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RESEARCH ARTICLE

EFFECTIVENESS OF TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS) ON PAIN AND BEHAVIOURAL RESPONSES AMONG PRIMIGRAVID MOTHERSDURING FIRST STAGE OF LABOUR, AT LABOUR WARD, GOVERNMENT RAJAJI HOSPITAL, MADURAI

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Abstract

Title: Effectiveness of Transcutaneous Electrical Nerve Stimulation (TENS) on pain and behavioural responses among primigravid mothers during first stage of labour, at labour ward, Government Rajaji Hospital.

Objectives: To assess the level of pain and behavioural responses. To evaluate the effectiveness of TENS on pain and behavioural responses. To associate the level of pain and behavioural responses among primigravid mothersand their socio demographic and obstetrical variable.To correlate the level of pain and behavioural responses.

Hypotheses: There is a statistically significant difference between pretest and posttest level of pain and behavioural responses. There is a statistically significant difference between posttest level of pain and behavioural responses. There is a statistically significant association between the level of pain and behavioural responses among primigravid mothers and their socio demographic and obstetrical variables. There is a statistically significant correlation between the level of pain and behavioural responses.

Methodology: True experimental – pretest posttest control group design used. 60 subjects selected by Simple random sampling. Intervention was given four times a day.

Results: Karl pearson coefficient of correlation r =0.46 at p ≤0.001 level of significance.

Conclusion: TENS is a simple, non-invasive, non-pharmacological, alternative method used in labour ward.

Introduction:-

"**Mothers are magician they turn pain into hope, hardship into lessons and tears into laughter."**
-Kelly'

Child bearing is a natural physiological event. However, this creative process is a challenge that may place the body at risk. The pregnant Mothers'sbody undergoes tremendous hormonal and physical changes during the 9 months

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prior to childbirth. In women the increase in pain threshold begins approximately 18 days before the onset of labour and further increases during labour.

Childbirth is never the same and it may differ between mother and in labour too; but in the modern era it is considered as a social event. 'Pain and suffering' is an ever present image and experience among mother from the dawn of history to contemporary time. It has been expressed vividly through the major visual, literary and musical arts. Although artists throughout the century have depicted their experience through a variety of art forms, it is also relevant for us to concentrate on our own meaning, from everybody's impression of pain.

Transcutaneous Electrical Nerve Stimulation(TENS) is the use of electric current produced by a device to stimulate the nerves for therapeutic purposes.TENS, by definition, covers the complete range of transcutaneously applied currents used for nerve excitation although the term is often used with a more restrictive intent, namely to describe the kind of pulses produced by portable stimulators used to treat pain. The unit is usually connected to the skin using two or more electrodes. A typical battery -operated TENS unit is able to modulate pulse width, frequency and intensity. Generally TENS is applied at high frequency (>50 Hz) with an intensity below motor contraction (sensory intensity) or low frequency (<1 0 Hz) with an intensity that producesmotorcontraction.While the use of TENS has provedeffective in clinical studies, there is controversy overwhich conditions the device should be used to treat.

Figure 2:- Pain relief measures.

Need for the study

Advances in technology continue at a fast pace within obstetrics,particularly with the dominant medical model of care and elective epidural provision.Some women are passive **(Blakka and Schauer, 2014)**, they do not want to feel pain andwant the professionals to take control and make their decisions for them. A proportion ofwomenwas high risk due to obstetric or medical problems and others prefer or simplychoose the technocratic medical model of care. Women often fear childbirth and wantothers to manage them in order that they feel safe in hospital **(Heinze and Sleigh, 2015)**.

WHO, 2017 Women who hold this belief system often have aims for ahome birth, birth centre experience or a midwife-led birth in hospital and want a normaloutcome. Within this belief system pregnancy and birth are seen much more as normalphysiological processes, in which medical intervention is inappropriate unless it isclinically

indicated and evidence-based. Midwives can assist by promoting the normalpathway, using their expertise in normal birth, and supporting women who choose to usenon-pharmacological pain control, such as TENS.

According to the statistics of GRH, Madurai District, during the year of 2018 in an average 1100 -1200 mothers delivered with normal labour in labour ward.

Statement of the Problem

"A study to evaluate the effectiveness of transcutaneous electrical nerve stimulation (TENS) on pain and behavioural responses among primigravidmothersduring first stage of labour, at labourward, Government Rajaji Hospital, Madurai"

Objectives of the study:-

1. To assess the level of pain and behavioural responses among primigravid mothers during the first stage of labour at labour ward, GRH, Madurai.
2. To evaluate the effectiveness of TENS on pain and behavioural responses among primigravid mothers during first stage of labour at labour ward,GRH, Madurai.
3. To associate the level of pain and behavioural responses among primigravid mothers during first stage of labour at labour ward,GRH, Madurai and their selected socio demographic variables and obstetrical variables.
4. To correlate the level of pain and behavioural responses among primigravid mothers during first stage of labour at labour ward,GRH, Madurai and their selected socio demographic variables and obstetrical variables.

Hypotheses

H_1: There is a statistically significant difference between pre test and post test level of pain and behavioural responses among primigravid mothers in intervention group during first stage of labour,atlabour ward, Government Rajaji Hospital, Madurai.

H_2: There is a statistically significant difference between post test level of pain and behavioural responses among primigravid mothers in intervention group and control group during first stage of labour, at labour ward, Government Rajaji Hospital, Madurai.

H_3: There is a statistically significant association between the level of pain and behavioural responses among primigravid mothers during first stage of labour,atlabour ward, Government Rajaji Hospital, Madurai and their socio demographic and obstetrical variables.

H_4: There is a statistically significant correlation between the level of pain and behavioural responses among primigravid mothers during first stage of labour,atlabour ward, Government Rajaji Hospital, Madurai and their socio demographic and obstetrical variables.

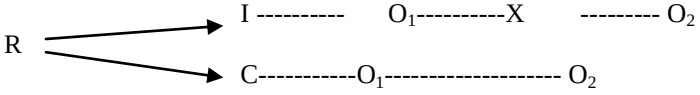
Review Of literature:-

It refers to extensive exhaustive and systematic examination of publication relevant to the research project. The researcher analysis existing knowledge before dealing into a new area of study,when interpreting the result of the study, and when making judgment about application at a new knowledge in nursing practice

Research Methedology:-

Research methodology includes the research design, variables of the study, setting, population, sample criteria for sample collection, sampling technique, sample size, description of the tool and scoring method, content validity, pilot study, procedure for data collection, plan for statistical analysis, protection of human rights and schematic representation of the study. The present study aimed to evaluate the effectiveness of TENS on pain and behavioural responses among primigravid mothers during first stage of labour, at labour ward, Government Rajaji Hospital, Madurai.**Research approach** The research approach is the most essential part of any research. The entire study was based on it **Quantitative valuative research approach** was used to evaluate the effectiveness of Transcutaneous Electrical Nerve Stimulation (TENS) application on pain and behavioural responses.

