osho Maternity Center for the period of two weeks on six postnatal mothers.The purpose of the pilot study was to find out the feasibility of the study and to finalize the plan for analysis. It revealed that the study was feasible. Results showed that the study was feasible to carry out the main study.

DATA COLLECTION PROCEDURE:

Before starting the study, the researcher obtained formal permission to conduct the study from the hospital authority and the Dissertation committee of RASS Academy College of Nursing, Poovanthi. Data collection procedure was done for 1 month. The researcher was introduced herself to the select the samples and verbal consent was obtained from each subject after giving assurance of confidentiality. The subjects were divided into experimental group I andexperimental group II. Initially

the subjects were interviewed in order to collect demographic data. Afterwards 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 therapyand 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.

PLAN FOR DATA ANALYSIS:

The data analysis was done according to the objectives of the study. Both descriptive and inferential statistics were used. Frequency, percentage distribution was used to describe the demographic variables, obstetrical variables and other variables. Independent and paired t test were used to determine the effectiveness of cold gel pad therapy and infra red light therapy. Chi-square test was used to determine the association between selected variables.

PROTECTION OF HUMAN RIGHTS:

Research proposal was approved by the dissertation committee, RASS AcademyCollege of Nursing, Poovanthi. Prior to the study oral consent of each study subject was obtained before starting the data collection. Assurance was given to the subjects that confidentiality would be maintained.

CHAPTER IV

ANALYSIS AND INTERPRETATION OF DATA

This chapter deals with the analysis and interpretation of the data collected from two selected group of samples that is experimental group I who have receivedthe application of cold gel pad therapy and experimental group II who have received application of infra red light therapy.

The data collected were tabulated, analyzed and presented based on the objectives and hypotheses.

It consists of the following sections:

Section I: Distribution of post-natal mothers according to demographic variables andobstetrical variables.

Section II: Distribution of post-natal mothers according to numerical pain rating scale score and REEDA scale score in experimental group I (Cold gel pad) and experimental group II (Infra red light).

Section III: Comparison of effectiveness of cold gel pad therapy in experimental group I and infra red light in experimental group II using pre and post test scores of numerical pain rating scale and REEDA scale.

Section IV: Comparison of effectiveness 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.

Section V: Association of numerical pain rating scale score and REEDA scale score with the demographic and obstetrical variables in experimental group I (Cold gel pad) and experimental group II (Infra red light).

SECTION – I

Distributionof post-natal mothers according to demographic variables and obstetrical variables

Table 1

Distribution of post-natal mothers according to demographic variables

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 summarizes the distribution of post-natal mothers according to demographic variables. Among 15 samples about 6 (40%) belongs to the Age group of 26-30 years, 5 (33.3%) belongs to the age group of 22-25 years, 4 (26.6%) belongs to the age group of 18-21 years and 0 (0%) belongs to the age group of above 30 years in experimental group I. And7 (46.6%) belongs to the age group of 22-25 years, 4 (26.6%) belongs to the age group of 26-30 years, 4 (26.6%) belongs to the age group of 18-21 years and 0 (0%) belongs to the age group of above 30 years in experimental group II.

Regarding Educational status, 9 out of 15 (60%) were graduate and above, 6 out of 15 (40%) had completed primary school level of education, 0 out of 15 (0%) had completed high school level of education, 0 out of 15 (0%) had completed higher secondary schoollevel of education and 0 out of 15 (0%) were illiterates in experimental group I. And 7 out of 15 (46.6%) were graduate and above, 6 out of 15 (40%) had completed higher secondary schoollevel of education, 2 out of 15 (13.3%)

had completed high school level of education, 0 out of 15 (0%) had completed primary school level of educationand 0 out of 15 (0%) were illiterates in experimental group II.

Regarding Occupation, 7 out of 15 (46.6%) were office worker, 5 out of 15 (33.3%) were housewife, 3 out of 15 (20%) were doing buisness 0 out of 15 (0%) were farmer and 0 out of 15 (0%) were working as daily wage workers in experimental group I. And 9 out of 15 (60%) were housewife, 6 out of 15 (40%) were office worker, 0 out of 15 (0%) were doing buisness, 0 out of 15 (0%) were farmer and 0 out of 15 (0%) were working as daily wage workers in experimental group II.

Regarding Monthly income, 12 out of 15 (80%) had been earning below Rs.5000, 2 out of 15 (13.3%) had been earning between Rs.10001-15000, 1 out of 15 (6.6%) had been earning between Rs.5001-10000 and 0 out of 15 (0%) had been earning above Rs.15000 in experimental group I.And 8 out of 15 (53.3%) had been earning between Rs.10001-15000, 5 out of 15 (33.3%) had been earning above Rs.15000, 2 out of 15 (6.6%) had been earning between Rs.5001-10000 and 0 out of 15 (0%) had been earning below Rs.5000 in experimental group II.

Regarding Type of family, 13 out of 15 (86.6%) belongs to nuclear type of family, 2 out of 15 (13.3%) belongs to joint type of family and 0 out of 15 (0%) belongs to other type of family in experimental group I. And 12 out of 15 (80%) belongs to nuclear type of family, 3 out of 15 (20%) belongs to joint type of family and 0 out of 15 (0%) belongs to other type of family in experimental group II.

Regarding Religion, 7 out of 15 (46.6%) are hindu, 5 out of 15 (33.3%) are christian, 3 out of 15 (20%) are muslim and 0 out of 15 (0%) are others in experimental group I. And 8 out of 15 (53.3%) are hindu, 4 out of 15 (26.6%) are christian, 3 out of 15 (20%) are muslim and 0 out of 15 (0%) are others in experimental group II.

Regarding Area of residence, 13 out of 15 (86.6%) are residing at urban area and 2 out of 15 (13.3%) are residing at rural area in experimental group I. And 13 out

of 15 (86.6%) are residing at urban area and 2 out of 15 (13.3%) are residing at rural area in experimental group II.

Regarding Dietary pattern, 12 out of 15 (80%)are non-vegetarian, 3 out of 15 (20%) are vegetarian and 0 out of 15 (0%) are ova-vegetarian in experimental group I. And 12 out of 15 (80%)are non-vegetarian, 3 out of 15 (20%) are vegetarian and 0 out of 15 (0%) are ova-vegetarian in experimental group II.

