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A study to assess the effectiveness of ice massage at L4 acupressure point on the level of labour pains among intranatal women in selected hospitals, Guntur, A.P

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Abstract
Background: Birthing is normal, yet extraordinary process that has been with us from time immemorial. Non-pharmacological methods for reducing labour pain are superior to pharmacological methods because of ease of implementation, ability to build confidence and increase patient participation, and lack of side effects on the mother and the fetus.
Objective: To assess the effectiveness of ice massage at LI4 acupressure point on the level of labour pains among intranatal women in experimental group and compare the labour pains with control group.
Materials and Methods: A quasi-experimental research design was adopted and a total of 60 intranatal women were selected by using non-probability purposive sampling technique. Data were collected by using a Wong bakers faces pain rating scale.
Results: Majority i.e., 21 (70%) of intranatal women in experimental group had severe labor pains in pre-test, where as in post-test 26(87%) of them had moderate labor pains. In the control group majority i.e. 18(60%) had severe pains in preintervention and post intervention respectively. The preintervention mean of the intranatal women in experimental group was 8.0 with a standard deviation of 1.26 while in the post intervention, the mean was 4.46 with a standard deviation of 1.33. The calculated paired 't' test was 13.6 which was found to be significant at P=0.05. Age, gravidity and parity were found significantly associated with the labour pains.
Conclusion: The ice massage at LI4 acupressure point is effective on level of labor pains among intranatal women.

Keywords: Ice message, LI4 acupressure points, Labor pains, and intranatal women

Introduction

"Childbirth is more admirable than conquest, more amazing than self-defence, and as courageous as either one" — Gloria Steinem

Birthing is normal, yet extraordinary process that has been with us from time immemorial. It is one of the most marvellous and memorable segments in a woman's life. It does not really matter if the child is the first, second or the third one. Each experience is unique and calls for a celebration. The fear and anxiety about childbirth often prevents most women from enjoying this experience [1].

Natural childbirth is a beautiful experience with many safe options and benefits. Comfort is an interesting concept in the context of the pain of childbirth. The feeling of comfort is the expression of having met present or impending needs or desires in three domains: body, mind and spirit [2].

The physiological transition from pregnancy to motherhood heralds an enormous change in each woman, physically and psychologically. Accompanying the physical changes are feelings of great intensity varying from excited anticipation to fearful expectancy [3]. Labour pain is due to the stimulation of nerve receptors, followed by uterine muscle contractions, and is felt in the lumbosacral, hip, and gut areas. The pain can be severe and prolonged and it might lead to confusion and loss of confidence among women. Labour pain causes an increase in epinephrine and norepinephrine levels, which increases the blood pressure, heart rate, and oxygen consumption in women [4]. For several decades the childbirth educators have focused on the alleviation or reduction of pain and suffering during the childbirth. As the labour pain is acute, which increases quickly, pain relief poses a major problem.

Labour pain is caused by uterine contractions and the dilatation of the cervix and in the late first stage and second stages by the stretching of the vagina and pelvic floor to accommodate the presenting part. The perception of acute pain during labour originates with the transmission of noxious sensory input to the central nervous system. These painful stimuli are said to be transmitted by thoracic, lumbar and sacral nerves, that is, T_{10}, T_{11} T_{12}, L1, S2, S3, and S4, although increase or decrease in pain level may be seen throughout labour when the reports of individual women are studied. The use of cold therapy provides a safe and inexpensive method for pain relief and provides mothers with an increased satisfaction with their labour experience [5]. Ice pack massage for reduction of labour pain is based on the work done by Dr. Ronald Melzack and Dr. Patrick wall at the McGill University in Canada. In the early 1960s Dr Melzack and wall proposed a new theory of pain mechanism. According to their gate control theory of pain, stimulation of the skin creates nerve impulses that are transmitted to the spinal-cord system; nerve impulses that can be inhibited or enhanced at the level of the spinal cord. Nerve impulses traveling toward the brain in the smaller nerve fibres of the spinal cord proceed at a steady rate. This continuous 3 discharge keeps the pain gate open and the transmission of pain is enhanced. When the large fiber impulses are artificially stimulated by vibration, scratching, or ice pack massage, the gate further closes resulting in a decrease in the sensation of pain. Ice has been successfully used in the treatment of musculoskeletal pain over the years.[6] Dr. Melzack studied the use of ice pack massage of the web of skin between the thumb and forefinger for the reduction of acute dental pain. His work showed a 50% reduction in acute dental pain. Located within the anatomical area they massaged on the hand, is an acupressure meridian point described in acupuncture literature as Hoku or Large Intestine 4 (LI4) [7].

Objectives

- To assess the level of labour pains before and after the ice massage at LI4 acupressure point among intranatal women in experimental and control group.
- To assess the effectiveness of ice massage at LI4 acupressure point on the level of labour pains among intranatal women in experimental group.
- To compare between the post interventional level of labour pains among intranatal women in experimental and control groups.
- To find out the association between the post interventional level of labour pain among intranatal women with their selected sociodemographic and clinical variables in experimental group and control group.