Research design The design is in this study is true experimental design (pre test – post test control group) design.



R-Randomization

I-Intervention group
C-Control group
O_1-Pre test level of Pain and Behavioural responses on both intervention and control group.
X- Transcutaneous Electrical Nerve Stimulation (TENS) application, four times a day.
O_2- Post test level of Pain and Behavioural responses on both intervention and control group.

Description of research tool

Section I

Part-A (Socio Demographic variables)

Socio demographic variables consist of Age in years, Religion,Types of family,Place of domicile,Food habit,Education,Occupation,Monthly income.

Part-B (Obstetrical variables)

Obstetrical variables consist of Gestation age in weeks, Uterine contraction, Dilatation of the cervix, Maternal temperature, Maternal pulse rate, Maternal respiration,Maternal blood pressure, Fetal heart rate, Position of the fetal, Presenting part, Duration of first stage of labour.

Section-II (Modified Structured checklist)

Modified structured observation checklist on behavioural responses and Numerical pain scale.

Ethical consideration

The study was conducted after the approval from the Ethical committee, Madurai Medical College,Madurai-20.All the respondents of the study was carefully informed about the purpose of the study and their part during the study and how the privacy is protected genuinely. Confidentiality was ensured and written permission was obtained from all participants of the study.

Data collecting procedure

The study was conducted after obtained permission from the ethical committee, Madurai Medical College, Madurai-20 and Head of the Obstetrics and Gynaecological Nursing Department Government Rajaji Hospital,Madurai-20. From 18.03.2019 to 12.04.2019, the objectives of the study was explained clearly to the Head of the Department (Obstetrics and Gynaecology) and other paramedical personnel, who are posted in the labour ward, before starting the data collection in order to get the cooperation from the study .Study session was started with introduction of self, Establishing rapport, Explanation regarding the purpose and the benefits of participating during the whole study programmes. Informed written and oral consent was obtained from the sample and the base line data was collected. 60 samples was selected by using Probability sampling technique - Simple random (Flip a coin) method and assigned the sample into (30) Intervention group (30) control group who met the inclusion criteria and pretest was done for both groups, intervention was given (TENS) and pain and behavioural responses on first stage labour among primigravid mothers was assessed by numerical pain scale for pain and modified structural checklist for behavioural responses.

Data Analysis And Interpretation

Section –I

Distributionof primigravid mothers during first stage of labour and their selected socio demographic variables.

Table 1:- Frequency and percentage distribution of primigravid mothers during first stage of labour with their selected socio demographic variables, both in intervention group and control group. n=60

Demographic variables		Group				χ^2test
		Intervention(n=30)		Control(n=30)		
		n	%	n	%	
Age	< 18 years	0	0.00%	0	0.00%	χ2=1.66 P=0.19(NS)
	19 -23 years	18	60.00%	13	43.33%	
	24 -28 years	12	40.00%	17	56.67%	
	> 28 years	0	0.00%	0	0.00%	
Religion	Christian	6	20.00%	6	20.00%	χ2=0.00 P=1.00(NS)
	Hindu	24	80.00%	24	80.00%	
	Muslim	0	0.00%	0	0.00%	
Types of	Nuclear	16	53.33%	18	60.00%	χ2=0.27

family	Joined	14	46.67%	12	40.00%	P=0.60(NS)
	Extended	0	0.00%	0	0.00%	
Place of domicile	Rural	12	40.00%	11	36.67%	$\chi 2$=0.07 P=0.79(NS)
	Urban	18	60.00%	19	63.33%	
	Sub urban	0	0.00%	0	0.00%	
Food habits	Vegetarian	8	26.67%	8	26.67%	$\chi 2$=0.009 P=1.00(NS)
	Non vegetarian	22	73.33%	22	73.33%	
	Mixed	0	0.00%	0	0.00%	
Education	Non formal education	0	0.00%	0	0.00%	$\chi 2$=0.62 P=0.73(NS)
	Primary education	13	43.34%	16	53.33%	
	Higher Secondary education	13	43.33%	11	36.67%	
	Graduate	4	13.33%	3	10.00%	
Occupation	Homemaker	20	66.67%	18	60.00%	$\chi 2$=0.50 P=0.77(NS)
	Cooly	6	20.00%	6	20.00%	
	Private employee	4	13.33%	6	20.00%	
	Government employee	0	0.00%	0	0.00%	
	Self employee	0	0.00%	0	0.00%	
Monthly income	≤ Rs.5000	4	13.33%	7	23.33%	$\chi 2$=4.31 P=0.22(NS)
	Rs.5001-Rs.10000	14	46.67%	18	60.00%	
	Rs.10001-Rs.15000	6	20.00%	3	10.00%	
	≥ Rs.15001	6	20.00%	2	6.67%	

Distribution of primigravid mothers during first stage of labour and their selected obstetrical variables

Table 2:- Frequency and percentage distribution ofprimigravid mothers during first stage of labour with their selected obstetrical variables n=60

Obstetrical variable		**Group**				**$\chi 2$ test**
		Intervention(n=30)		**Control(n=30)**		
		n	**%**	**n**	**%**	
Gestation age in weeks	< 38 weeks	0	0.00%	0	0.00%	$\chi 2$=0.07 P=0.79(NS)
	38-40 weeks	19	63.33%	18	60.00%	
	> 40 weeks	11	36.67%	12	40.00%	
Uterine contraction	Mild	0	0.00%	0	0.00%	$\chi 2$=0.63 P=0.42(NS)
	Moderate	17	56.67%	20	66.67%	
	Severe	13	43.33%	10	33.33%	
Dilatation of the cervix	2-4 cm	13	43.33%	18	60.00%	$\chi 2$=1.66 P=0.19(NS)
	4-6 cm	17	56.67%	12	40.00%	
	6-8 cm	0	0.00%	0	0.00%	
	8-10 cm	0	0.00%	0	0.00%	
Maternal Temperature	≤ 36•	0	0.00%	0	0.00%	$\chi 2$=0.00 P=1.00(NS)
	37.5•-38.4•	30	100.00%	30	100.00%	
	≥ 38.5•	0	0.00%	0	0.00%	
Maternal pulse rate	≤ 70 bpm	0	0.00%	0	0.00%	$\chi 2$=0.00 P=1.00(NS)
	80-100 bpm	30	100.00%	30	100.00%	
	≥ 110 bpm	0	0.00%	0	0.00%	
Maternal respiration rate	≤ 12 breath per minute	0	0.00%	0	0.00%	$\chi 2$=0.10 P=0.75(NS)
	13-16 breath per minute	6	20.00%	7	23.33%	
	17-22 breath per minute	24	80.00%	23	76.67%	
	≥ 23 breath per minute	0	0.00%	0	0.00%	
Maternal blood pressure	≤ 90/60 mmHg	0	0.00%	0	0.00%	$\chi 2$=0.00 P=1.00(NS)
	100/70 − 130/90 mmHg	30	100.00%	30	100.00%	
	≤ 140/100 mmHg	0	0.00%	0	0.00%	
Fetal heart rate	100-110 bpm	0	0.00%	0	0.00%	$\chi 2$=1.83