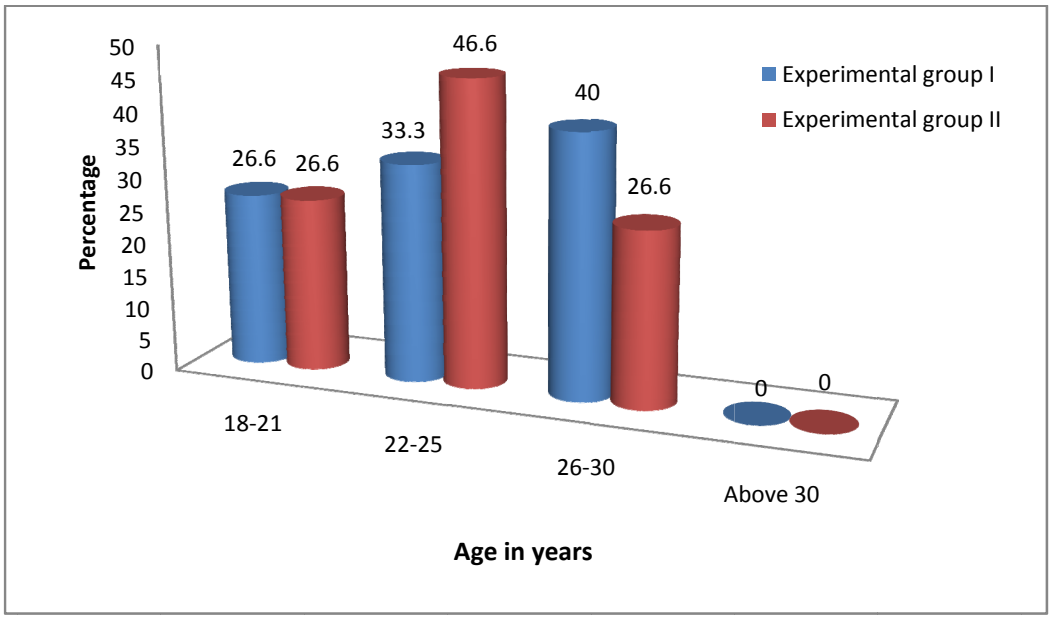


Figure: 3 Distribution of post-natal mothers according to Age

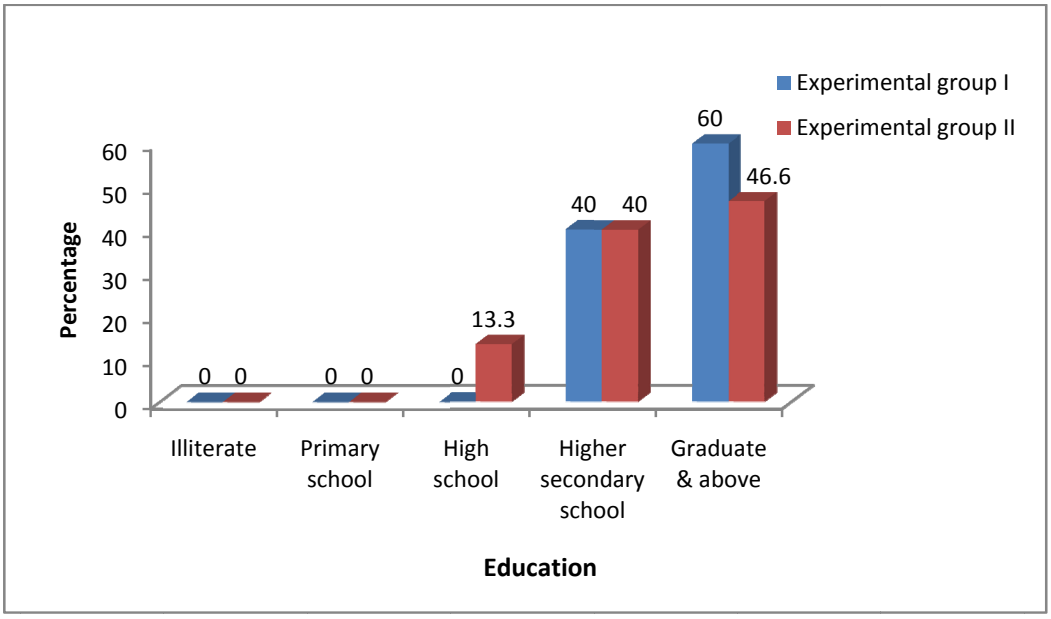


Figure: 4 Distribution of post-natal mothers according to Education

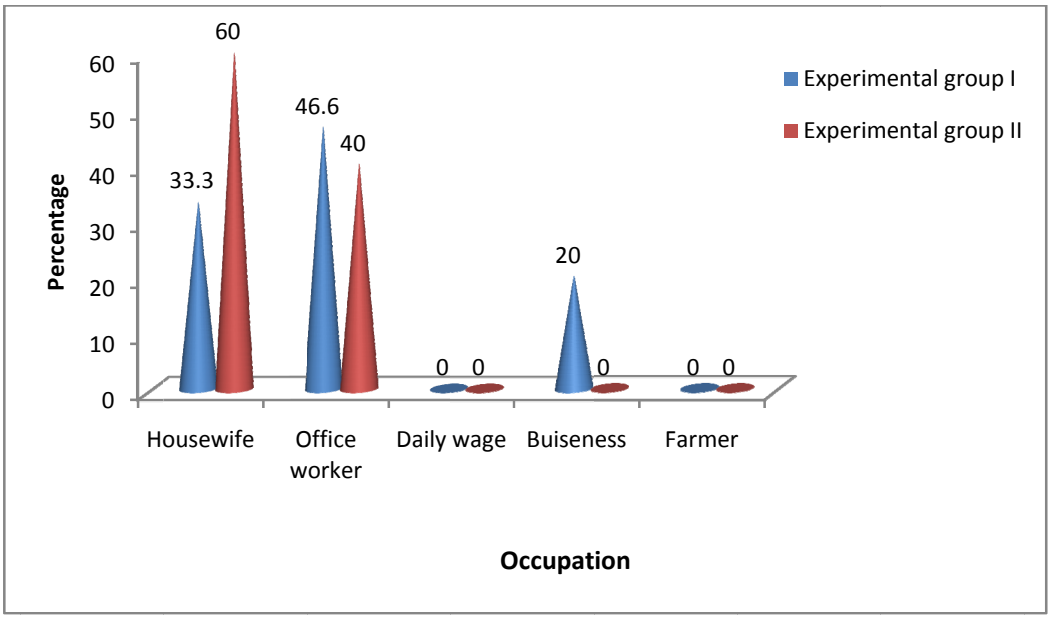


Figure: 5 Distribution of post-natal mothers according to Occupation

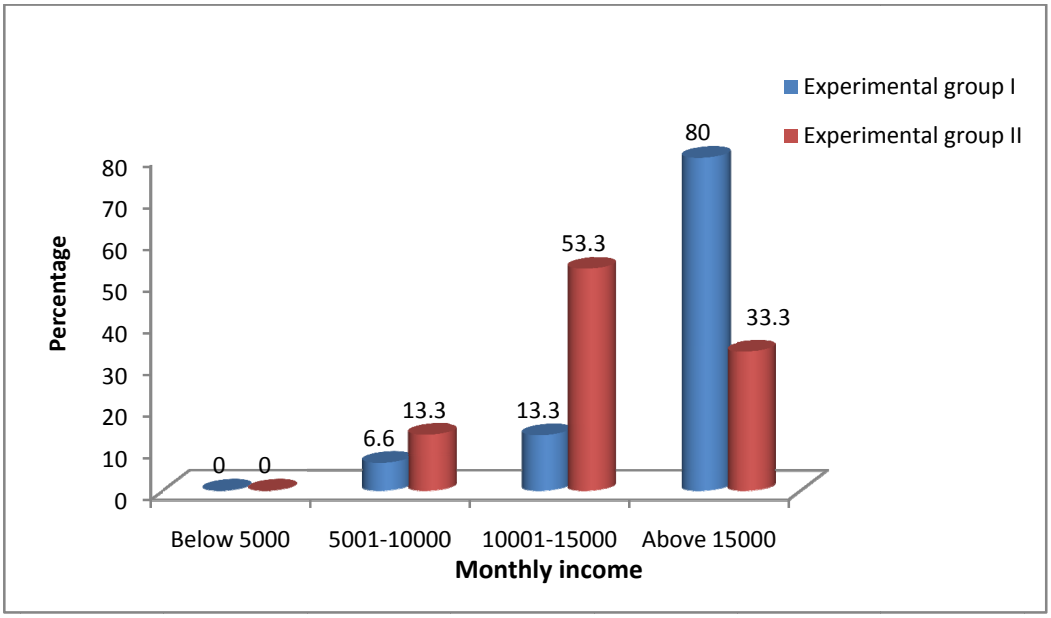


Figure: 6 Distribution of post-natal mothers according to Monthly income

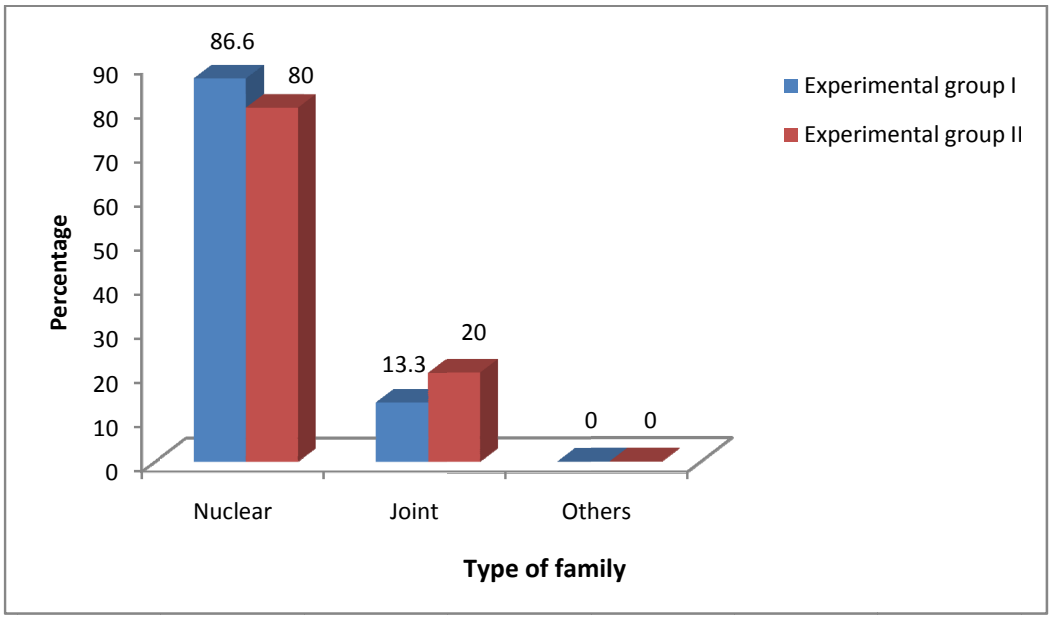


Figure: 7 Distribution of post-natal mothers according to Type of family

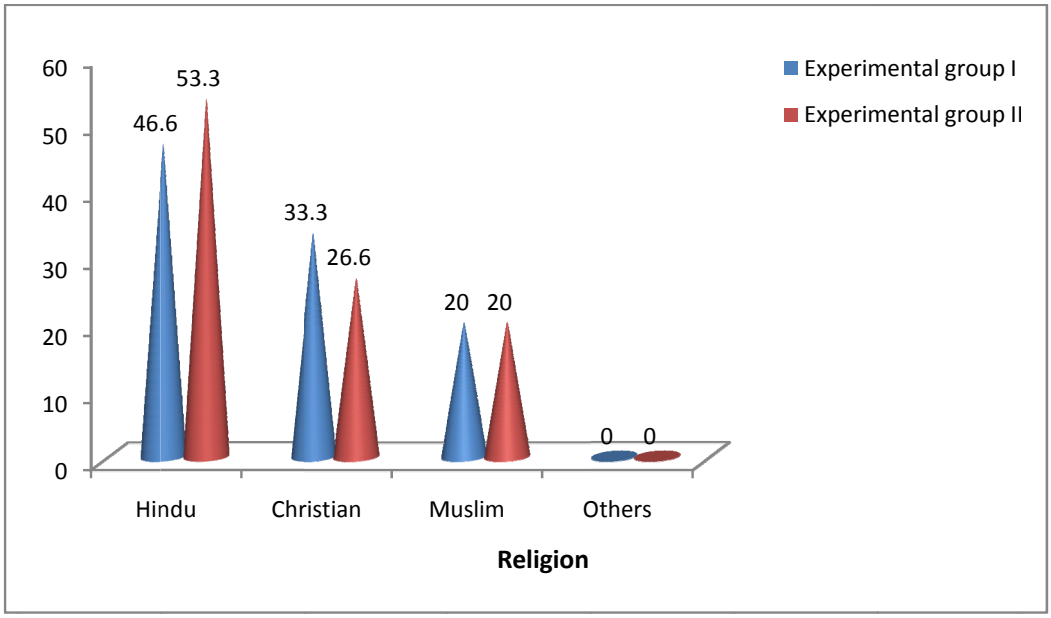


Figure: 8 Distribution of post-natal mothers according to Religion

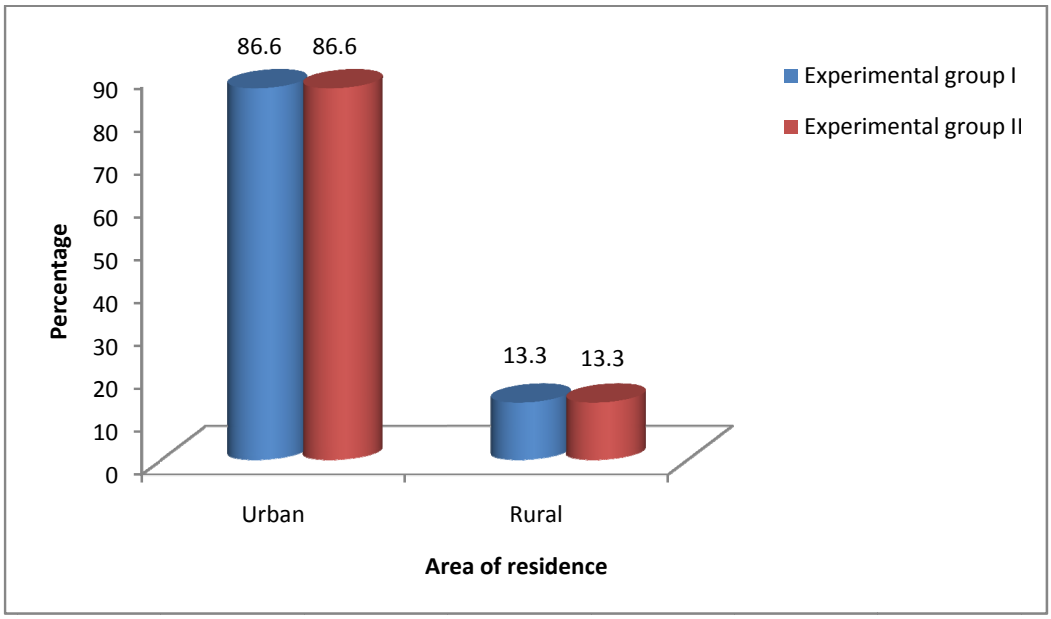


Figure: 9 Distribution of post-natal mothers according to Area of residence

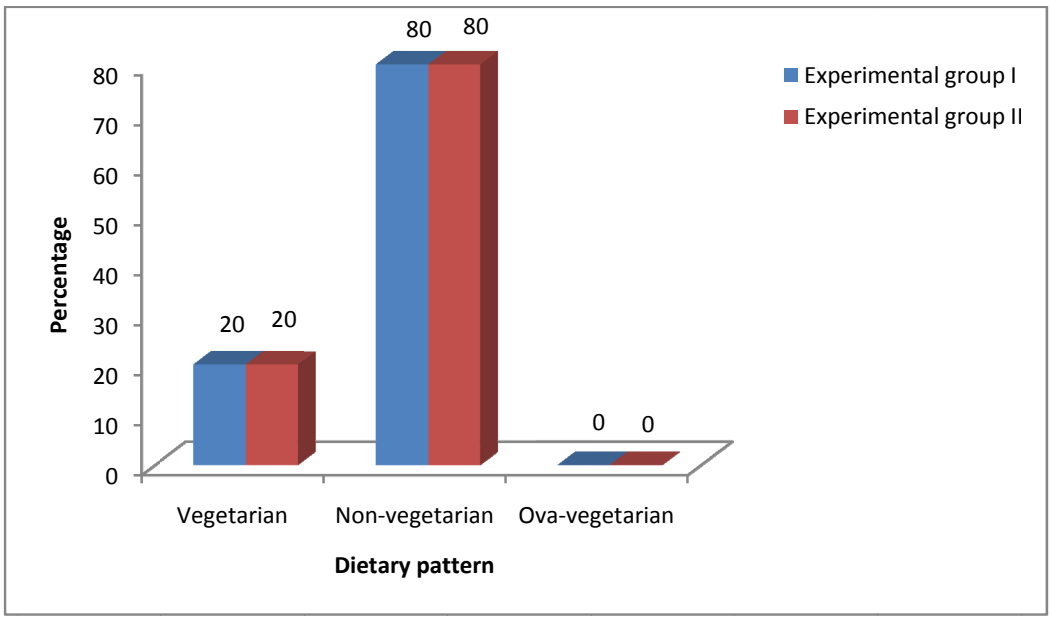


Figure: 10 Distribution of post-natal mothers according to Dietary pattern

Table 2

Distribution ofpost-natal mothers according to obstetrical variables

S.No	Obstetrical variables	Experimental group I (Cold gel pad) (n=15)		Experimental group II (Infra red light) (n=15)	
		f	%	f	%
1.	**Type of episiotomy**				
	Mediolateral	15	100	15	100
	Median	0	0	0	0
	Lateral	0	0	0	0
	J - shaped	0	0	0	0
2.	**Number of episiotomy stitches**				
	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.	**Gravida**				
	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.	**Para**				
	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.	**Live births**				
	1	12	80	11	73.3
	2	3	20	4	26.6
	3	0	0	0	0
	Above 3	0	0	0	0

Table 2summarizes the distribution of post-natal mothers according to obstetrical variables. Regarding Type of episiotomy, 15 out of 15 (100%) had mediolateral episiotomy, 0 out of 15 (0%) had median episiotomy, 0 out of 15 (0%) had lateral episiotomy and 0 out of 15 (0%) had J-shaped episiotomy in experimental group I. And 15 out of 15 (100%) had mediolateral episiotomy, 0 out of 15 (0%) had median episiotomy, 0 out of 15 (0%) had lateral episiotomy and 0 out of 15 (0%) had J-shaped episiotomy in experimental group II.

Regarding Number of episiotomy stitches, 11 out of 15 (73.3%) had 5 stitches, 3 out of 15 (20%) had 4 stitches, 1 out of 15 (6.6%) had 6 stitches and 0 out of 15 (0%) had above 6 stitches in experimental group I. And 13 out of 15 (86.6%) had 5 stitches, 2 out of 15 (13.3%) had 4 stitches, 0 out of (0%) had 6 stitches and 0 out of 15 (0%) had above 6 stitchesin experimental group II.

Regarding Gravida, 9 out of 15 (60%) had G_1, 5 out of 15 (33.3%) had G_2, 1 out of 15 (6.6%) had G_3 and 0 out of 15 (0%) had above G_3in experimental group I. And 11 out of 15 (73.3%) had G_2, 4 out of 15 (26.6%) had G_1, 0 out of 15 (0%) had G_3 and 0 out of 15 (0%) had above G_3 in experimental group II.

Regarding Para, 11 out of 15 (73.3%) had P_1, 4 out of 15 (26.6%) had P_2, 0 out of 15 (0%) had P_3 and 0 out of 15 (0%) had above P_3 in experimental group I. And 8 out of 15 (53.3%) had P_2, 7 out of 15 (46.6%) had P_1, 0 out of 15 (0%) had P_3 and 0 out of 15 (0%) had above 3 in experimental group II.

Regarding Live births, 12 out of 15 (80%) had L_1, 3 out of 15 (20%) had L_2, 0 out of 15 (0%) had $L_3$and 0 out of 15 (0%) had above 3 score in experimental group I. And 11 out of 15 (73.3%) had L_1, 4 out of 15 (26.6%) had L_2, 0 out of 15 (0%) L3 and 0 out of 15 (0%) above 3 score in experimental group II.

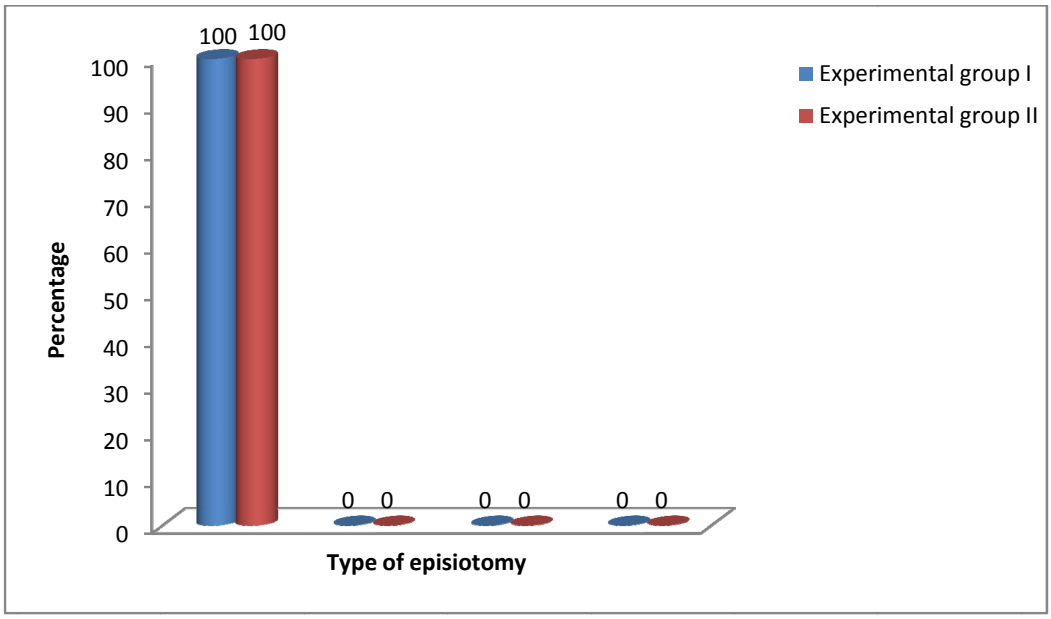


Figure: 11 Distribution of post-natal mothers according to Type of episiotomy

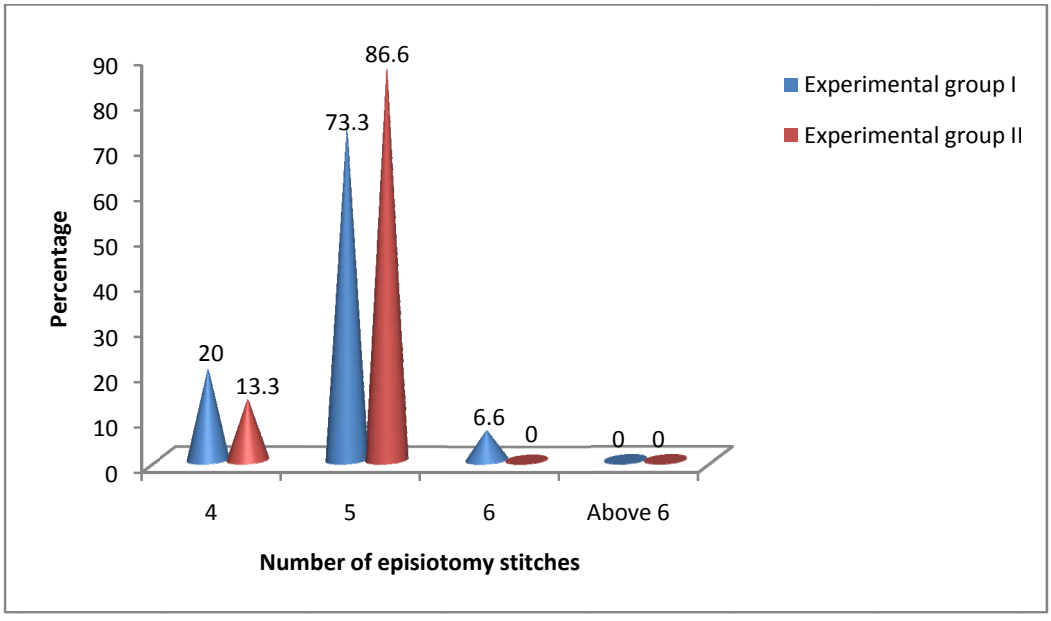


Figure: 12 Distribution of post-natal mothers according to Number of episiotomy stitches