Hypothesis

- **H_1:** There is a significant difference between the level of labour pain before and after ice massage among intranatal women in experimental and control group.
- **H_2:** There is a significant association between post interventional level of labour pain among intranatal women in experimental and control group with their selected socio-demographic and clinical variables.

Materials and Methods

Research approach: Quantitative research approach.

- **Research design:** Quasi-experimental pre-test posttest control group design.
- **Setting of the study:** Government General Hospital, Guntur district, Andhra Pradesh.
- **Sample and sampling technique:** 60 intranatal women i.e. 30 in experimental group and 30 in control group were selected using non-probability purposive sampling technique.
- **Method of data collection:** A Wong-Baker faces pain rating scale was used.
- The tool was organized under the following sections:
- **Part-I: Socio demographic data:** It includes age, gestational age, gravidity, parity, birthing classes attended
- **Part-II:** Clinical data, it includes with temperature, pulse, respiration, blood pressure, uterine contractions.
- **Part-III:** A Wong baker's faces pain rating scale to assess the level of labor pains among intranatal women. The scale comprised of the items in horizontal line with selection marks of 0-10, 1cm apart and point marked at no pain at 0, moderate pain at 5 and worst pain at 10.

Validity

Validity of the tool was obtained from 4 experts in obstetrical and Gynaecological nursing for their opinions and suggestion. Based on the suggestions of the experts the tool was modified before conducting main study.

Reliability

Wong-bakers faces pain rating scale is a standardized tool.

Pilot study

Pilot study was conducted on 10 intranatal women in Sri Krishna Chaitanya maternity hospital from 7/1/24 to 13/1/24.

Data collection procedure: The data were collected between 14/1/2024 to 14/2/2024 in the following phases

- **Phase I:** Pre interventional assessment of labour pains using Wong bakers faces pain rating scale was done 30 minutes before intervention at the bedside of intranatal women.
- **Phase II:** Ice massage at LI4 Acupressure point for the reduction of labour pains for about 40 minutes for each sample.
- **Phase III:** Post interventional assessment of labour pains using Wong bakers faces pain rating scale was done 30 minutes and one hour after intervention.

Plan for data analysis:

Descriptive statistics

Frequency and percentage were used to analyze demographic data.

Mean and standard deviation for analyzing the level of labour pains.

Inferential statistics

Paired 't' test to find effectiveness of ice massage. Independent 't' test to compare between experimental and control group. Chi-square to find association between labour pains with their sociodemographic data.

Results

Table 1: Frequency and percentage distribution of intranatal women according to their sociodemographic data, N=60

S. No.	Socio-demographic variable	Category	Experimental (N=30)		Control (N=100)	
			F	%	F	%
1	Age (years)	18-21	9	30	17	17
		22-25	8	27	27	27
		26-29	9	30	43	43
		30 & above	4	13	13	13
2	Gestational age (weeks)	28-31	2	7	3	3
		32-35	13	43	37	37
		36-39	9	30	27	27
		40 & above	6	20	33	33
3	Gravidity	1	9	30	23	23
		2	7	23	23	23
		3	6	20	30	30
		4 & above	8	26	23	23
4	Parity	1	10	33	33	33
		2	7	23	23	23
		3	8	26	17	17
		4 & above	5	17	27	27
5	Birthing classes attended	Yes	7	23	27	27
		No	23	76	73	73

Table 2: Frequency and percentage distribution of intranatal women according to their clinical data, N=60

S. No.	Clinical Data	Category	Experimental (N=30)		Control (N=100)	
			F	%	F	%
1	Temperature (°F)	97.2-98.2°F	6	20	20	20
		98.4-99.4°F	11	37	37	37
		99.6-100.0°F	6	20	20	20
		Above 100°F	7	23	23	23
2	Pulse (beats/min)	70-80/min	5	17	17	17
		81-90/min	10	33	30	30
		91-100/min	4	13	13	13
		Above 101	11	37	37	37
3	Respiration (/min)	16-20/min	9	30	23	23
		22-24/min	6	20	33	33
		26-28/min	8	26	20	20
		Above 30	7	23	23	23
4	Blood Pressure (mmHg)	70-90 mmHg	8	27	20	20
		100-120	7	23	30	30
		130-150	8	27	27	27
		160 & above	7	23	10	10
5	Uterine Contractions (sec)	Lasts below 30 secs	3	10	10	10
		Lasts 31-50 secs	12	40	37	37
		Lasts 51-70 secs	8	27	33	33
		Above 71secs	7	23	20	20

Table 3: Pre-interventional and post interventional level of labour pains among intranatal women in experimental group, N=60