	110-120 bpm	0	0.00%	1	3.33%	P=0.40(NS)
	120-130 bpm	18	60.00%	14	46.67%	
	130-140 bpm	12	40.00%	15	50.00%	
Position of the fetal	Left Occiput Anterior	9	30.00%	12	40.00%	$\chi 2$=2.62 P=0.26(NS)
	Right Occiput Anterior	18	60.00%	12	40.00%	
	Left Occiput Posterior	3	10.00%	6	20.00%	
	Right Occiput Posterior	0	0.00%	0	0.00%	
Presenting part	Vertex presentation	30	100.00%	29	96.67%	$\chi 2$=1.01 P=0.31(NS)
	Breech presentation	0	0.00%	1	3.33%	
	Face presentation	0	0.00%	0	0.00%	
Duration of first stage of labour	≤ 10 Hours	0	0.00%	0	0.00%	$\chi 2$=0.80 P=0.37(NS)
	11-14 Hours	21	70.00%	24	80.00%	
	15-17 Hours	9	30.00%	6	20.00%	
	≥ 18 Hours	0	0.00%	0	0.00%	

Section – II

Description of level of pain among primigravid mothers during first stage of labour in intervention group and control group

Table 3:- Frequency and percentage distribution of pre test level of pain among primigravid mothers during first stage of labour in intervention group and control group. n=60

Level of pain	**Intervention group pre test**		**Control group pre test**		**$\chi 2$ test**
	n	**%**	**n**	**%**	
No pain	0	0.00%	0	0.00%	$\chi 2$=0.30 P=0.58 (NS)
Mild	0	0.00%	0	0.00%	
Moderate	9	30.00%	11	36.67%	
Severe	21	70.00%	19	63.33%	
worst pain	0	0.00%	0	0.00%	
Total	30	100.0%	30	100.0%	

Description of behavioural responses among primigravid mothers during first stage of labour in intervention group and control group.

Table 4:- Frequency and percentage distribution of pre testbehavioural responses among primigravid mothers during first stage of labour in intervention group and control group. n= 60

Behavioural responses	**Intervention group pre test**		**Control group pre test**		**$\chi 2$ test**
	n	**%**	**n**	**%**	
Poor	12	40.00%	10	33.33%	$\chi 2$=0.28 P=0.59 (NS)
Moderate	18	60.00%	20	66.67%	
Good	0	0.00%	0	0.00%	
Total	30	100.0%	30	100.0%	

Section – III

Description of pre test and post test level of pain among primigravid mothers during first stage of labour in intervention group

Table 5:- Frequency and percentage distribution of pre test and post testlevel of pain among primigravid mothers during first stage of labour in intervention group n=30.

Level of pain	**Intervention group**			
	Pre test		**Post test**	
	n	**%**	**n**	**%**
No pain	0	0.00%	0	0.00%
Mild	0	0.00%	8	26.67%
Moderate	9	30.00%	22	73.33%

Severe	21	70.00%	0	0.00%
worst pain	0	0.00%	0	0.00%
Total	**30**	**100.0%**	**30**	**100.0%**

Table 6:- Description of pre test and post test mean, standard deviation and mean score difference on level of pain of among primigravid mothers during first stage of labour in intervention group

Level of pain	**Intervention group**		**Mean difference**	**Student independent t-test**
	Mean score	**SD**		
Pretest	7.00	1.39	0.33	t=1.03P=0.30(NS)
Posttest	4.30	0.99	1.80	t=5.69P=0.001***(S)

Description of pre test and post testof behavioural responses among primigravid mothers during first stage of labour in intervention group

Table 7:- Frequency and percentage distribution of pre test and post testbehavioural responses among primigravid mothers during first stage of labour in intervention group. n=30.

Behavioural responses	**Intervention group**			
	pre test		**post test**	
	n	**%**	**n**	**%**
Poor	12	40.00%	0	0.00%
Moderate	18	60.00%	8	26.67%
Good	0	0.00%	22	73.33%
Total	30	100.0%	30	100.0%

Table 8:- Description of pre test and post test mean, standard deviation and mean score difference on behavioural responses of among primigravid mothers during first stage of labour in intervention group.

Level of behavioural responses	**Pretest**		**Posttest**		**Mean difference**	**Student paired t-test**
	Mean score	**SD**	**Mean score**	**SD**		
Intervention group	7.00	1.39	4.30	0.99	2.70	**t=7.58P=0.001***(S)**

Descriptionof pre test and post test level of pain among primigravid mothers during first stage of labour in control group

Table 9:- Frequency and percentage distribution of pre test and post test level of pain among primigravid mothers during first stage of labour in control group n=30

Level of pain	**Control group**			
	Pre test		**Post test**	
	n	**%**	**n**	**%**
No pain	0	0.00%	0	0.00%
Mild	0	0.00%	0	0.00%
Moderate	11	36.67%	15	50.00%
Severe	19	63.33%	15	50.00%
Worst pain	0	0.00%	0	0.00%
Total	30	100.0%	30	100.0%

Table 10:- Description of pre test and post test mean, standard deviation and mean score difference on level of pain of among primigravid mothers during first stage of labour in control group

Level of pain	**Control group**		**Mean difference**	**Student independent t-test**
	Mean score	**SD**		
Pretest	6.67	1.09	1.80	t=1.03
Posttest	6.10	1.42		P=0.30(NS)

Description of pre test and post testof behavioural responses among primigravid mothers during first stage of labour in control group

Table 11:- Frequency and percentage distribution of pre test and post testbehavioural responses among primigravid mothers during first stage of labour in control group. n=30

Behavioural responses	**control group**			
	Pre test		**Post test**	
	n	**%**	**n**	**%**
Poor	10	40.00%	7	23.33%
Moderate	20	60.00%	23	76.67%
Good	0	0.00%	0	0.00%
Total	30	100.0%	30	100.0%

Table 12:- Description of pre test and post test mean, standard deviation and mean score difference on behavioural responses of among primigravid mothers during first stage of labour in control group.