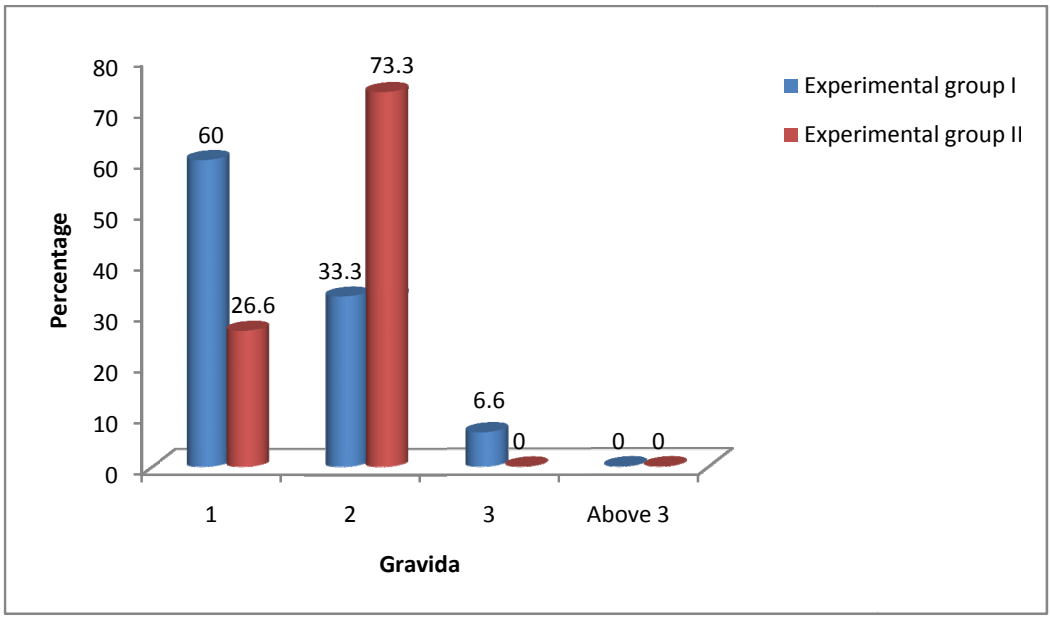


Figure: 13 Distribution of post-natal mothers according to Gravida

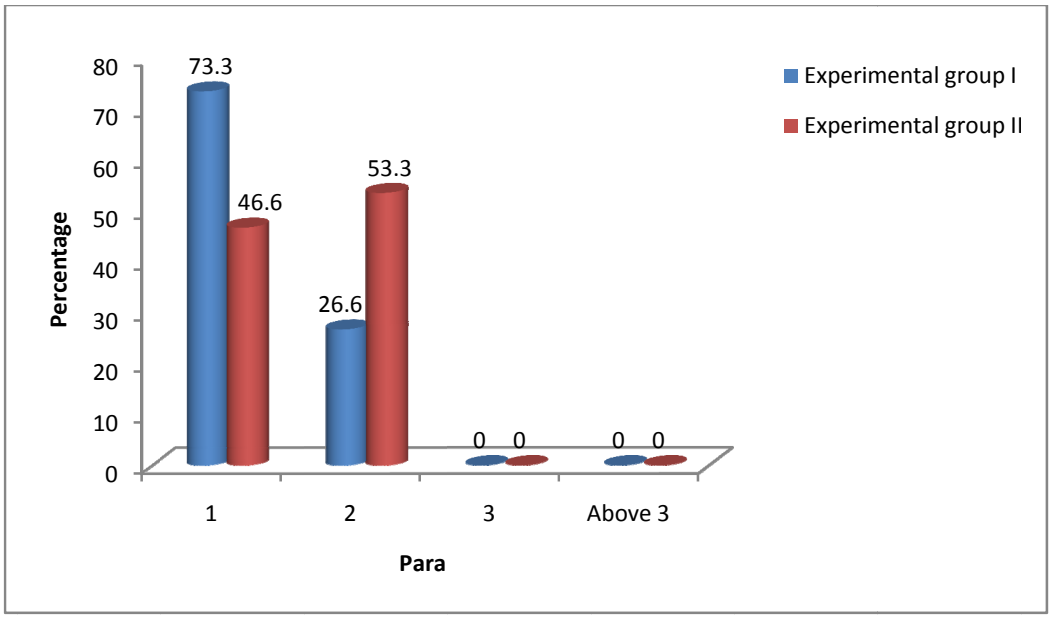


Figure: 14 Distribution of post-natal mothers according to Para

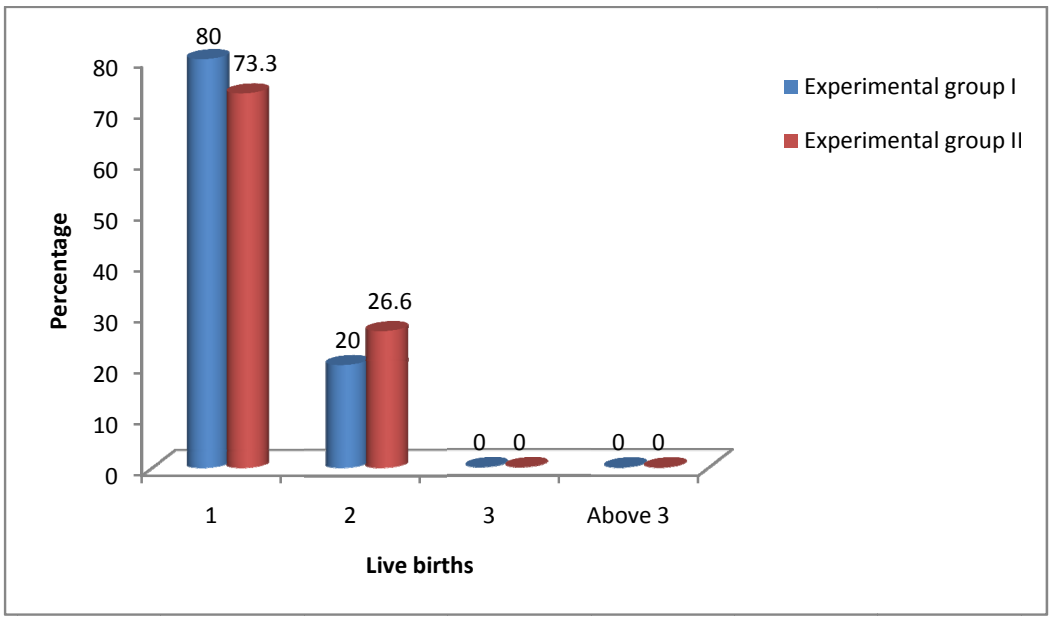


Figure: 15 Distribution of post-natal mothers according to Live births

SECTION-II

Distribution of post-natal mothers according to Numerical pain rating scale score and REEDA scale scorein experimental group I (Cold gel pad) and experimental group II (Infra red light).

Table 3

Distribution of post-natal mothers according to Numerical pain rating scale score and REEDA scale score in experimental group I (Cold gel pad).

S.No	Scale	No. of observation	None		Mild		Moderate		Severe	
			f	%	f	%	f	%	f	%
1.	Pain scale score	Pre test	0	0	0	0	2	13.3	13	86.6
		Post test	0	0	1	6.6	12	80	2	13.3
2.	REEDA scale score	Pre test	0	0	0	0	12	80	3	20
		Post test	0	0	0	0	15	100	0	0

Table 3summarizes the distribution of post-natal mothers according to Numerical pain rating scale score and REEDA scale scorein experimental group I(Cold gel pad).According to numerical pain rating scale score in pre test, 13 out of 15 (86.6%) were in severe, 2 out of 15 (13.3%) were in moderate, 0 out of 15 (0%) were in none and 0 out of 15 (0%) were in mild. In post test12 out of 15 (80%) were in severe, 2 out of 15 (13.3%) were in moderate, 1 out of 15 (6.6%) were in mild and 0 out of 15 (0%) were in none.

According to REEDA scale score in pre test, 12 out of 15 (80%) were in moderate, 3 out of 15 (20%) were in severe, 0 out of 15 (0%) were in none and 0 out of 15 (0%)were in mild. In post test15 out of 15 (100%) were in moderate, 0 out of 15 (0%) were in severe, 0 out of 15 (0%) were in none and 0 out of 15 (0%)were in mild.

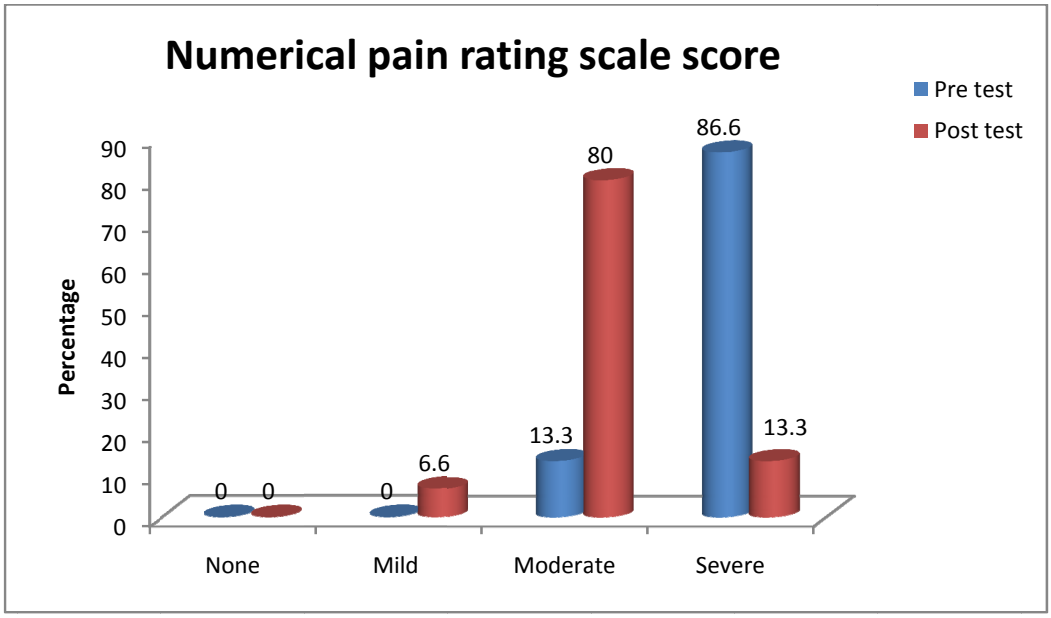


Figure: 16 Distribution of post-natal mothers according to Numerical pain rating scale score in experimental group I (Cold gel pad).

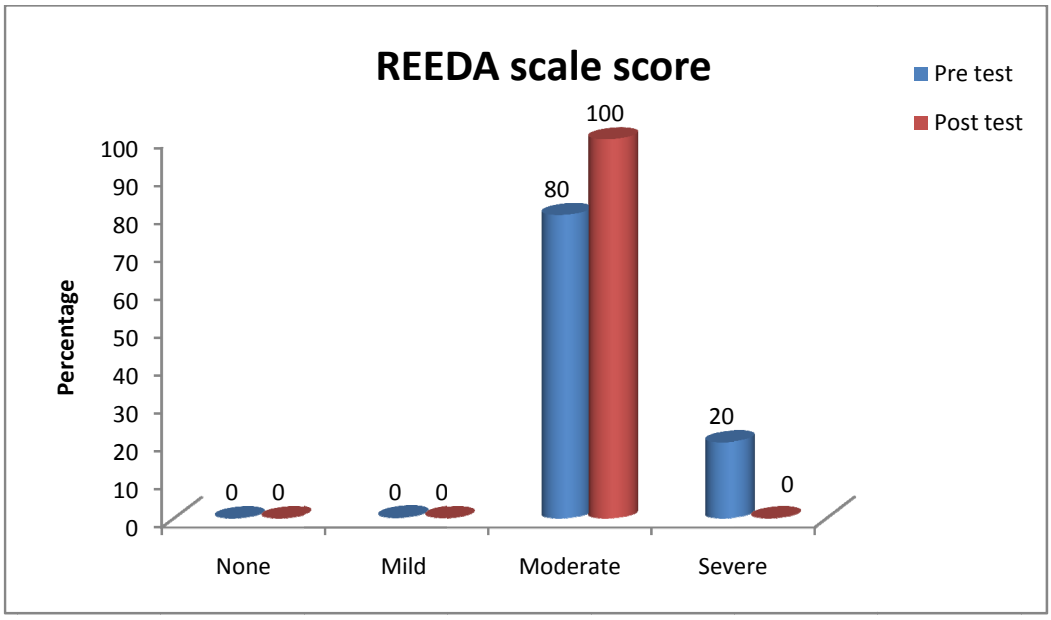


Figure: 17 Distribution of post-natal mothers according to REEDA scale score in experimental group I (Cold gel pad).

Table 4

Distributionof post-natal mothers according to Numerical pain ratingscale score and REEDA scale score in experimental group II (Infra red light)

S.No	Scale	No. of observation	None		Mild		Moderate		Severe	
			f	%	f	%	f	%	f	%
1.	Pain scale score	Pre test	0	0	0	0	3	20	12	80
		Post test	0	0	0	0	3	20	12	80
2.	REEDA scale score	Pre test	0	0	0	0	10	66.6	5	33.3
		Post test	0	0	0	0	14	93.3	1	6.6

Table 4summarizes the distribution of post-natal mothers according to Numerical pain rating scale score and REEDA scale scoreinexperimental group II (Infra red light). According to numerical pain rating scale score in pre test, 12 out of 15 (80%) were in severe, 3 out of 15 (20%) were in moderate, 0 out of 15 (0%) were in none and 0 out of 15 (0%) were in mild. And 12 out of 15 (80%) were in severe, 3 out of 15 (20%) were in severe, 0 out of 15 (0%) were in none and 0 out of 15 (0%) were in mild.