S. No.	Level of Pain	Pre Test (N=30)		Post Test (N=30)	
		F	%	F	%
1	No pain	0	0	0	0
2	Mild pain	0	0	4	13
3	Moderate pain	7	23	26	87
4	Severe pain	21	70	0	0
5	Worst pain	2	7	0	0

Table 4: Pre-interventional and post interventional level of labour pains among intranatal women in control group, N=60

S. No.	Level of Pain	Pre Test (N=30)		Post Test (N=30)	
		F	%	F	%
1	No pain	0	0	0	0
2	Mild pain	0	0	0	0
3	Moderate pain	6	20	6	20
4	Severe pain	18	60	18	60
5	Worst pain	6	20	6	20

Table 5: Effectiveness of ice massage on labor pains in experimental group

S. No	Group	Pre-test		Post-test		Paired 't' test
		M	SD	M	SD	
1.	EG	8.0	1.26	4.46	1.33	13.6*

Table 6: Comparison between post interventional labor pains among experimental and control group

S. No	Criteria	EG		CG		Unpaired 't' test
		M	SD	M	SD	
1.	Post intervention	4.4	1.3	7.8	1.06	41.0*

Table 7: Association between level of labour pains of intranatal women with their sociodemographic variables in experimental and control group

S. No.	Sociodemographic Variables	χ^2 value (EG)	χ^2 value (CG)
1	Age	13.1*	8.40
2	Gestational age	3.03	3.98
3	Gravidity	8.40*	0.61
4	Parity	9.50*	1.75
5	Birthing classes attended	0.17	3.86

***** Denotes significant

Table 8: Association between level of labour pains of intranatal women with their clinical data in experimental and control group

S. No.	Clinical Data	χ^2 value (EG)	χ^2 value (CG)
1	Temperature	1.39	5.2
2	Pulse	4.92	10.6*
3	Respiration	1.73	8.2
4	Blood pressure	8.87*	12.6*
5	Uterine contractions	8.11*	15.1*

***** Denotes significant

Discussion

The present study was conducted to assess the effectiveness of ice massage at L14 accupressure point among intranatal women.

In present study, majority i.e., 21 (70%) of the intranatal women in experimental group had severe labor pains, where as in post intervention 26(87%) of them had moderate labor pains. In the control group, majority i.e., 18 (60%) had severe labor pains before intervention. Where as in post intervention, majority i.e., 18(60%) of them had severe labor pains.

The above findings are supported by a Jilan Ibrahim *et al* (2018) who conducted a study on effect of ice pack application on intensity of labour pains. The results showed that before intervention, the majority i.e. 53% had severe pain while in the control group also 53% had severe pain. After the intervention, majority i.e. 55% had moderate pain, 25% had mild pain and 20% had severe pain whereas in the control group, 85% had severe pain respectively [8].

In the present study the pre interventional paired 't' test was 13.6 with a table value of 1.699, which was found to be significant at $p<0.05$.

The above findings were supported by the study report of Sharma (2018) results show a reduction of 40% in pain assessment score was observed in Experimental Group which was significant at 1% level of Significance ($p<0.01$). Thus, H_1 was accepted.

In the present study the calculated value of independent 't' test was 41.06 and the table value was 2.04. Which was found significant at $p<0.05$.

The finding of the study is supported by Nagwa Afefy *et al* (2015) in which the results showed that there was a significant decrease in pain intensity immediately and 30 minutes after intervention in ice massage and acupressure groups in comparison to the control group ($p\leq0/003$; $p<0/002$). Moreover, the length of first and second stage of labor was significantly reduced ($p\leq0/003$; $p\leq0/04$) in comparison with the control group [9]. Thus, a research hypothesis H_2 was accepted.

In the present study, the socio demographic variables such as age χ^2=13.15, gravidity χ^2 = 8.40, and parity χ^2= 9.50 were found significant at $p<0.05$ in experimental group while in control group none of the variables were found significant at p<0.05.

With regard to clinical variables, blood pressure χ^2 = 8.87, uterine contractions χ^2 = 8.11, were found significant at $p<0.05$ in experimental group while clinical variables like pulse χ^2 = 10.67,respiration χ^2 = 8.2, blood pressure x2= 12.6, uterine contractions χ^2 = 15.1, were found significant at $p<0.05$ in control group.

The above findings were supported by the study report of Rajni (2018) to find the associated variables, Application of Z test (Double Proportion) for different variables such as, age was found significant at 1% level of significance [10].

Conclusion

Ice massage can be used in hospital settings to provide comfort to the intranatal women during labour pains.

Recommendations

- A similar study can be done on a large sample to generalize the findings.
- A quasi-experimental study can be done.
- A similar study can be carried out to evaluate the effectiveness of various other non-pharmacological methods
- A descriptive study can be done to assess the level of labour pains.

Ethical clearance: Written permission from the authorities of the Government General Hospital, Guntur (dt) was obtained before conducting the study

Conflict of Interest
Not available

Financial Support
Not available

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