Behavioural responses	**Pretest**		**Posttest**		**Mean difference**	**Student paired t-test**
	Mean score	**SD**	**Mean score**	**SD**		
Control group	6.67	1.09	6.10	1.42	0.57	t=1.76 P=0.09 (NS)

Description of level of pain among primigravid mothers during first stage of labour in intervention group and control group

Table 13:- Frequency and percentage distribution of post test level of pain among primigravid mothers during first stage of labour in intervention group and control group.n=60

Level of pain	**Intervention group post test**		**Control group post test**		**χ2 test**
	n	**%**	**n**	**%**	
No pain	0	0.00%	0	0.00%	χ2=22.94 P=0.001*** (S)
Mild	8	26.67%	0	0.00%	
Moderate	22	73.33%	15	50.00%	
Severe	0	0.00%	15	50.00%	
worst pain	0	0.00%	0	0.00%	
Total	30	100.0%	30	100.0%	

Description of behavioural responses among primigravid mothers during first stage of labour in intervention group and control group.

Table 14:- Frequency and percentage distribution of post test behavioural responses among primigravid mothers during first stage of labour in intervention group and control group. n= 60

Behavioural responses	**Intervention group post test**		**Control group post test**		**χ2 test**
	n	**%**	**n**	**%**	
Poor	0	00.00%	7	23.33%	χ2=36.25 P=0.001*** (S)
Moderate	8	26.67%	23	76.67%	
Good	22	73.33%	0	0.00%	
Total	30	100.0%	30	100.0%	

Table 15:- Effectiveness Transcutaneous Electrical Nerve Stimulation (TENS) on pain among primigravid mother during first stage of labour in intervention group and control group n=60.

Level of pain		**Max score**	**Mean score**	**Mean Difference of changes with pain 95% Confidence interval**	**Percentage of changes with pain 95% Confidence interval**
Experiment	Pretest	10	7.00	2.70(1.97 – 3.42)	27.00%

group	Posttest	10	4.30		(19.70%–34.20%)
Control group	Pretest	10	6.67	0.50(-0.16 – 1.16)	5.00% (-0.16% –11.60%)
	Posttest	20	6.17		

Table 16:- Frequency and percentage distribution of pre test level of behavioural responses among primigravid mother during first stage of labour in intervention group and control group n=60.

	Domainwisebehavioural responses	**No. of questions**	**Intervention group**		**Control group**	
			Mean	**%**	**Mean**	**%**
1	Behavioural responses during uterine contraction	10	4.43	44.30%	4.73	47.30%
2	Behavioural responses in between contraction	6	3.17	63.40%	3.37	67.40%
3	Manifestation of participation	4	3.10	62.00%	2.77	55.40%
	Total	20	10.70	53.50%	10.87	54.35%

Table 17:- Description of pre test mean, standard deviation and mean score difference on behavioural responsesamong primigravid mothers during first stage of labour in intervention group and control group. n=60.

Domainwisebehavioural responses	**Intervention**		**Control**		**Mean difference**	**Student independent t-test**
	Mean score	**SD**	**Mean score**	**SD**		
Behavioural responses during uterine contraction	4.43	.63	4.73	1.62	-0.30	t=0.94 P=0.34(NS)
Behavioural responses in between contraction	3.17	.91	3.37	.72	-0.20	t=0.96 P=0.35(NS)
Manifestation of participation	3.10	.71	2.77	1.17	0.33	t=1.33 P=0.18(NS)
Total	10.70	1.34	10.87	1.81	-0.17	t=0.40 P=0.68(NS)

Table 18:- Frequency and percentage distribution of post test level ofbehavioural responses among primigravid mother during first stage of labour in intervention group and control group n=60

	Domainwisebehavioural responses	**No. of questions**	**Intervention group**		**Control group**	
			Mean	**%**	**Mean**	**%**
1	Behavioural responses during uterine contraction	10	7.40	74.00%	4.97	49.70%
2	Behavioural responses in between contraction	6	4.33	86.60%	3.50	70.00%
3	Manifestation of participation	4	3.97	79.40%	3.07	61.40%
	Total	**20**	**15.70**	**78.50%**	**11.53**	**57.65%**

Table 19:- Description of post test mean, standard deviation and mean score difference onbehavioural responsesamong primigravid mothers during first stage of labour in intervention group and control group . n=60

Domainwisebehavioural responses	**Intervention group**		**Control group**		**Mean difference**	**Student independent t-test**
	Mean score	**SD**	**Mean score**	**SD**		
Behavioural responses during uterine contraction	7.40	1.71	4.97	1.96	2.43	t=5.124 P=0.001***(S)
Behavioural responses in between contraction	4.33	.80	3.50	.82	0.83	t=3.97 P=0.001***(S)
Manifestation of participation	3.97	1.13	3.07	1.08	0.90	t=3.15 P=0.001***(S)
Total	**15.70**	**1.90**	**11.53**	**2.29**	**4.17**	**t=7.68**

						P=0.001*(S)**

Table 20:- Description of pre test and post test percentage on behavioural responses among primigravid mother during first stage of labour in intervention group and control group n=60.

Domainwisebehavioural responses		**Pre test**	**Post test**	**Percentage %**
Intervention	Behavioural responses during uterine contraction	44.30%	74.00%	29.70%
	Behavioural responses in between contraction	63.40%	86.60%	23.20%
	Manifestation of participation	62.00%	79.40%	17.40%
	Overall	**53.50%**	**78.50%**	**25.00%**
Control	Behavioural responses during uterine contraction	47.30%	49.70%	2.40%
	Behavioural responses in between contraction	67.40%	70.00%	2.60%
	Manifestation of participation	55.40%	61.40%	6.00%
	Overall	**54.35%**	**57.65%**	**3.30%**

Table 21:- Effectiveness of Transcutaneous Electrical Nerve Stimulation (TENS) on level of pain and behavioural responsesamong primigravid mother during first stage of labour in intervention group and control group n=60

Level of pain and behavioural responses		**Max score**	**Mean score**	**Mean Difference of changes with 95% Confidence interval**	**Percentage of changes with 95% Confidence interval**
Intervention group	Pretest	20	10.70	5.00(4.21 – 5.78)	25.00% (21.05%–28.90%)
	Posttest	20	15.70		
Control group	Pretest	20	10.87	0.66(-0.17 – 1.50)	3.38% (-0.90% –7.50%)
	Posttest	20	11.53		

Section – IV

Description of association between the post test level of pain and behavioural responsesamong primigravid mothers during first stage of labour with their selected socio demographic variables and obstetrical variables intervention group and control group.