According to REEDA scale scorein pre test, 10 out of 15 (66.6%) were in moderate, 5 out of 15 (33.3%) were in severe, 0 out of 15 (0%) were in none and 0 out of 15 (0%)were in mild. And 14 out of 15 (93.3%) were in moderate, 1 out of 15 (6.6%) were in severe, 0 out of 15 (0%) were in none and 0 out of 15 (0%)were in mild.

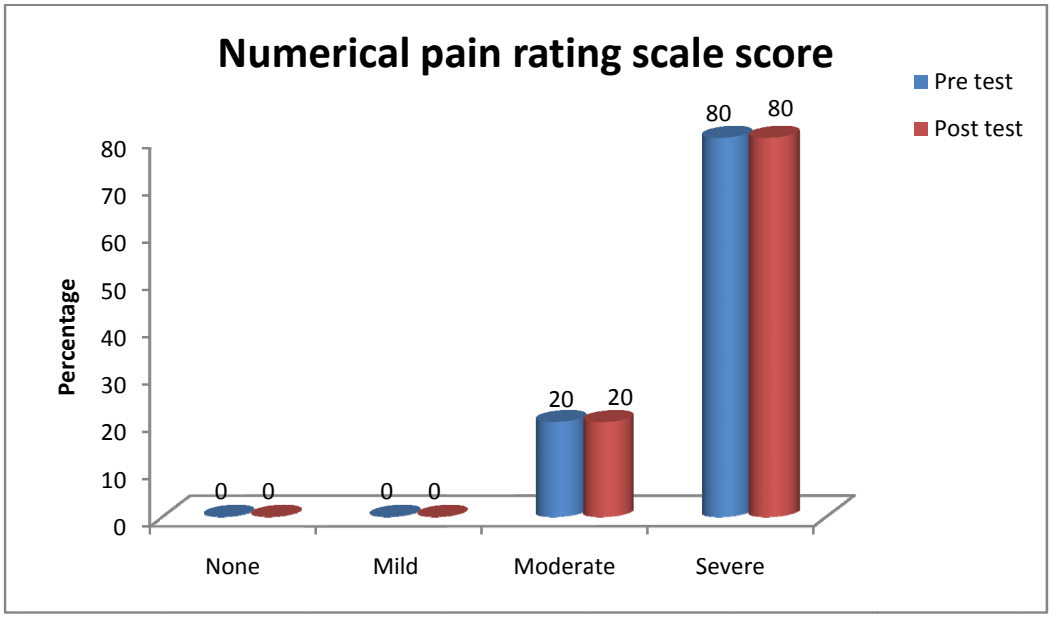


Figure: 18 Distribution of post-natal mothers according to Numerical pain rating scale scorein experimental group II (Infra red light)

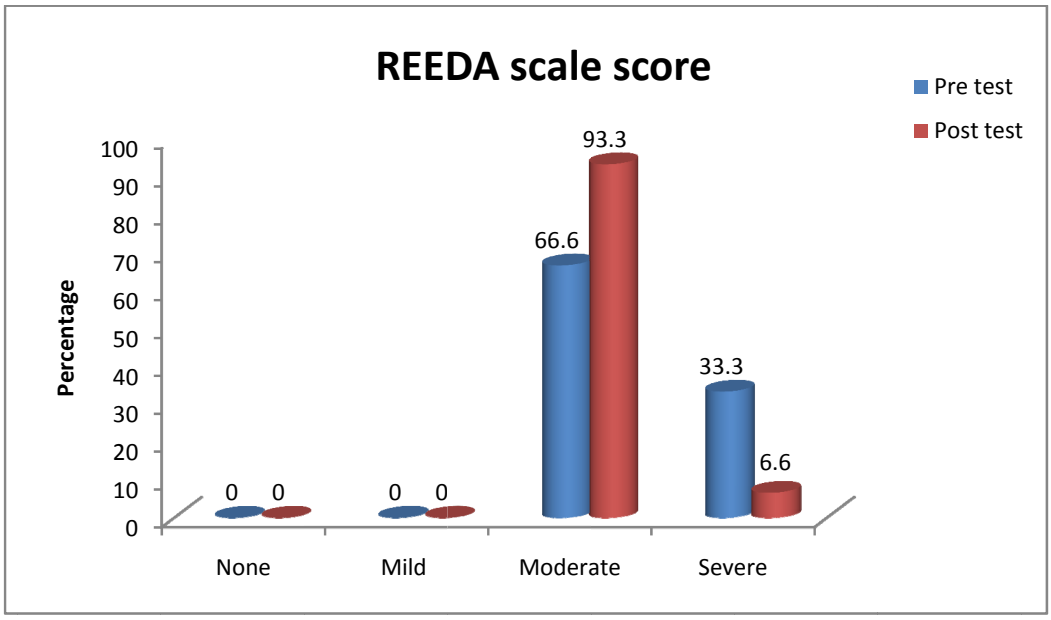


Figure: 19 Distribution of post-natal mothers according to REEDA scale scorein experimental group II (Infra red light)

SECTION-III

Comparison of effectiveness of cold gel pad therapy in experimental group I andinfra red light therapy in experimental group II using pre and post test scores of numerical pain rating scale and REEDA scale.

Table 5

Comparison of effectiveness of cold gel pad therapy in experimental group Iusing pre and post test scores of numerical pain rating scale and REEDA scale.

N=15

S.No	Scale	Pre test		Post test		
		Mean	S.D	Mean	S.D	t value
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***

Pre test "t" value= 7.07
Post test "t" value=30.3
***** - Highly significant**

Table 5represents the comparison of effectiveness 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 testscore of Numerical pain rating scale was 8.46 and the mean score of post testwas 5.8 and the obtained "t" value was 7.07 at 14 (df) which was significant at 0.05 levelwhen compared to tabulated value 2.15. This indicates that the difference between the mean (2.66) was a true difference and has not occurred by chance which shows the effectiveness of cold gel pad therapy in reducing episiotomy pain and in improving the wound healing process.

The mean pre test score of REEDA scale was 9.73and the mean score of post test was 7 and the obtained "t" value was 30.3 at 14 (df) which was significant at 0.05 level when compared to tabulated value 2.15. This indicates that the difference between the mean (2.73) was a true difference and has not occurred by chance which shows the effectiveness of infra red light therapy in reducing episiotomy pain and in improving the wound healing process.

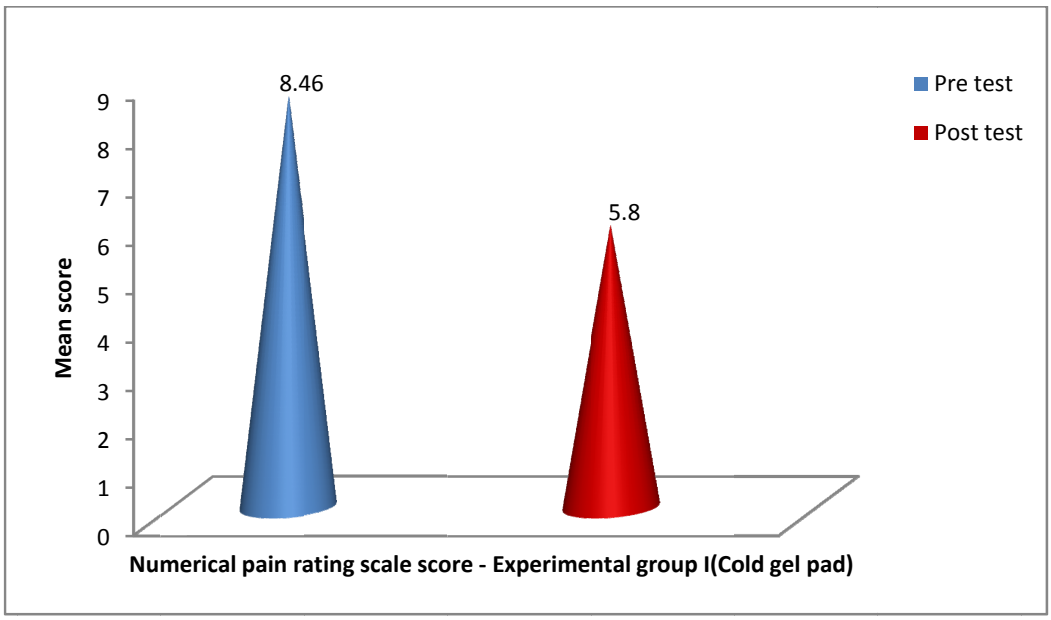


Figure:20Comparison of effectiveness of cold gel pad therapy in experimental group I using pre and post test scores of numerical pain rating scale.

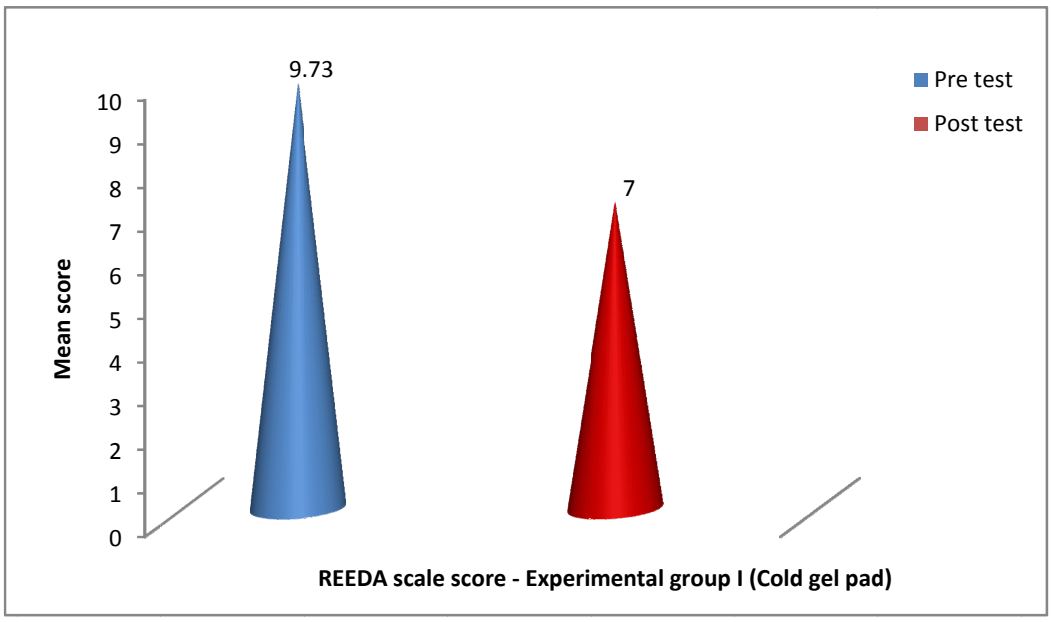


Figure:21Comparison of effectiveness of cold gel pad therapy in experimental group I using pre and post test scores of numerical pain rating scale.

Table 6

Comparison of effectiveness of infra red light therapy in experimental group II using pre and post test scores of numerical pain rating scale and REEDA scale.

N=15

S.No	Scale	Pre test		Post test		
		Mean	**S.D**	**Mean**	**S.D**	**t value**
1.	Pain scale	8.93	0.24	6.13	0.10	28**
2.	REEDA scale	10.26	1.34	7.6	1.70	8.52**

Pre test "t" value=28
Post test "t" value=8.52
**** - Highly significant**

Table 6represents thecomparison of effectiveness 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 testscore of Numerical pain rating scale was 8.93 and the mean score of post test was 6.13 and the obtained "t" value was 28 at 14 (df) which was significant at 0.05 levelwhen compared to tabulated value 2.15. This indicates that the difference between the mean (2.8) was a true difference and has not occurred by chance which shows the effectiveness of cold gel pad therapy in reducing episiotomy pain and in improving the wound healing process.

The mean pre test score of REEDA scale was 10.26 and the mean score of post test was 7.6 and the obtained "t" value was 8.52 at 14 (df) which was significant at 0.05 levelwhen compared to tabulated value2.15. This indicates that the difference between the mean (2.66) was a true difference and has not occurred by chance which shows the effectiveness of infra red light therapy in reducing episiotomy pain and in improving the wound healing process.

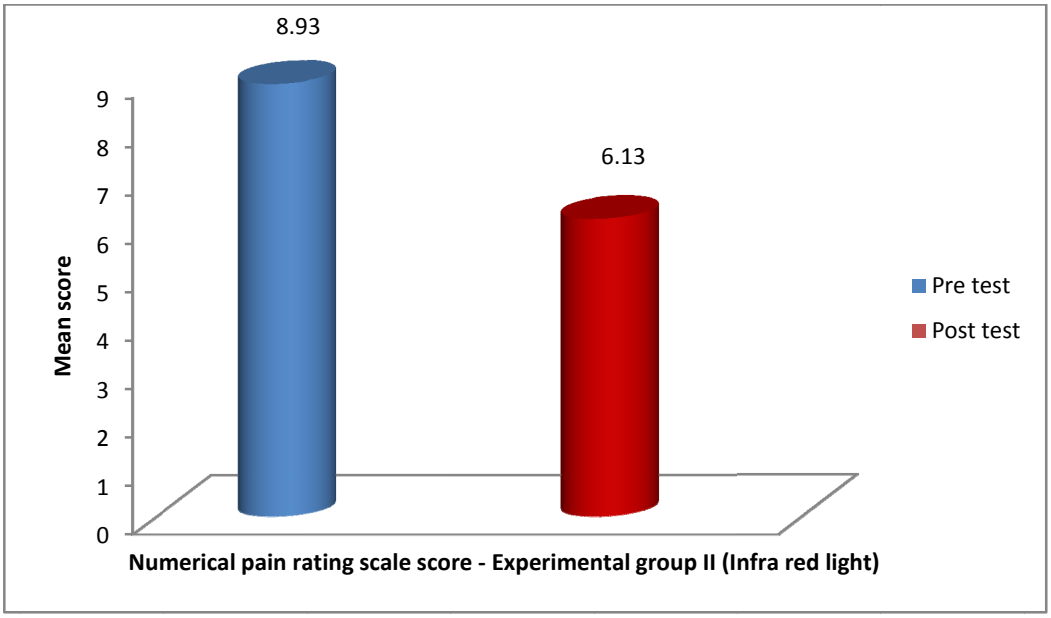


Figure:22Comparison of effectiveness of infra red light therapy in experimental group II using pre and post test scores of numerical pain rating scale.