Table 22:- Association betweenthe post test level of pain among primigravid mothers during first stage of labour in intervention group with their selected socio demographic variables and obstetrical variables. n=30

Socio demographic variables		**Post test level of pain**						**n**	**χ2 test**
		No pain		**Mild**		**Moderate**			
		n	**%**	**n**	**%**	**n**	**%**		
Age	< 18 years	0	0.00%	0	0.00%	0	0.00%	0	**χ2=5.56 P=0.02 *(S)**
	19 -23 years	2	11.11%	16	88.89%	0	0.00%	18	
	24 -28 years	6	50.00%	6	50.00%	0	0.00%	12	
	> 28 years	0	0.00%	0	0.00%	0	0.00%	0	
Religion	Christian	1	16.67%	5	83.33%	0	0.00%	6	χ2=0.38 P=0.53 (NS)
	Hindu	7	29.17%	17	70.83%	0	0.00%	24	
	Muslim	0	0.00%	0	0.00%	0	0.00%	0	
Types of family	Nuclear	5	31.25%	11	68.75%	0	0.00%	16	χ2=0.36 P=0.54 (NS)
	Joined	3	21.43%	11	78.57%	0	0.00%	14	
	Extended	0	0.00%	0	0.00%	0	0.00%	0	
Place of domicile	Rural	1	8.33%	11	91.67%	0	0.00%	12	**χ2=3.84 P=0.05* (S)**
	Urban	7	38.89%	11	61.11%	0	0.00%	18	
	Sub urban	0	0.00%	0	0.00%	0	0.00%	0	

Food habits	Vegetarian	4	50.00%	4	50.00%	0	0.00%	8	$\chi 2=3.03$ P=0.08 (NS)
	Non vegetarian	4	18.18%	18	81.82%	0	0.00%	22	
	Mixed	0	0.00%	0	0.00%	0	0.00%	0	
Education	Non formal education	0	0.00%	0	0.00%	0	0.00%	0	$\chi 2=6.75$ P=0.11 (NS)
	Primary education	1	7.69%	12	92.31%	0	0.00%	13	
	Higher Secondary education	6	46.15%	7	53.85%	0	0.00%	13	
	Graduate	1	25.00%	3	75.00%	0	0.00%	4	
Occupation	Homemaker	6	30.00%	14	70.00%	0	0.00%	20	$\chi 2=0.42$ P=0.80 (NS)
	Cooly	1	16.67%	5	83.33%	0	0.00%	6	
	Private employee	1	25.00%	3	75.00%	0	0.00%	4	
	Government employee	0	0.00%	0	0.00%	0	0.00%	0	
	Self employee	0	0.00%	0	0.00%	0	0.00%	0	
Monthly income	≤ Rs.5000	2	50.00%	2	50.00%	0	0.00%	4	$\chi 2=4.18$ P=0.24 (NS)
	Rs.5001-Rs.10000	5	35.71%	9	64.29%	0	0.00%	14	
	Rs.10001-Rs.15000	1	16.67%	5	83.33%	0	0.00%	6	
	≥ Rs.15001	0	0.00%	6	100.00%	0	0.00%	6	

Obstetricalvariables		**Post test level of pain**						**n**	**$\chi 2$test**
		No pain		**Mild**		**Moderate**			
		n	**%**	**n**	**%**	**n**	**%**		
Gestation age in weeks	< 38 weeks	0	0.00%	0	0.00%	0	0.00%	0	**$\chi 2=3.13$ P=0.07 **(S)**
	38-40 weeks	3	15.79%	16	84.21%	0	0.00%	19	
	> 40 weeks	5	45.45%	6	54.55%	0	0.00%	11	
Uterine contraction	Mild	0	0.00%	0	0.00%	0	0.00%	0	$\chi 2=1.49$ P=0.22 (NS)
	Moderate	6	35.29%	11	64.71%	0	0.00%	17	
	Severe	2	15.38%	11	84.62%	0	0.00%	13	
Dilatation of the cervix	2-4 cm	6	46.15%	7	53.85%	0	0.00%	13	**$\chi 2=4.45$ P=0.03 *(S)**
	4-6 cm	2	11.76%	15	88.24%	0	0.00%	17	
	6-8 cm	0	0.00%	0	0.00%	0	0.00%	0	
	8-10 cm	0	0.00%	0	0.00%	0	0.00%	0	
Maternal Temperature	≤ 36•	0	0.00%	0	0.00%	0	0.00%	0	$\chi 2=0.00$ P=1.00 (NS)
	37.5•-38.4•	8	26.67%	22	73.33%	0	0.00%	30	
	≥ 38.5•	0	0.00%	0	0.00%	0	0.00%	0	
Maternal pulse rate	≤ 70 bpm	0	0.00%	0	0.00%	0	0.00%	0	$\chi 2=0.00$ P=1.00 (NS)
	80-100 bpm	8	26.67%	22	73.33%	0	0.00%	30	
	≥ 110 bpm	0	0.00%	0	0.00%	0	0.00%	0	
Maternal respiration rate	≤ 12 breath per minute	0	0.00%	0	0.00%	0	0.00%	0	$\chi 2=2.72$ P=0.10 (NS)
	13-16 breath per minute	0	0.00%	6	100.00%	0	0.00%	6	
	17-22 breath per minute	8	33.33%	16	66.67%	0	0.00%	24	

	≥ 23 breath per minute	0	0.00%	0	0.00%	0	0.00%	0	
Maternal blood pressure	≤ 90/60 mmHg	0	0.00%	0	0.00%	0	0.00%	0	$\chi 2=0.00$ P=1.00 (NS)
	100/70 − 130/90 mmHg	8	26.67%	22	73.33%	0	0.00%	30	
	≤ 140/100 mmHg	0	0.00%	0	0.00%	0	0.00%	0	
Fetal heart rate	100-110 bpm	0	0.00%	0	0.00%	0	0.00%	0	$\chi 2=2.30$ P=0.12 (NS)
	110-120 bpm	0	0.00%	0	0.00%	0	0.00%	0	
	120-130 bpm	3	16.67%	15	83.33%	0	0.00%	18	
	130-140 bpm	5	41.67%	7	58.33%	0	0.00%	12	
Position of the fetal	Left Occiput Anterior	1	11.11%	8	88.89%	0	0.00%	9	$\chi 2=3.58$ P=0.16 NS)
	Right Occiput Anterior	7	38.89%	11	61.11%	0	0.00%	18	
	Left Occiput Posterior	0	0.00%	3	100.00%	0	0.00%	3	
	Right Occiput Posterior	0	0.00%	0	0.00%	0	0.00%	0	
Presenting part	Vertex presentation	8	26.67%	22	73.33%	0	0.00%	30	$\chi 2=0.00$ P=1.00 (NS)
	Breech presentation	0	0.00%	0	0.00%	0	0.00%	0	
	Face presentation	0	0.00%	0	0.00%	0	0.00%	0	
Duration of first stage of labour	≤ 10 Hours	0	0.00%	0	0.00%	0	0.00%	0	$\chi 2=0.13$ P=0.71 (NS)
	11-14 Hours	6	28.57%	15	71.43%	0	0.00%	21	
	15-17 Hours	2	22.22%	7	77.78%	0	0.00%	9	
	≥ 18 Hours	0	0.00%	0	0.00%	0	0.00%	0	