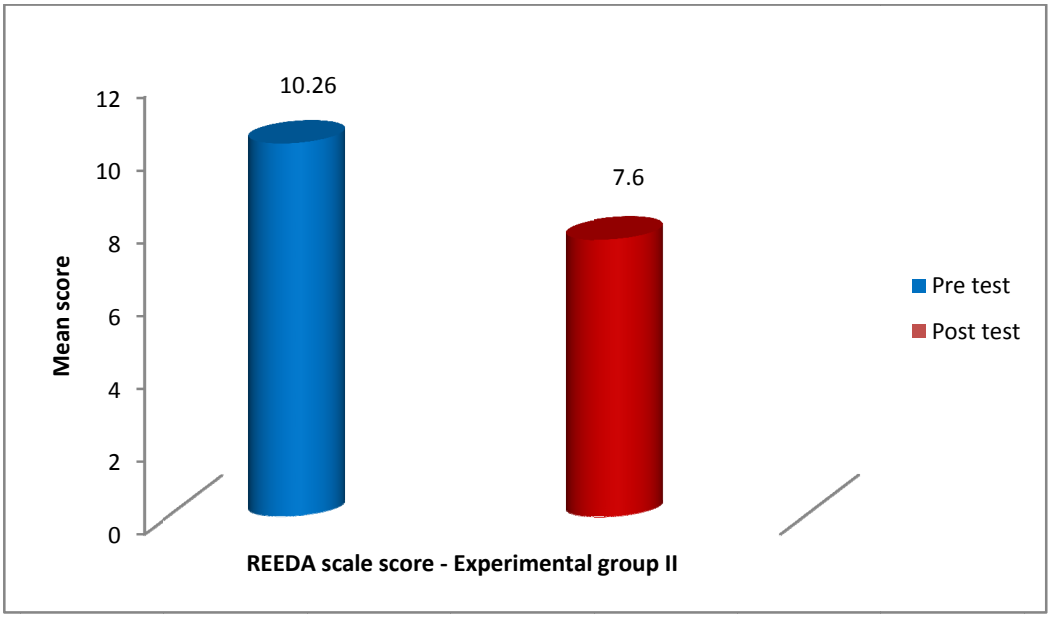


Figure: 23Comparison of effectiveness of infra red light therapy in experimental group II using pre and post test scores of REEDA scale.

SECTION-III

Table 7

Comparison of effectiveness 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.

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)		
		Mean	S.D	Mean	S.D	t value
1.	Pain scale	5.8	1.47	6.13	0.10	6.56***
2.	REEDA scale	7	0.92	7.6	1.70	2.40**

Experimental group I(Cold gel pad)"t" value=6.56
Experimental group II(Infra red light)"t" value=2.40
**** - Highly significant**

Table 7 represents the comparison of effectiveness 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 score of post test in the experimental group II was 6.13 and the obtained "t" value was 6.56 at 29 (df) which was significant at 0.05 levelwhen compared to tabulated value 2.05. This indicates that the difference between the mean (0.33) was a true difference and has not occurred by chance which shows 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.

The mean post test score of REEDA scale in experimental group II was 7 and the mean score of post testin the experimental group II was 7.6 and the obtained "t" value was 2.40 at 29 (df) which was significant at 0.05 levelwhen compared to tabulated value 2.05. This indicates that the difference between the mean (0.6) was a

true difference and has not occurred by chance which shows 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.

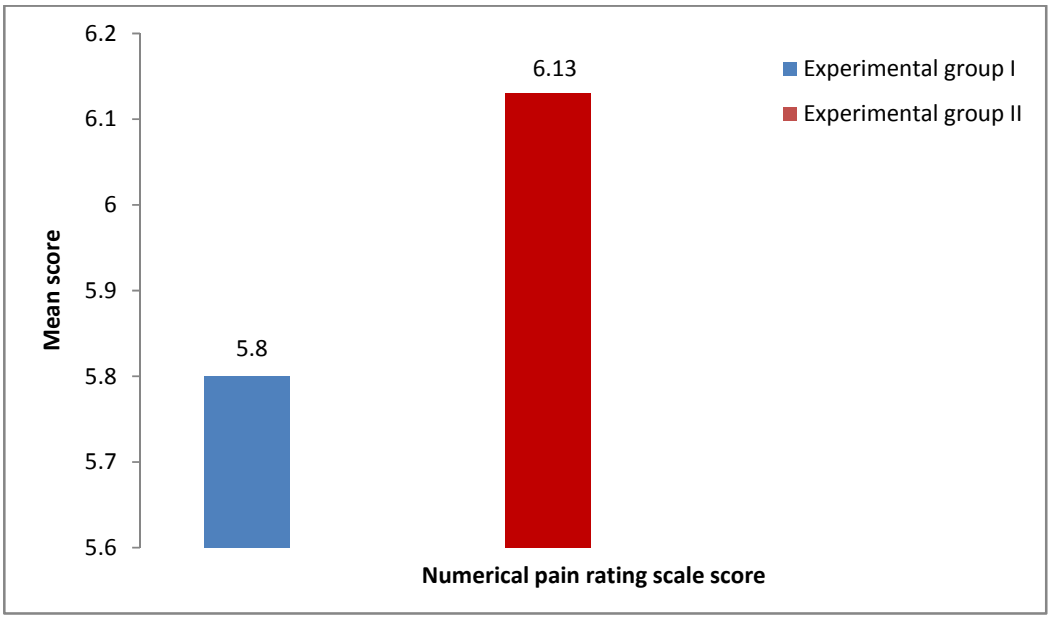


Figure: 24 Comparison of effectiveness of cold gel pad therapy in experimental group I versus infra red light therapy in experimental group II using post test scores of numerical pain rating scale.

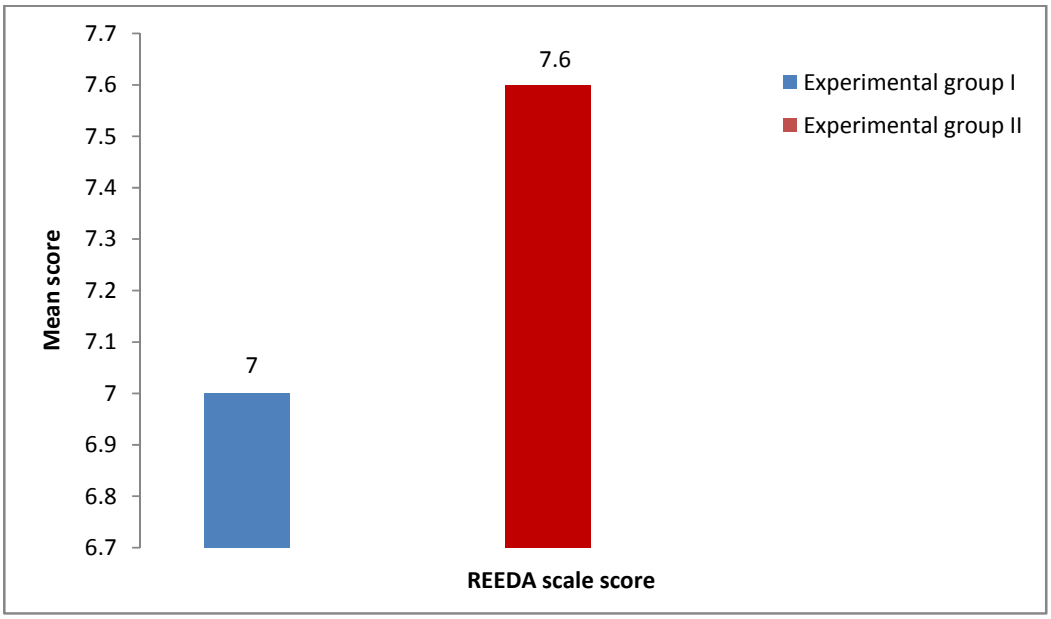


Figure: 25Comparison of effectiveness of cold gel pad therapy in experimental group I versus infra red light therapy in experimental group II using post test scores of REEDAscale.

SECTION-VI

Association of numerical pain rating scale score and REEDA scale score with selected demographic and obstetricalvariables in experimental group I (Cold gel pad) and experimental group II (Infra red light).

Table 8

Association of numerical pain rating scale score and REEDA scale score with selecteddemographic variables in experimental group I (Cold gel pad).

S.No	Demographic variables	Numerical pain rating scale			REEDA scale		
		Above mean	Below mean	X^2	Above mean	Below mean	X^2
1.	**Age**			2.26			0.10
	18-21 years	-	9.75	(NS)	-	4	(NS)
	22-25 years	9.6	-		9.6	-	
	26-30 years	8.3	-		9.6	-	
	>30 years	-	-		-	-	
2.	**Education**			0.09			
	Illiterate	-	-	(NS)	-	-	0.06
	Primary school	-	-		-	-	(NS)
	High school	-	-		-	-	
	Higher secondary school	8.83			9.6	-	
	Graduate/PG	-	9.22		9.7	10	
3.	**Occupation**			0.66			0.90
	Housewife	8.8	-	(NS)	-	9	(NS)
	Office worker	9	-		10	-	
	Daily wage	-	-		-	-	
	Business	-	10		10.3	-	
	Farmer	-	-		-	-	

4.	**Monthly income**			0.56 (NS)			9.27 (NS)
	Below 5000	-	-		-	-	
	5000-10001	9	-		10	-	
	10001-15000	9.5	-		11	-	
	Above 15000	9.08	-		9.5	-	
5.	**Type of family**			2.77 (NS)			1.29 (NS)
	Nuclear	9.30	-		-	9	
	Joint	-	8		9.5	-	
	Others	-	-		-	-	
6.	**Religion**			4.06			0.47
	Hindu	-	8.16	(NS)	9.85	-	(NS)
	Christian	9.66	-		9.8	-	
	Muslim	10	-		10.5	-	
	Others	-	-		-	-	
7.	**Area of residence**			2.77 (NS)			0.57 (NS)
	Urban	9.30	-		-	9	
	Rural	-	8		9.5	-	
8.	**Dietary pattern**			1.6 (NS)			0.41 (NS)
	Vegetarian	-	9		9.66	-	
	Non vegetarian	9.16	-		-	8.91	
	Ova vegetarian	-	-		-	-	

Level of significant at 0.05
(NS)-Not Significant

1. According to numerical pain rating scale

Regarding age the calculated value of chi-square (2.26) is less than the table value (16.92) at 0.05 level of significance. So there was no association between the age and pre test scores of numerical pain rating scale.

According to education the calculated value of chi-square (0.09) is less than the table value (21.03) at 0.05 level of significance. So there was no association between the education and pre test scores of numerical pain rating scale.

According to occupation the calculated value of chi-square (0.66) is less than the table value (12) at 0.05 level of significance. So there was no association between the occupation and pre test scores of numerical pain rating scale.

According to monthly income the calculated value of chi-square (0.56) is less than the table value (16.92) at 0.05 level of significance. So there was no association between themonthly income and pre test scores of numerical pain rating scale.

According to type of family the calculated value of chi-square (2.77) is less than the table value (12.59) at 0.05 level of significance. So there was no association between the type of family and pre test scores of numerical pain rating scale.

According to Religion the calculated value of chi-square (4.06) is less than the table value (16.92) at 0.05 level of significance. So there was no association between the Religion and pre test scores of numerical pain rating scale.

According to Area of residence the calculated value of chi-square (2.77) is less than the table value (9.49) at 0.05 level of significance. So there was no association between the Area of residence and pre test scores of numerical pain rating scale.

According to Dietary patternthe calculated value of chi-square (1.6) is less than the table value (12.59) at 0.05 level of significance. So there was no association between the Dietary pattern and pre test scores of numerical pain rating scale.

2. According to REEDA Scale

Regarding age the calculated value of chi-square (0.10) is less than the table value (16.92) at 0.05 level of significance. So there was no association between the age and pre test scores of REEDA and scale.

According to education the calculated value of chi-square (0.06) is less than the table value (21.03) at 0.05 level of significance. So there was no association between the education and pre test scores of REEDA scale.

According to occupation the calculated value of chi-square (0.90) is less than the table value (12) at 0.05 level of significance. So there was no association between the occupation and pre test scores of REEDA scale.

According to monthly income the calculated value of chi-square (9.27) is less than the table value (16.92) at 0.05 level of significance. So there was no association between the monthly income and pre test scores of REEDA scale.

According to type of family the calculated value of chi-square (1.29) is less than the table value (12.59) at 0.05 level of significance. So there was no association between the type of family and pre test scores of REEDA scale.

According to Religion the calculated value of chi-square (0.18) is less than the table value (16.92) at 0.05 level of significance. So there was no association between theReligionand pre test scores of REEDA scale.

According to Area of residence the calculated value of chi-square (0.57) is less than the table value (9.49) at 0.05 level of significance. So there was no association between the Area of residenceage and pre test scores of REEDA scale.

According to Dietary patternthe calculated value of chi-square (1.87) is less than the table value (12.59) at 0.05 level of significance. So there was no association between the Dietary pattern and pre test scores of REEDA scale.

Table 9

Association of numerical pain rating scale score and REEDA scale score with selectedobstetrical variables in experimental group I (Cold gel pad).

S.No	Obstetrical variables	Numerical pain rating scale			REEDA scale		
		Above mean	Below mean	X^2	Above mean	Below mean	X^2
1.	**Type of episiotomy**			0			0
	Mediolateral	9.13	-	(NS)	9.06	-	(NS)
	Median	-	-		-	-	
	Lateral	-	-		-	-	
	J-shaped	-	-		-	-	
2.	**No. of episiotomy stitches**			1.35 (NS)			0.005 (NS)
	4	-	8		9.66	-	
	5	10.27	-		9.81	-	
	6	-	9		12	-	
	>6	-	-		-	-	
3.	**Gravida**			8.26			2.5
	1	9.5	-	(NS)	9.88	-	(NS)
	2	9.2	-		-	8.8	
	3	-	6		10	-	
	Above 3	-	-		-	-	
4.	**Para**			6.37			1.36
	1	9.54	-	(NS)	9.9	-	(NS)
	2	-	8		-	9	
	3	-	-		-	-	
	Above 3	-	-		-	-	
5.	**Live births**			9.23			0.93
	1	9.58	-	(NS)	-	9	(NS)
	2	-	7.3		9.33	-	
	3	-	-		-	-	
	Above 3	-	-		-	-	

Level of significant at 0.05
(NS)-Not Significant

1. According to numerical pain rating scale

Regarding Type of episiotomy the calculated value of chi-square (0) is less than the table value (16.92) at 0.05 level of significance. So there was no association between the Type of episiotomy and pre test scores of numerical pain rating scale.

According to No. of episiotomy stitches the calculated value of chi-square (1.35) is less than the table value (16.92) at 0.05 level of significance. So there was no association between the No. of episiotomy stitches and pre test scores of numerical pain rating scale.

According toGravidathe calculated value of chi-square (8.26) is less than the table value (16.92) at 0.05 level of significance. So there was no association between the Gravida and pre test scores of numerical pain rating scale.

According to Parathe calculated value of chi-square (6.37) is less than the table value (16.92) at 0.05 level of significance. So there was no association between the Para and pre test scores of numerical pain rating scale.

According to Live births the calculated value of chi-square (9.23) is less than the table value (16.92) at 0.05 level of significance. So there was no association between the Live births and pre test scores of numerical pain rating scale.

2. According to REEDA Scale

Regarding Type of episiotomy the calculated value of chi-square (0) is less than the table value (16.92) at 0.05 level of significance. So there was no association between the Type of episiotomy and pre test scores of REEDA scale.

According to No. of episiotomy stitches the calculated value of chi-square (0.005) is less than the table value (16.92) at 0.05 level of significance. So there was no association between the No. of episiotomy stitches and pre test scores of REEDA scale.

According toGravidathe calculated value of chi-square (2.5) is less than the table value (16.92) at 0.05 level of significance. So there was no association between the Gravida and pre test scores of REEDA scale.

According to Parathe calculated value of chi-square (1.36) is less than the table value (16.92) at 0.05 level of significance. So there was no association between the Paraand pre test scores of REEDA scale.

According to Live births the calculated value of chi-square (0.93) is less than the table value (16.92) at 0.05 level of significance. So there was no association between the Live births and pre test scores of REEDA scale.

Table 10

Association of numerical pain rating scale score and REEDA scale score with selected demographic variables in experimental group II (Infra red light).

S.No	Demographic variables	Numerical pain rating scale			REEDA scale		
		Above mean	Below mean	X^2	Above mean	Below mean	X^2
1.	**Age**			10.31			2.82
	18-21 years	9.75	-	(NS)	-	10.25	(NS)
	22-25 years	9.71	-		11	-	
	26-30 years	-	6.75		-	9.25	
	>30 years	-	-		-	-	
2.	**Education**			4.28			
	Illiterate	-	-	(NS)	-	-	2.11
	Primary school	-	-		-	-	(NS)
	High school	10	-		10.5	-	
	Higher secondary school	9.66	-		10.5	-	
	Graduate/PG	-	8.28		-	10	
3.	**Occupation**			0.39			0
	Housewife	9.33	-	(NS)	10.2	-	(NS)
	Office worker	-	8.33		10.3	-	
	Daily wage	-	-		-	-	
	Business	-	-		-	-	
	Farmer	-	-		-	-	
4.	**Monthly income**			0.62 (NS)			0.71 (NS)
	Below 5000				-	-	
	5000-10001	10	-		10.5	-	
	10001-15000	-	8.75		10.37	-	
	Above 15000	-	8.8		-	10	

5.	**Type of family**			0.41			0 (NS)
	Nuclear	-	8.3		10.3	10	
	Joint	-	8.66		-	10	
	Others	-	-				
6.	**Religion**			10.31			0.18 (NS)
	Hindu	9.62	-		10.5	-	
	Christian	-	6.75		-	10	
	Muslim	9.66	-		-	10	
	Others	-	-		-	-	
7.	**Area of residence**			0.57			0.54 (NS)
	Urban	-	8.84		-	10.1	
	Rural	9.5	-		11	-	
8.	**Dietary pattern**			5.08			1.87 (NS)
	Vegetarian	-	7		10.5	-	
	Non vegetarian	9.41	-		-	9.33	
	Ova vegetarian	-	-		-	-	

Level of significant at 0.05
(NS)-Not Significant

1. According to numerical pain rating scale

Regarding age the calculated value of chi-square (10.31) is less than the table value (16.92) at 0.05 level of significance. So there was no association between the age and pre test scores of numerical pain rating scale.

According to education the calculated value of chi-square (4.28) is less than the table value (21.03) at 0.05 level of significance. So there was no association between the education and pre test scores of numerical pain rating scale.

According to occupation the calculated value of chi-square (0.39) is less than the table value (12) at 0.05 level of significance. So there was no association between the occupation and pre test scores of numerical pain rating scale.

According to monthly income the calculated value of chi-square (0.62) is less than the table value (16.92) at 0.05 level of significance. So there was no association between the monthly income and pre test scores of numerical pain rating scale.

According to type of family the calculated value of chi-square (0.41) is less than the table value (12.59) at 0.05 level of significance. So there was no association between thetype of family and pre test scores of numerical pain rating scale.

According to Religion the calculated value of chi-square (10.31) is less than the table value (16.92) at 0.05 level of significance. So there was no association between the Religion and pre test scores of numerical pain rating scale.

According to Area of residence the calculated value of chi-square (0.57) is less than the table value (9.49) at 0.05 level of significance. So there was no association between the Area of residence and pre test scores of numerical pain rating scale.

According to Dietary patternthe calculated value of chi-square (5.08) is less than the table value (12.59) at 0.05 level of significance. So there was no association between the Dietary pattern and pre test scores of numerical pain rating scale.

2. According to REEDA Scale

Regarding age the calculated value of chi-square (2.82) is less than the table value (16.92) at 0.05 level of significance. So there was no association between the age and pre test scores of REEDA scale.

According to education the calculated value of chi-square (2.11) is less than the table value (21.03) at 0.05 level of significance. So there was no association between the education and pre test scores of REEDA scale.

According to occupation the calculated value of chi-square (0) is less than the table value (12) at 0.05 level of significance. So there was no association between the occupation and pre test scores of REEDA scale.

According to monthly income the calculated value of chi-square (0.71) is less than the table value (16.92) at 0.05 level of significance. So there was no association between the monthly income and pre test scores of REEDA scale.

According to type of family the calculated value of chi-square (1.29) is less than the table value (12.59) at 0.05 level of significance. So there was no association between the type of family and pre test scores of REEDA scale.

According to Religion the calculated value of chi-square (0.18) is less than the table value (16.92) at 0.05 level of significance. So there was no association between the Religion and pre test scores of REEDA scale.

According to Area of residence the calculated value of chi-square (0.54) is less than the table value (9.49) at 0.05 level of significance. So there was no association between the Area of residence and pre test scores of REEDA scale.

According to Dietary patternthe calculated value of chi-square (1.87) is less than the table value (12.59) at 0.05 level of significance. So there was no association between the Dietary pattern and pre test scores of REEDA scale.

Table 11

Association of numerical pain rating scale score and REEDA scale score with selected obstetrical variables in experimental group II (Infra red light).

S.No	Obstetrical variables	Numerical pain rating scale			REEDA scale		
		Above mean	Below mean	X^2	Above mean	Below mean	X^2
1.	**Type of episiotomy**			0			0
	Mediolateral	8.93	-	(NS)	10.26	-	(NS)
	Median	-	-		-	-	
	Lateral	-	-		-	-	
	J-shaped	-	-		-	-	
2.	**No. of episiotomy stitches**			1.28 (NS)			1.14 (NS)
	4	-	7.5		-	9	
	5	9.15	-		10.46	-	
	6	-	-		-	-	
	>6	-	-		-	-	
3.	**Gravida**			1.36			0.16
	1	9.5	-	(NS)	-	10	(NS)
	2	-	8.72		10.63	-	
	3	-	-		-	-	
	Above 3	-	-		-	-	
4.	**Para**			3.27			1.76
	1	-	8.42	(NS)	10.42	-	(NS)
	2	-	6		-	9	
	3	-	-		-	-	
	Above 3	-	-		-	-	
5.	**Live births**			7.38			1.68
	1	9.72	-	(NS)	10.63	-	(NS)
	2	-	6.75		-	9.25	
	3	-	-		-	-	
	Above 3	-	-		-	-	

Level of significant at 0.05
(NS)-Not Significant

1. According to numerical pain rating scale

Regarding Type of episiotomy the calculated value of chi-square (0) is less than the table value (16.92) at 0.05 level of significance. So there was no association between the Type of episiotomy and pre test scores of numerical pain rating scale.

According to No. of episiotomy stitches the calculated value of chi-square (1.28) is less than the table value (16.92) at 0.05 level of significance. So there was no association between the No. of episiotomy stitches and pre test scores of numerical pain rating scale.

According toGravidathe calculated value of chi-square (1.36) is less than the table value (16.92) at 0.05 level of significance. So there was no association between the Gravida and pre test scores of numerical pain rating scale.

According to Parathe calculated value of chi-square (3.27) is less than the table value (16.92) at 0.05 level of significance. So there was no association between the age and pre test scores of numerical pain rating scale.

According to Live births the calculated value of chi-square (7.38) is less than the table value (16.92) at 0.05 level of significance. So there was no association between the Live births and pre test scores of numerical pain rating scale.

2. According to REEDA Scale

Regarding Type of episiotomy the calculated value of chi-square (0) is less than the table value (16.92) at 0.05 level of significance. So there was no association between the Type of episiotomy and pre test scores of REEDA scale.

According to No. of episiotomy stitches the calculated value of chi-square (1.14) is less than the table value (16.92) at 0.05 level of significance. So there was no association between the No. of episiotomy stitches and pre test scores of REEDA scale.

According toGravidathe calculated value of chi-square (0.16) is less than the table value (16.92) at 0.05 level of significance. So there was no association between the Gravida and pre test scores of REEDA scale.

According to Parathe calculated value of chi-square (1.76) is less than the table value (16.92) at 0.05 level of significance. So there was no association between the Para and pre test scores of REEDA scale.

According to Live births the calculated value of chi-square (1.68) is less than the table value (16.92) at 0.05 level of significance. So there was no association between the Live births and pre test scores of REEDA scale.

CHAPTER-V
DISCUSSION, SUMMARY, CONCLUSION, IMPLICATIONS AND RECOMMENDATIONS

DISCUSSION:

This chapter deals with the discussion, summary, conclusion, implications and recommendations for further study.

1. **The first objective was 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**

1.**Episiotomy pain** of the post natal mothers in the experimental group Iandexperimental group IIwere assessed with the help of Numerical pain rating scale.

According to **numerical pain rating scale score** in pre test, 13 out of 15 (86.6%) were in severe, 2 out of 15 (13.3%) were in moderate, 0 out of 15 (0%) were in none and 0 out of 15 (0%) were in mild. According to numerical pain rating scale score in pre test, 12 out of 15 (80%) were in severe, 3 out of 15 (20%) were in moderate, 0 out of 15 (0%) were in none and 0 out of 15 (0%) were in mild.

2.**Wound healing process**of the post natal mothers in the experimental and control group were assessed with the help of REEDA scale score.

According to **REEDA scale score** in pre test, 12 out of 15 (80%) were in moderate, 3 out of 15 (20%) were in severe, 0 out of 15 (0%) were in none and 0 out of 15 (0%)were in mild. According to REEDA scale score in pre test, 10 out of 15 (66.6%) were in moderate, 5 out of 15 (33.3%) were in severe, 0 out of 15 (0%) were in none and 0 out of 15 (0%)were in mild.

Therefore H_1 is accepted.

2. The second objective was 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

1. Assessment of the **episiotomy pain and wound** healing process in the experimental group I.

(a) The mean pre test**Numerical pain rating scale score** was 8.46 and the mean score of post test was 5.8 and the obtained "t" value was 7.07 at 14 (df) which was significant at 0.05 level. This indicates that the difference between the mean (2.66) was a true difference and has not occurred by chance which shows the effectiveness of cold gel pad therapy in reducing episiotomy pain and in improving the wound healing process.

(b) The mean pre test **REEDA scale score** was 9.73and the mean score of post test was 7 and the obtained "t" value was 30.3 at 14 (df) which was significant at 0.05 level. This indicates that the difference between the mean (2.73) was a true difference and has not occurred by chance which shows the effectiveness of infra red light therapy in reducing episiotomy pain and in improving the wound healing process.

2.Assessmentof theepisiotomy pain and wound healing process in theexperimental group II.

(a)The mean pre test **Numerical pain rating scale score** was 8.93 and the mean score of post test was 6.13 and the obtained "t" value was 28 at 14 (df) which was significant at 0.05 level. This indicates that the difference between the mean (2.8) was a true difference and has not occurred by chance which shows the effectiveness of cold gel pad therapy in reducing episiotomy pain and in improving the wound healing process.

(b)The mean pre test **REEDA scale score** was 10.26 and the mean score of post test was 7.6 and the obtained "t" value was 8.52 at 14 (df) which was significant at 0.05 level. This indicates that the difference between the mean (2.66) was a true difference and has not occurred by chance which shows the effectiveness of infra red light therapy in reducing episiotomy pain and in improving the wound healing process.

Therefore H_2 is accepted.

3. **The third objective was 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**

1.The mean post test**Numerical pain rating scale score** of experimental group I was 5.8 and the mean score of post test in the experimental group I was 6.13 and the obtained "t" value was 6.56 at 29 (df) which was significant at 0.05 level. This indicates that the difference between the mean (0.33) was a true difference and has not occurred by chance which shows 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.

2.The mean post test **REEDA scale score** of experimental group II was 7 and the mean score of post testin the experimental group II was 7.6 and the obtained "t" value was 2.40 at 29 (df) which was significant at 0.05 level. This indicates that the difference between the mean (0.6) was a true difference and has not occurred by chance which shows 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.

Therefore H_3 is accepted.

4. **The fourth objective was to find out the association between the pre test 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 II1.Association of demographic variables with the numerical pain rating scale score in experimental group I**

According to Numerical pain rating scale

This study depicts the **association of demographic variables** with the numerical **pain rating scale score** of post natal mothers.Regarding demographic variables such as age, education, occupation, monthly income, type of family, religion, area of residence, dietary pattern the calculated value of chi-square (2.26, 0.09, 0.66, 0.56, 2.77, 4.06, 2.77 and 1.6) is less than the table value (16.92, 21.03, 12, 16.92, 12.59, 16.92, 9.49 and 12.59) so there was no association between the demographic variables and pre test scores of numerical pain rating scale.

According to REEDA scale

This study depicts the **association of demographic variables** with the **REEDA scale score** of post natal mothers.Regarding demographic variables such as age, education, occupation, monthly income, type of family, religion, area of residence, dietary pattern the calculated value of chi-square (0.10, 0.06, 0.90, 9.27, 1.29, 0.18 0.57and 1.87) is less than the table value (16.92, 21.03, 12, 16.92, 12.59, 16.92, 9.49 and 12.59) so there was no association between the demographic variables and pre test scores of REEDA scale.

According to Numerical pain rating scale

This study depicts the **association of obstetrical variables** with the numerical **pain rating scale score** of post natal mothers.Regarding demographic variables such as type of episiotomy, number of episiotomy stitches, gravida, para, live births the calculated value of chi-square (0, 1.35, 8.26, 6.37and 9.23) is less than the table value (16.92) so there was no association between the obstetrical variables and pre test scores of numerical pain rating scale.

According to REEDA scale

This study depicts the **association of obstetricalvariables** with the **REEDA scale score** of post natal mothers.Regarding obstetricalvariables such as type of episiotomy, number of episiotomy stitches, gravida, para, live births the calculated value of chi-square (0, 0.005, 2.5, 1.36, and 0.93) is less than the table value (16.92) so there was no association between the obstetrical variables and pre test scores of REEDA scale.

According to Numerical pain rating scale

This study depicts the **association of demographic variables** with the numerical **pain rating scale score** of post natal mothers.Regarding demographic variables such as age, education, occupation, monthly income, type of family, religion, area of residence, dietary pattern the calculated value of chi-square (10.31, 4.28, 0.39, 0.62, 0.41, 10.31, 0.57 and 5.08) is less than the table value (16.92, 21.03, 12, 16.92, 12.59, 16.92, 9.49 and 12.59) so there was no association between the demographic variables and pre test scores of numerical pain rating scale.

According to REEDA scale

This study depicts the **association of demographic variables** with the **REEDA scale score** of post natal mothers.Regarding demographic variables such as age, education, occupation, monthly income, type of family, religion, area of residence, dietary pattern the calculated value of chi-square (2.82, 2.11, 0, 0.71, 0, 0.18, 0.54 and 1.87) is less than the table value (16.92, 21.03, 12, 16.92, 12.59, 16.92, 9.49 and 12.59) so there was no association between the demographic variables and pre test scores of REEDA scale.