Socio demographic variables		**Posttest level of behavioural responses**						**n**	**$\chi 2$ test**
		Poor		**Moderate**		**Good**			
		n	**%**	**n**	**%**	**n**	**%**		
Age	< 18 years	0	0.00%	0	0.00%	0	0.00%	0	**$\chi 2=4.07$ P=0.04 *(S)**
	19 -23 years	0	0.00%	8	44.44%	10	55.56%	18	
	24 -28 years	0	0.00%	0	0.00%	12	100.00%	12	
	> 28 years	0	0.00%	0	0.00%	0	0.00%	0	
Religion	Christian	0	0.00%	2	33.33%	4	66.67%	6	$\chi 2=0.17$ P=0.68 (NS)
	Hindu	0	0.00%	6	25.00%	18	75.00%	24	
	Muslim	0	0.00%	0	0.00%	0	0.00%	0	
Types of family	Nuclear	0	0.00%	3	18.75%	13	81.25%	16	$\chi 2=1.10$ P=0.29 (NS)
	Joined	0	0.00%	5	35.71%	9	64.29%	14	
	Extended	0	0.00%	0	0.00%	0	0.00%	0	
Place of domicile	Rural	0	0.00%	6	50.00%	6	50.00%	12	**$\chi 2=5.56$ P=0.02 *(S)**
	Urban	0	0.00%	2	11.11%	16	88.89%	18	
	Sub urban	0	0.00%	0	0.00%	0	0.00%	0	
Food habits	Vegetarian	0	0.00%	1	12.50%	7	87.50%	8	$\chi 2=1.12$ P=0.29 (NS)
	Non vegetarian	0	0.00%	7	31.82%	15	68.18%	22	
	Mixed	0	0.00%	0	0.00%	0	0.00%	0	
Education	Non formal education	0	0.00%	0	0.00%	0	0.00%	0	$\chi 2=4.43$

	Primary education	0	0.00%	1	7.69%	12	92.31%	13	P=0.10 (NS)
	Higher Secondary education	0	0.00%	5	38.46%	8	61.54%	13	
	Graduate	0	0.00%	2	50.00%	2	50.00%	4	

Occupation	Homemaker	0	0.00%	7	35.00%	13	65.00%	20	$\chi 2=2.47$ P=0.29 (NS)
	Cooly	0	0.00%	1	16.67%	5	83.33%	6	
	Private employee	0	0.00%	0	0.00%	4	100.00%	4	
	Government employee	0	0.00%	0	0.00%	0	0.00%	0	
	Self employee	0	0.00%	0	0.00%	0	0.00%	0	
Monthly income	≤ Rs.5000	0	0.00%	3	75.00%	1	25.00%	4	$\chi 2=6.31$ P=0.10 (NS)
	Rs.5001-Rs.10000	0	0.00%	2	14.29%	12	85.71%	14	
	Rs.10001-Rs.15000	0	0.00%	2	33.33%	4	66.67%	6	
	≥ Rs.15001	0	0.00%	1	16.67%	5	83.33%	6	

Obstetrical variables		**Posttest level of behavioural responses**						**n**	**$\chi 2$test**
		Poor		**Moderate**		**Good**			
		n	**%**	**n**	**%**	**n**	**%**		
Gestation age in weeks	< 38 weeks	0	0.00%	0	0.00%	0	0.00%	0	**$\chi 2=6.90$ P=0.01 **(S)**
	38-40 weeks	0	0.00%	2	10.52%	17	89.48%	19	
	> 40 weeks	0	0.00%	6	54.54%	5	45.46%	11	
Uterine contraction	Mild	0	0.00%	0	0.00%	0	0.00%	0	$\chi 2=1.49$ P=0.22 (NS)
	Moderate	0	0.00%	6	75.00%	11	50.00%	17	
	Severe	0	0.00%	2	25.00%	11	50.00%	13	
Dilatation of the cervix	2-4 cm	0	0.00%	3	37.50%	10	45.45%	13	$\chi 2=0.15$ P=0.69 (NS)
	4-6 cm	0	0.00%	5	62.50%	12	54.55%	17	
	6-8 cm	0	0.00%	0	0.00%	0	0.00%	0	
	8-10 cm	0	0.00%	0	0.00%	0	0.00%	0	
Maternal Temperature	≤ 36•	0	0.00%	0	0.00%	0	0.00%	0	$\chi 2=0.00$ P=1.00 (NS)
	37.5•-38.4•	0	0.00%	8	100.00%	22	100.00%	30	
	≥ 38.5•	0	0.00%	0	0.00%	0	0.00%	0	
Maternal pulse rate	≤ 70 bpm	0	0.00%	0	0.00%	0	0.00%	0	$\chi 2=0.00$ P=1.00 (NS)
	80-100 bpm	0	0.00%	8	100.00%	22	100.00%	30	
	≥ 110 bpm	0	0.00%	0	0.00%	0	0.00%	0	

Maternal respiration rate	≤ 12 breath per minute	0	0.00%	0	0.00%	0	0.00%	0	$\chi 2=0.38$ P=0.53 (NS)
	13-16 breath per minute	0	0.00%	1	12.50%	5	22.73%	6	
	17-22 breath per minute	0	0.00%	7	87.50%	17	77.27%	24	
	≥ 23 breath per minute	0	0.00%	0	0.00%	0	0.00%	0	

Maternal blood pressure	≤ 90/60 mmHg	0	0.00%	0	0.00%	0	0.00%	0	χ^2=0.00 P=1.00 (NS)
	100/70 − 130/90 mmHg	0	0.00%	8	100.00%	22	100.00%	30	
	≤ 140/100 mmHg	0	0.00%	0	0.00%	0	0.00%	0	
Fetal heart rate	100-110 bpm	0	0.00%	0	0.00%	0	0.00%	0	χ^2=2.30 P=0.12 (NS)
	110-120 bpm	0	0.00%	0	0.00%	0	0.00%	0	
	120-130 bpm	0	0.00%	3	37.50%	15	68.18%	18	
	130-140 bpm	0	0.00%	5	62.50%	7	31.82%	12	
Position of the fetal	Left Occiput Anterior	0	0.00%	2	25.00%	7	31.82%	9	χ^2=1.59 P=0.45 (NS)
	Right Occiput Anterior	0	0.00%	6	75.00%	12	54.55%	18	
	Left Occiput Posterior	0	0.00%	0	0.00%	3	13.64%	3	
	Right Occiput Posterior	0	0.00%	0	0.00%	0	0.00%	0	
Presenting part	Vertex presentation	0	0.00%	8	100.00%	22	100.00%	30	χ^2=0.00 P=1.00 (NS)
	Breech presentation	0	0.00%	0	0.00%	0	0.00%	0	
	Face presentation	0	0.00%	0	0.00%	0	0.00%	0	
Duration of first stage of labour	≤ 10 Hours	0	0.00%	0	0.00%	0	0.00%	0	χ^2=0.29 P=0.580 (NS)
	11-14 Hours	0	0.00%	5	62.50%	16	72.73%	21	
	15-17 Hours	0	0.00%	3	37.50%	6	27.27%	9	
	≥ 18 Hours	0	0.00%	0	0.00%	0	0.00%	0	