According to Numerical pain rating scale

This study depicts the **association of obstetrical variables** with the numerical **pain rating scale score** of post natal mothers.Regarding demographic variables such as type of episiotomy, number of episiotomy stitches, gravida, para, live births the calculated value of chi-square (0, 1.28, 1.36, 3.27 and 7.38) is less than the table value (16.92) so there was no association between the obstetrical variables and pre test scores of numerical pain rating scale.

According to REEDA scale

This study depicts the **association of obstetrical variables** with the **REEDA scale score** of post natal mothers.Regarding obstetricalvariables such as type of episiotomy, number of episiotomy stitches, gravida, para, live births the calculated value of chi-square (0, 1.14, 0.16, 1.76 and 1.68) is less than the table value (16.92) so there was no association between the obstetrical variables and pre test scores of REEDA scale.

Therefore H_1 is rejected.

SUMMARY OF THE STUDY:

The study was undertaken to evaluate the effectiveness ofversus infra red light therapy on episiotomy pain and wound healing process among postnatal mothers at Selected Hospitals, Madurai.

The following objectives were set for the study.

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 thepre test 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.

Post natal mothers with episiotomy wound had decreased episiotomy pain and progress in wound healing process after the application of cold gel pad therapy than the post natal mothers receiving infra red light therapy. The conceptual framework adopted was Von-Ludwig Bertalanffy-General system theory. An evaluatoryand comparative research approach and Quasi-experimental and Non-equivalent two group pre testandpost test design was adopted for this study. The sample size was 30. Among those 15 mothers were assigned in experimental group I and another 15 mothers were assigned in experimental group II.

Non probability purposive sampling technique was adopted for assigning the mothers.

The tool consists of the following sections:

Section A: Demographic variables.

Section B: Obstetrical variables.

Section C: Numerical pain rating scale.

Section D: REEDA scale.

The tool was found to be valid and reliable through pilot study. Data were collected for a period of 1 month. The post-natal mothers in the experimental group I received application of cold gel pad therapy and the experimental group II received infra red light therapy. Based on the objectives and hypothesis, data were analyzed using both descriptive and inferential statistics.

MAJOR FINDINGS OF THE STUDY:

The mean post test Numerical pain rating scale score of experimental group I was 5.8 and the mean score of post test in the experimental group II was 6.13 and the obtained "t" value was 6.56 at 29 (df) which was significant at 0.05 levelwhen compared to tabulated value 2.05. This indicates that the difference between the mean (0.33) was a true difference and has not occurred by chance which shows 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.

The mean post test REEDA scale score of experimental group I was 7 and the mean score of post testin the experimental group II was 7.6 and the obtained "t" value was 2.40 at 29 (df) which was significant at 0.05 levelwhen compared to tabulated value 2.05. This indicates that the difference between the mean (0.6) was a true difference and has not occurred by chance which shows 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.

CONCLUSION:

The study findings provide the statistical evidence which clearly indicates that cold gel pad therapy andinfra red light therapy can be used to reduce episiotomy pain and improve the wound healing process. 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.

IMPLICATIONS:

The findings of the present study supports that both the treatments that is cold gel pad therapy and infra red light therapy are very safe, cost effective and are not harmful to health. It is proved to be effective in non-pharmacologic measurement to reduce episiotomy pain and promote wound healing process. The findings of the study have several implications on the following fields.

Implications for Nursing Practice

- The findings of the study enlighten the fact that application of cold gel pad therapy and infra red light therapy can be used to reduce episiotomy pain and promote wound healing process of post natal mothers with episiotomy wound.
- The study findings help the nursing personnel to include cold gel pad therapy and infra red light therapy as nursing intervention in the reduction ofepisiotomy pain and promote wound healing process.
- Nurses can gain skill in providing non-pharmacological measurement to decrease theepisiotomy pain and promote wound healing process.

Implications for Nursing Education

- The study has clearly proved that cold gel pad therapy was more effective in reducing episiotomy pain and promoting wound healing process.
- The study enables to gain knowledge in assessment of episiotomy wound.
- These findings would help the nursing faculty to give importance for cold gel pad therapy application and infra red light therapy in the management of episiotomy wound and motivate the nursing students to use this measures in the management of postnatal mothers with episiotomy wound.

Implications for Nursing Research

There is a need for extensive and intensive research in this area.One of the aims of nursing research is to expand and broaden the scope of nursing. Findings of this study will provide baseline data about the reduction of pain level and progress in wound healing and it can be used for further studies in this area.

Implications for Nursing Administration

- Nurse administrators can encourage the nursing personnel to conduct research on care of postnatal mothers with episiotomy wound based on that findings.
- Periodic conference, seminars, symposium, can be arranged for nursing personnel regarding care of mothers with episiotomy wound.
- Education should be given to the clinical nurses, nurses and nurse educators to update knowledge regarding management of episiotomy wound.
- Nurse administrators should prepare procedure manuals and protocols regarding non-pharmacological methods and use it in the wards.

RECOMMENDATIONS FOR FURTHER STUDY:

- The study can be conducted using large population to generalize the findings.
- This study can be done as a comparative study in different settings.
- A comparative study can be conducted in between primi and multi para mothers.

REFERENCES

1. Aissaoui, Y. (2008). Placement of bupivacaine-soaked Spongostan in episiotomy bed is effective treatment modality for episiotomy-associated pain. Journal of Minimally Invasive Gynecology. No. 15(6).
2. Alison J. Macarthur, (2004). Incidence, severity, and determinants of perineal pain after vaginal delivery: A prospective cohort study. American Jorunal of Obstetrics & Gynecology, Vol.191, No. (4).
3. Ana Carolina RodartiPitangui, (2009). Measurement and characteristics of perineal pain in primiparous undergoing episiotomy. Acta Paul Enferm.
4. Annama Jacob, (2007). A comprehensive textbook of midwifery. India: Jaypee Publications.
5. Basavanthappa, B.T. (1998). Nursing Research.Banglore: Jaypee Brothers Medical Publications IP Ltd.
6. Bennet, V.R. & Brown, L.K. (1997). Myles Text Book For Midwives. Philadelphia: ELBS Churchill living tone.
7. BudhiBaruah, (2010). A Study to Assess the Effect of Infrared Radiation (Lamp) in Episiotomy Wound Healing among Postnatal Mothers. Journal of South Asian Federation of Obstetrics and Gynecology, No.2(3).
8. Burns, (1993). The Practice Of Nursing Research. Philadelphia: W.B Sanders Company.
9. ChaweewanYusamran, (2007). Relief Perineal Pain After Perineorrhaphy by Cold Gel Pack Pad : A Randomized Controlled Trial. Thai Journal of Nursing Research, Vol.11, No. (2).
10. Christine E. East, (2012). Perineal pain following childbirth: Prevalence, effects on postnatal recovery and analgesia usage. Midwifery, Vol. 28, No. (1).
11. Dhanalakshmi, V. (2010). A study to assess the effect of infra red light therapy and sitzbath on the perineum after episiotomy at selected corporation centre of Coimbatore, Nightingale Nursing Times, Vol.5, No. 12.
12. Dutta, D.C. (2009). Text Book of Obstetrics and Gynecology Calcutta: New Central Book Agency (P) Ltd.

13. FatemehSheikhan, (2011). Episiotomy Discomforts Relief Using Cold Gel Pads in Primiparous Iranian Women (A Comparative Study). Research Journal of Medical Sciences, Vol.5, Issue (3).
14. FereshteJahdi, (2010). The effect of cooling gel pad on the intensity of perineal pain following episiotomy. Vol.13, No.(3).
15. Gupta, S.P. (2000). Statistical Method. New Delhi: Sultan Chand & Sons
16. HodaAbed El – Azim Mohamed, (2012). Effect of Self Perineal Care Instructions on Episiotomy Pain and Wound Healing of Postpartum Women. Journal of American Science, No, 8(6).
17. Jahdie, F. (2011). The effect of Calendula ointment in pain intensity of episiotomy among primiparous women. Retrieved on 25 April at http://europepmc.org/abstract/MED/18633043.
18. Janula, R. (2013). Effectiveness of expectant father's presence during first stage of labour, International journal of nursing education, Vol.5, No.1.
19. JaroslavaKymplova, (2003). Contribution of Phototherapy to the Treatment of Episiotomies. Journal of Clinical Laser Medicine & Surgery. Vol.21, No.(1).
20. Joy, (2013). Retrived on 15 March at http://thejoyofthis.com/2013/03/15/birth-sensations-and-protecting-the-perineum-through-it-all.
21. Juby Mary Chacko, (2013). Effectiveness of Infrared Lamp on Reducing Pain and Inflammation due to Episiotomy Wound. International Journal of Nursing Education, Vol.5, No.1.
22. Kothari, C. R.(2000). Research Methodology. New Delhi. WishvaParkasan.
23. Lowdermilk, Perry. S.E. (1999). Maternity Nursing. London: Mosby Publications.
24. Mary De Wire, (2003). PerinealLacerations : The Effects of Suturing versus Nonsuturing on Postpartum Healing and Pain. Evidence Based Clinical Practice Guideline, Evidence Based Clinical Practice Guideline. Retrieved at http://www.instituteofmidwifery.org/MSFinalProj.nsf/a9ee58d7a823968525684f0056be8d/d9c8fe42b3bee29985256ddf004f381d.
25. Mohamed HodaAbed El-Azim, (2012). Effect of Self Perineal Care Instructions on Episiotomy Pain and Wound Healing of Postpartum Women,Journal of American Science.
26. Myles, (2009). Textbook for Midwives. Philadelphia: Elsevier Publications.

27. NavdeepKaur, (2013). Effect of dry heat versus moist heat on Episiotomy pain and wound healing. Nursing and Midwifery Research Journal, Vol.9, No. (1).
28. NavvabiRigi, SH. (2011). Cold and Reduced Episiotomy Pain Interfere with Mood and Daily Activity. Shiraz E-Medical Journal, Vol.12, No. (2).
29. Navviba, (2009). Effectiveness of cooling gel pads and ice packs on perineal pain. British Journal of Midwifery, 17(11).
30. NeelamKumari, (2010). A textbook of midwifery and gynecological nursing. (1st edition). Jalandhar: PV Publication.
31. Nimabhaskar, (2012). Text Book of Midwifery and Obstetrics. Philadelphia: EMMESS Publications.
32. Potter and Perry, (2006). Fundamentals of Nursing. New Delhi: Elsevier Publications.
33. Raile, M.A., &Marriner, A.T. (1997). Nursing Theory Utilization and Application. Philadelphia: Mosby Publication.
34. Ramadevi, (2012). Textbook of midwifery and obstetrical nursing. Hyderabad: Florence Publishers.
35. Rebecca Garland, (2004). Retrieved at http://www.totsites.com/help/pregnancy/what-is-motherhood.php.
36. Safar Ali EsmaeiliVardanjani, (2012). Wound healing Benefits of Curcumin for Perineal Repair after Episiotomy: Results of an Iranian Randomized Controlled Trial. Life Science Journal, No, 9(4).
37. Sr. Nancy, (2006). Principles and practice of nursing. Indore: N.R. Publishing house.
38. Steen, (2000). A randomized controlled trial to compare the effectiveness of ice-packs and Epifoam with cooling maternity gel pads at alleviating postnatal perineal trauma. Midwifery Journal, 16(1).
39. SucharitaSahoo, (2013). Effect of Infrared Therapy on Episiotomy Pain and Wound Healing among Post Natal Mothers. International Journal of Continuing Nursing Education, Vol.5, No. (2).
40. Sule, S.T. (2003). Puerperal Complications Of Episiotomies At Ahmadu Bello University Teaching Hospital, Zara, Nigeria. East African Medical Journal, Vol.8, No.(7).
41. Suresh K Sharma, (2012). Nursing Research & Statistics. India: Elsevier Publications.

42. ThangarajuPunasundri, (2008). Perineal Cold Gel Pad Versus Oral Analgesic to Relief Episiotomy Wound Pain. Retrieved on July 8 at https://stti.confex.com/stti/congrs08/techprogram/paper 38349.htm.
43. The Trained Nurses Association of India, (2005). Fundamentals of Nursing – A Procedure Manual. New Delhi: Published by Secretary General.
44. Tomay, A.M., &Alligood, R.M. (2002). Nursing theorists and Their Work. St Louis: Mosby Publication.
45. Venkadalakshmi, (2010). Effectiveness of Infrared therapy upon Episiotomy pain and wound healing in postnal mothers. International Journal of Continuing Nursing Education, Vol.11, No. (1).
46. Viswanathan, M. (2005). The Use of Episiotomy in Obstetrical Care : A Systemic Review. Agency for Healthcare Research and Quality, No. 05-E009-2.

APPENDIX-I

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.

TOOL

PART-A

DEMOGRAPHIC VARIABLES :-

Sample No :

1.Age :

a) 18-21 years
b) 22-25 years
c) 26-30 years
d) Above 30 years

2.Education :

a) Illiterate
b) Primary school
c) Secondary school
d) Higher school
e) Graduate

3.Occupation :

a) House wife
b) Office worker
c) Daily wage
d) Buiseness
e) Farmer

4.Monthly income :

a) Below 5000
b) 5001-10000
c) 10001-15000
d) Above 15,000

5.Type of family :

a) Nuclear
b) Joint
c) Others

6.Religion :

a) Hindu
b) Christian
c) Muslim
d) Others

7.Area of residence :

a) Urban
b) Rural

8.Dietary pattern

a) Vegetarian
b) Non-vegetarian
c) Ova vegetarian

PART - B

OBSTETRICAL VARIABLES:-

1.Type of episiotomy

a) Medio-lateral episiotomy
b) Median
c) Lateral
d) J shaped

2.Number of episiotomy stitches

a) 4
b) 5
c) 6
d) Above 6

3.Gravida

a) 1
b) 2
c) 3
d) Above 3

4.Para

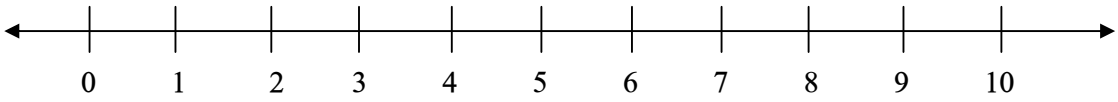
a) 1
b) 2
c) 3
d) Above 3

5.Live births

a) 1
b) 2
c) 3
d) Above 3

PART - C

NUMERICAL PAIN RATING SCALE



SCORE:

Maximum score = 10

Minimum score = 0

O – None

1to 3 – Mild pain

4 to 6 – Moderate pain

7 to 10 – Severe pain

NUMBER OF OBSERVATIONS:4

Observation	**Score**
$\mathbf{0_0}$	
$\mathbf{0_1}$	
$\mathbf{0_2}$	
$\mathbf{0_3}$	

PART-D

REEDA scale

Score	0	1	2	3
Redness	None	Within 0.25cm of incision	Within 0.5cm of incision bilaterally	Beyond 0.5cm of incision bilaterally
Edema	None	Less than 1cm	1-2cm from incision	>2cm from incision
Ecchymosis	None	Within 0.25 cm bilaterally or 0.5cm unilaterally	0.25-1cm bilaterally or 0.5-2cm bilaterally	>1cm bilaterally or 2cm
Discharge	None	Serum	Sero-sanguineous	Bloody, purulent
Approximation	No separation	Skin separation 3mm or less	Skin and subcutaneous fat separation	Skin subcutaneous fat separation and fascial separation

Total score = 15

Maximum score = 15

Minimum score = 0

Good = 0

Mild = 1to 5

Moderate = 6 to 10

Severe = 11 to 15

NUMBER OF OBSERVATIONS:4

Observation	Score
0_0	
0_1	
0_2	
0_3	

APPENDIX - II

PERMISSION LETTER FOR CONDUCTION OF STUDY

To

Respected Madam/Sir,

Sub : Permission to do Research – Project- M.Sc. Nursing – Reg.