The above table 23despites that association between the post level of behavioural responses among primigravid		**Mild**		**Moderate**		**Severe**			
		n	**%**	**n**	**%**	**n**	**%**		
Age	< 18 years	0	0.00%	0	0.00%	0	0.00%	0	χ^2=2.03 P=0.15 (NS)
	19 -23 years	0	0.00%	5	38.46%	8	61.54%	13	
	24 -28 years	0	0.00%	11	64.71%	6	35.29%	17	
	> 28 years	0	0.00%	0	0.00%	0	0.00%	0	
Religion	Christian	0	0.00%	3	50.00%	3	50.00%	6	χ^2=0.03 P=0.85 (NS)
	Hindu	0	0.00%	13	54.17%	11	45.83%	24	
	Muslim	0	0.00%	0	0.00%	0	0.00%	0	
Types of family	Nuclear	0	0.00%	10	55.56%	8	44.44%	18	χ^2=0.09 P=0.76 (NS)
	Joined	0	0.00%	6	50.00%	6	50.00%	12	
	Extended	0	0.00%	0	0.00%	0	0.00%	0	
Place of domicile	Rural	0	0.00%	5	45.45%	6	54.55%	11	χ^2=0.43 P=0.53 (NS)
	Urban	0	0.00%	11	57.89%	8	42.11%	19	
	Sub urban	0	0.00%	0	0.00%	0	0.00%	0	
Food habits	Vegetarian	0	0.00%	7	87.50%	1	12.50%	8	χ^2=3.41 P=0.06 (NS)
	Non vegetarian	0	0.00%	9	40.91%	13	59.09%	22	
	Mixed	0	0.00%	0	0.00%	0	0.00%	0	

Education	Non formal education	0	0.00%	0	0.00%	0	0.00%	0	χ^2=3.28 P=0.19 (NS)
	Primary education	0	0.00%	11	68.75%	5	31.25%	16	
	Higher Secondary education	0	0.00%	4	36.36%	7	63.64%	11	
	Graduate	0	0.00%	1	33.33%	2	66.67%	3	
Occupation	Homemaker	0	0.00%	9	50.00%	9	50.00%	18	χ^2=0.53 P=0.76 (NS)
	Cooly	0	0.00%	4	66.67%	2	33.33%	6	
	Private employee	0	0.00%	3	50.00%	3	50.00%	6	
	Government employee	0	0.00%	0	0.00%	0	0.00%	0	
	Self employee	0	0.00%	0	0.00%	0	0.00%	0	
Monthly income	≤ Rs.5000	0	0.00%	4	57.14%	3	42.86%	7	χ^2=3.91 P=0.27 (NS)
	Rs.5001-Rs.10000	0	0.00%	11	61.11%	7	38.89%	18	
	Rs.10001-Rs.15000	0	0.00%	0	0.00%	3	100.00%	3	
	≥ Rs.15001	0	0.00%	1	50.00%	1	50.00%	2	

Obstetrical variables		**Posttest level of pain**						**n**	**χ^2 test**
		Mild		**Moderate**		**Severe**			
		n	**%**	**n**	**%**	**n**	**%**		
Gestation age in weeks	< 38 weeks	0	0.00%	0	0.00%	0	0.00%	0	χ^2=1.42 P=0.23 (NS)
	38-40 weeks	0	0.00%	8	44.44%	10	55.56%	18	
	> 40 weeks	0	0.00%	8	66.67%	4	33.33%	12	
Uterine contraction	Mild	0	0.00%	0	0.00%	0	0.00%	0	χ^2=3.19 P=0.07 (NS)
	Moderate	0	0.00%	14	70.00%	6	30.00%	20	
	Severe	0	0.00%	2	20.00%	8	80.00%	10	
Dilatation of the cervix	2-4 cm	0	0.00%	10	55.56%	8	44.44%	18	χ^2=0.09 P=0.76 (NS)
	4-6 cm	0	0.00%	6	50.00%	6	50.00%	12	
	6-8 cm	0	0.00%	0	0.00%	0	0.00%	0	
	8-10 cm	0	0.00%	0	0.00%	0	0.00%	0	
Maternal Temperature	≤ 36•	0	0.00%	0	0.00%	0	0.00%	0	χ^2=0.00 P=1.00 (NS)
	37.5•-38.4•	0	0.00%	16	53.33%	14	46.67%	30	
	≥ 38.5•	0	0.00%	0	0.00%	0	0.00%	0	
Maternal pulse rate	≤ 70 bpm	0	0.00%	0	0.00%	0	0.00%	0	χ^2=0.00 P=1.00 (NS)
	80-100 bpm	0	0.00%	16	53.33%	14	46.67%	30	
	≥ 110 bpm	0	0.00%	0	0.00%	0	0.00%	0	
Maternal respiration rate	≤ 12 breath per minute	0	0.00%	0	0.00%	0	0.00%	0	χ^2=0.05 P=0.81 (NS)
	13-16 breath per minute	0	0.00%	4	57.14%	3	42.86%	7	
	17-22 breath per minute	0	0.00%	12	52.17%	11	47.83%	23	
	≥ 23 breath	0	0.00%	0	0.00%	0	0.00%	0	

	per minute								
Maternal blood pressure	≤ 90/60 mmHg	0	0.00%	0	0.00%	0	0.00%	0	$\chi2$=0.00 P=1.00 (NS)
	100/70 – 130/90 mmHg	0	0.00%	16	53.33%	14	46.67%	30	
	≤ 140/100 mmHg	0	0.00%	0	0.00%	0	0.00%	0	
Fetal heart rate	100-110 bpm	0	0.00%	0	0.00%	0	0.00%	0	$\chi2$=0.93 P=0.62 (NS)
	110-120 bpm	0	0.00%	1	100.00%	0	0.00%	1	
	120-130 bpm	0	0.00%	7	50.00%	7	50.00%	14	
	130-140 bpm	0	0.00%	8	53.33%	7	46.67%	15	
Position of the fetal	Left Occiput Anterior	0	0.00%	6	50.00%	6	50.00%	12	$\chi2$=0.53 P=0.76 (NS)
	Right Occiput Anterior	0	0.00%	6	50.00%	6	50.00%	12	
	Left Occiput Posterior	0	0.00%	4	66.67%	2	33.33%	6	
	Right Occiput Posterior	0	0.00%	0	0.00%	0	0.00%	0	
Presenting part	Vertex presentation	0	0.00%	15	51.72%	14	48.28%	29	$\chi2$=0.90 P=0.34 (NS)
	Breech presentation	0	0.00%	1	100.00%	0	0.00%	1	
	Face presentation	0	0.00%	0	0.00%	0	0.00%	0	
Duration of first stage of labour	≤ 10 Hours	0	0.00%	0	0.00%	0	0.00%	0	$\chi2$=0.53 P=0.46 (NS)
	11-14 Hours	0	0.00%	12	50.00%	12	50.00%	24	
	15-17 Hours	0	0.00%	4	66.67%	2	33.33%	6	
	≥ 18 Hours	0	0.00%	0	0.00%	0	0.00%	0	