I , Ms. A.G.L.Cindiya, II year M.Sc(N) student of Midwifery & Obstetrics speciality at RASS Academy College of Nursing, wish to do the project on the topic of **"Effectiveness of Cold gel pad therapy versus Infra red light therapy on Episiotomy wound among postnatal mothers",** for my dissertation to be submitted to Dr. M.G.R. Medical University in partial fulfillment of the requirement of Degree of Master of Science in Nursing. So I request you to grant permission to undertake the study for postnatal mothers in your esteemed institution on the month of November. So please accept this permission letter and kindly do the needful.

Thanking You

Yours faithfully,

(A.G.L.Cindiya)

Place: Poovanthi

Date :

PERMISSION LETTER FOR CONDUCTION OF STUDY

To

Dr. Indira Raja, M.B.B.S, D.G.O, F.A.M.S.,
Infant Jesus & Jesus Vineyard Hospitals
Madurai

Sub : Permission to do Research – Project- M.Sc. Nursing – Reg.

I, Ms. A.G.L.Cindiya, II year M.Sc(N) student of Midwifery & Obstetrics speciality at RASS Academy College of Nursing, wish to do the project on the topic of **"Effectiveness of Cold gel pad therapy versus Infra red light therapy on Episiotomy wound among postnatal mothers"**, for my dissertation to be submitted to Dr. M.G.R. Medical University in partial fulfillment of the requirement of Degree of Master of Science in Nursing. So I request you to grant permission to undertake the study for postnatal mothers in your esteemed institution on the month of November. So please accept this permission letter and kindly do the needful.

Thanking You

Yours faithfully,
(A.G.L.Cindiya)

Place: Poovanthi

Date : 11/11/13

Dr. (Mrs.) INDRA RAJA
M.B.B.S.,D.G.O.,F.A.M.S.,
Obstetrician & Gynaecologist
Reg. No. 13599
INFANT JESUS HOSPITAL
104-107, South Veli Street
(Thavittu Chanthai)
MADURAI-625 001

LETTER REQUESTING OPINIONS AND SUGGESTIONS OF EXPERT FOR ESTABLISHING CONTENT VALIDITY OF RESEARCH TOOL

From,

Ms. A.G.L.Cindiya,

M.Sc(Nursing) II year,

RASS Academy College of Nursing,

Poovanthi.

To,

Respected Madam / Sir,

Subject:Requesting for expert opinion and suggestion to establish content validity of the research tool.

I, wish to undertake a study title, **"Effectiveness of Cold gel pad therapy versus Infra red lamp therapy on Episiotomy wound among postnatal mothers at Selected hospitals, Madurai".**It will be immense help to me if you put peruse the proposal the research tool. Herewith I am enclosing the following,

1. Objectives of the study, Operational definitions, Hypotheses
2. Research methodology
3. Blueprint of the tool.

Kindly do the needful.

Thanking You,

Yours sincerely,

Place: Poovanthi (A.G.L.Cindiya)

CERTIFICATE FOR CONTENT VALIDITY

This is to certify that I have perused the research proposal submitted by Mrs. A.G.L.CINDIYA, that **"Effectiveness of Cold gel pad therapy versus Infra red lamp therapy on episiotomy wound among postnatal mothers atSelected hospitals, Madurai."** I found that the tool is appropriate.

Place:

Date: Signature

CERTIFICATE FOR CONTENT VALIDITY

This is to certify that I have perused the research proposal submitted by Ms. A.G.L.CINDIYA, that **"Effectiveness of Cold gel pad therapy versus Infra red lamp therapy on episiotomy wound among postnatal mothers in Selected hospitals at Madurai."** I found that methodology and instruments are appropriate.

Place: Mana Madurai

Date: 6.10.13

Signature

VIJIPRIYA. S.K.
Associate Professor
Malla College of Nsg.
Mana Madurai.

CERTIFICATE FOR CONTENT VALIDITY

This is to certify that I have perused the research proposal submitted by Mrs. A.G.L.CINDIYA, that **"Effectiveness of Cold gel pad therapy versus Infra red lamp therapy on episiotomy wound among postnatal mothers at Selected hospitals, Madurai."** I found that the tool is appropriate.

Place:

Date:

Signature

Dr. (Mrs.) INDRA RAJA
M.B.B.S.,D.G.O.,F.A.M.S.,
Obstetrician & Gynaecologist
Reg. No. 13599

INFANT JESUS HOSPITAL
104-107, South Veli Street
(Thavittu Chanthai)
MADURAI-625 001

CERTIFICATE FOR CONTENT VALIDITY

This is to certify that I have perused the research proposal submitted by Ms. A.G.L.CINDIYA, that **"Effectiveness of Cold gel pad therapy versus Infra red lamp therapy on episiotomy wound among postnatal mothers in Selected hospitals at Madurai."** I found that methodology and instruments are appropriate.

Place: Madurai

Date: 18/10/13

Signature (P.SHANTHI)

Professor
C.S.I. JACON,
Pasumalai, Madurai

CERTIFICATE FOR VALIDITY

This is to certify that I have perused the research proposal submitted by Mrs. A.G.L.CINDIYA. that **"Effectiveness of Cold gel pad therapy versus Infra red lamp therapy on episiotomy wound among postnatal mothers at Selected hospitals, Madurai."** I found that the cold gel pad is appropriate and can be used for the study.

Place:

Date:

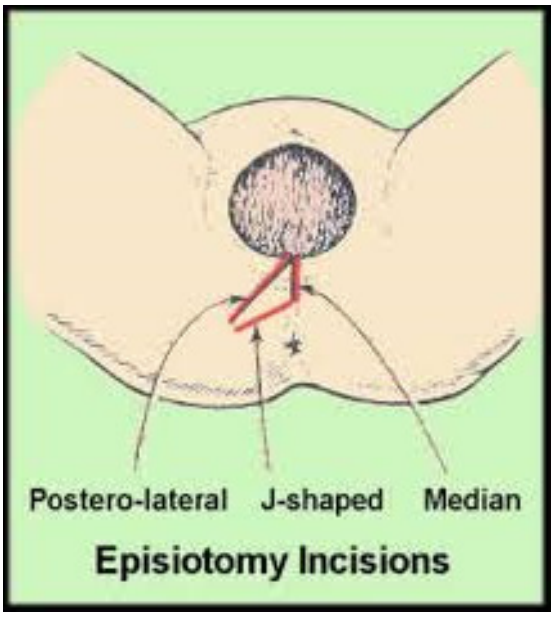
Signature

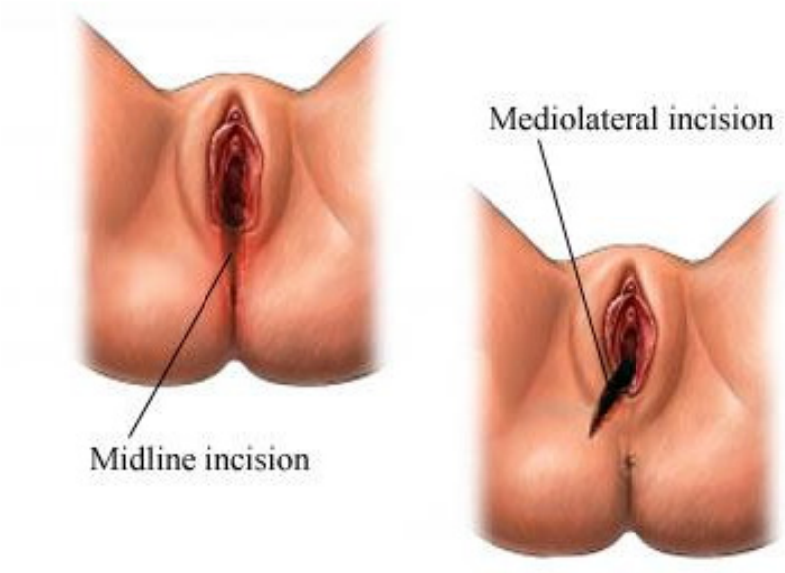
Dr. (Mrs.) INDRA RAJA
M.B.B.S.,D.G.O.,F.A.M.S.,
Obstetrician & Gynaecologist
Reg. No. 13599

INFANT JESUS HOSPITAL
104-107, South Veli Street
(Thavittu Chanthai)
MADURAI-625 001

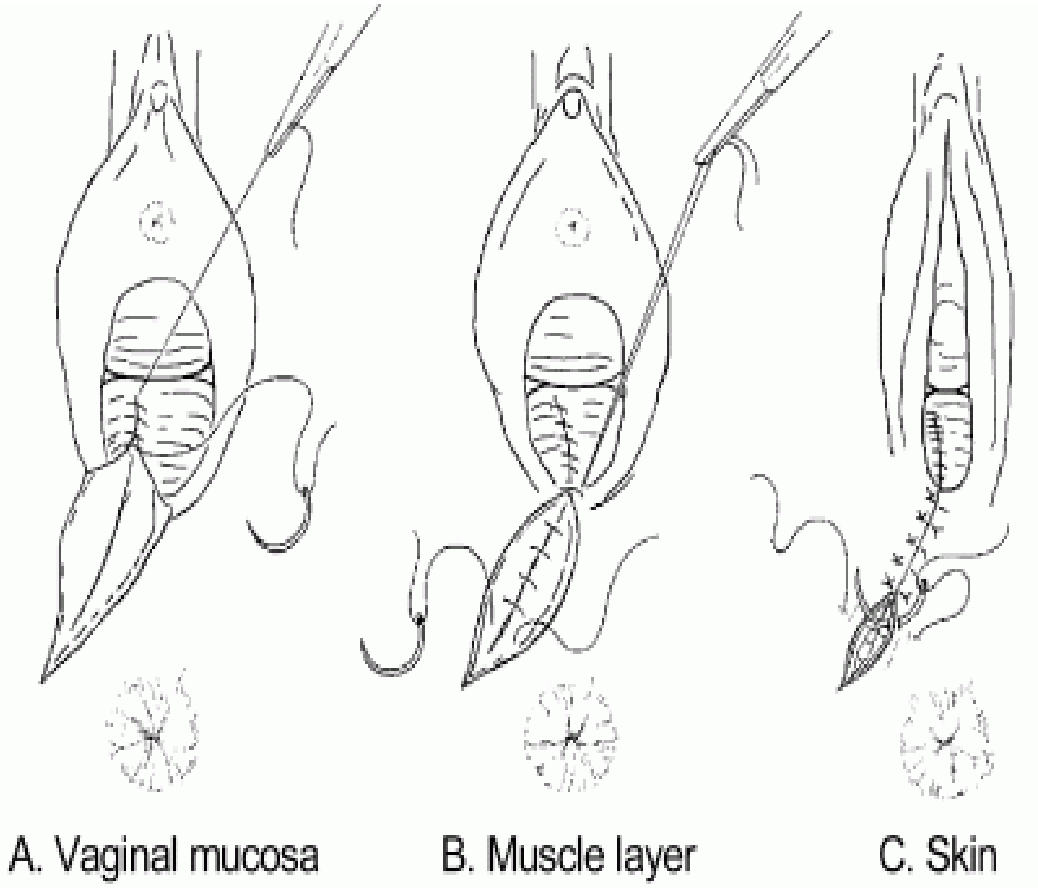
APPENDIX - III

TYPES OF ESPISIOTOMY





EPISIOTOMY SUTURES



COLD GEL PAD

Description :

Temperature below 12°C

Size :

10.5cm x 12.5cm

Appication:

Every moning upto 10 mintes for 3 days

INFRA RED LIGHT

Description :

Distance 45cm

Appication:

Every moning upto 10 mintes for 3 days

LIST OF EXPERTS

1. **Prof.G.Thilagavathi,M.Sc(N),MBA,Ph.D,**
   Principal,
   HODCommunity Health Nursing,
   RASS Academy college of Nursing,
   Poovanthi
   Sivagangai-630 611.

2. **Asso.Prof.Mrs.UmmulHapipa, M.Sc(N).,**
   Vice-Principal,
   HOD of Medical and Surgical Nursing,
   RASS Academy college of Nursing,
   Poovanthi
   Sivagangai-630 611.

3 **Asso.Prof.Miss.J.AmalaNambikkai,M.Sc(N),**
   HOD of Obstetrics &Gynecological Nursing,
   RASS Academy College of Nursing,
   Poovanthi,
   Sivagangai-630 611.

4. Asso.Prof.Mrs.R.Sutha, M.Sc(N).,
   Department of Obstetrics and Gynecological,
   RASS AcademyCollege of Nursing,
   Poovanthi,
   Sivagangai-630 611.

5.Asso.Prof. Mrs.R.N.K.Vasugi, M.Sc(N), MBA.,
   HOD of Medical-Surgical Nursing,
   RASS AcademyCollege of Nursing,
   Poovanthi,
   Sivagangai-630-611.

6.Asso.Prof.Mrs.RuthRani, M.Sc(N).,
HOD of Mental health Nursing,
RASS Academy College of Nursing,
Poovanthi,
Sivagangai-623611.

7.Asso.Prof.Mrs.UmaMaheshwari,M.Sc(N).,
Department of Community Health Nursing,
RASS Academy College of Nursing,
Poovanthi,
Sivagangai-630 611.

8.Asso.Prof.Miss.PremaSathyamoorthy, M.Sc(N), MBA.,
HOD of Child Health Nursing,
RASS Academy College of Nursing,
Poovanthi,
Sivagangai-630 611.

9.Asso.Prof.Mrs.Sangeetha,M.Sc(N).,
Department of Mental health Nursing,
RASS Academy College of Nursing,
Poovanthi,
Sivagangai-630 611.

10. Mrs.Saranya,M.Sc(N).,
Department of Obstetrics and Gynecological Nursing,
RASS Academy College of Nursing,
Poovanthi,
Sivagangai-630 611.

11. Prof.Mrs.P.Shanthi,M.Sc(N).,
C.S.I.JeyarajAnnapackiam College of Nursing,
Pasumalai,
Madurai

12 .Asso.Prof.Mrs.S.K.Vijipriya,M.Sc(N).,
Matha College of Nursing,
Manamadurai,
Sivagangai.