Association between the post test of behavioural responses among primigravid mothers during first stage of labour with their selected socio demographicvariables and obstetrical variables in control group. n=30

Socio demographic variables		**Posttest level of behavioural responses**						**n**	**$\chi2$ test**
		Poor		**Moderate**		**Good**			
		n	**%**	**n**	**%**	**n**	**%**		
Age	< 18 years	0	0.00%	0	0.00%	0	0.00%	0	$\chi2$=0.45 P=0.50 (NS)
	19 -23 years	6	46.15%	7	53.85%	0	0.00%	13	
	24 -28 years	1	5.88%	16	94.12%	0	0.00%	17	
	> 28 years	0	0.00%	0	0.00%	0	0.00%	0	
Religion	Christian	1	16.67%	5	83.33%	0	0.00%	6	$\chi2$=0.17 P=0.68 (NS)
	Hindu	6	25.00%	18	75.00%	0	0.00%	24	
	Muslim	0	0.00%	0	0.00%	0	0.00%	0	
Types of family	Nuclear	4	22.22%	14	77.78%	0	0.00%	18	$\chi2$=1.10 P=0.29 (NS)
	Joined	3	25.00%	9	75.00%	0	0.00%	12	
	Extended	0	0.00%	0	0.00%	0	0.00%	0	
Place of domicile	Rural	3	27.27%	8	72.73%	0	0.00%	11	$\chi2$=0.03 P=0.86 (NS)
	Urban	4	21.05%	15	78.95%	0	0.00%	19	
	Sub urban	0	0.00%	0	0.00%	0	0.00%	0	
Food	Vegetarian	0	0.00%	8	100.00%	0	0.00%	8	$\chi2$=1.12

habits	Non vegetarian	7	31.82%	15	68.18%	0	0.00%	22	P=0.29 (NS)
	Mixed	0	0.00%	0	0.00%	0	0.00%	0	
Education	Non formal education	0	0.00%	0	0.00%	0	0.00%	0	$\chi2$=4.43 P=0.10 (NS)
	Primary education	3	18.75%	13	81.25%	0	0.00%	16	
	Higher Secondary education	1	9.09%	10	90.91%	0	0.00%	11	
	Graduate	3	100.00%	0	0.00%	0	0.00%	3	
Occupation	Homemaker	4	22.22%	14	77.78%	0	0.00%	18	$\chi2$=2.47 P=0.29 (NS)
	Cooly	2	33.33%	4	66.67%	0	0.00%	6	
	Private employee	1	16.67%	5	83.33%	0	0.00%	6	
	Government employee	0	0.00%	0	0.00%	0	0.00%	0	
	Self employee	0	0.00%	0	0.00%	0	0.00%	0	
Monthly income	≤ Rs.5000	1	14.29%	6	85.71%	0	0.00%	7	$\chi2$=6.31 P=0.10 (NS)
	Rs.5001-Rs.10000	1	5.56%	17	94.44%	0	0.00%	18	
	Rs.10001-Rs.15000	3	100.00%	0	0.00%	0	0.00%	3	
	≥ Rs.15001	2	100.00%	0	0.00%	0	0.00%	2	

Obstetrical variables		**Posttest level of behavioural responses**						**n**	**$\chi2$ test**
		Poor		**Moderate**		**Good**			
		n	**%**	**n**	**%**	**n**	**%**		
Gestation age in weeks	< 38 weeks	0	0.00%	0	0.00%	0	0.00%	0	$\chi2$=0.63 P=0.42 (NS)
	38-40 weeks	5	27.77%	13	72.23%	0	0.00%	18	
	> 40 weeks	2	16.67%	10	83.33%	0	0.00%	12	
Uterine contraction	Mild	0	0.00%	0	0.00%	0	0.00%	0	$\chi2$=1.49 P=0.22 (NS)
	Moderate	0	0.00%	20	86.96%	0	0.00%	20	
	Severe	7	100.00%	3	13.04%	0	0.00%	10	
Dilatation of the cervix	2-4 cm	4	57.14%	14	60.87%	0	0.00%	18	$\chi2$=0.03 P=0.86 (NS)
	4-6 cm	3	42.86%	9	39.13%	0	0.00%	12	
	6-8 cm	0	0.00%	0	0.00%	0	0.00%	0	
	8-10 cm	0	0.00%	0	0.00%	0	0.00%	0	
Maternal Temperature	≤ 36•	0	0.00%	0	0.00%	0	0.00%	0	$\chi2$=0.00 P=1.00 (NS)
	37.5•-38.4•	7	100.00%	23	100.00%	0	0.00%	30	
	≥ 38.5•	0	0.00%	0	0.00%	0	0.00%	0	
Maternal pulse rate	≤ 70 bpm	0	0.00%	0	0.00%	0	0.00%	0	$\chi2$=0.00 P=1.00 (NS)
	80-100 bpm	7	100.00%	23	100.00%	0	0.00%	30	
	≥ 110 bpm	0	0.00%	0	0.00%	0	0.00%	0	
Maternal respiration rate	≤ 12 breath per minute	0	0.00%	0	0.00%	0	0.00%	0	$\chi2$=0.41 P=0.51 (NS)
	13-16 breath per minute	1	14.29%	6	26.09%	0	0.00%	7	
	17-22 breath per minute	6	85.71%	17	73.91%	0	0.00%	23	
	≥ 23 breath per minute	0	0.00%	0	0.00%	0	0.00%	0	
Maternal blood pressure	≤ 90/60 mmHg	0	0.00%	0	0.00%	0	0.00%	0	$\chi2$=0.00 P=1.00 (NS)
	100/70 − 130/90 mmHg	7	100.00%	23	100.00%	0	0.00%	30	
	≤ 140/100 mmHg	0	0.00%	0	0.00%	0	0.00%	0	
Fetal heart rate	100-110 bpm	0	0.00%	0	0.00%	0	0.00%	0	$\chi2$=0.61 P=0.73 (NS)
	110-120 bpm	0	0.00%	1	4.35%	0	0.00%	1	
	120-130 bpm	4	57.14%	10	43.48%	0	0.00%	14	
	130-140 bpm	3	42.86%	12	52.17%	0	0.00%	15	
Position of the	Left Occiput Anterior	3	42.86%	9	39.13%	0	0.00%	12	$\chi2$=0.65

fetal	Right Occiput Anterior	2	28.57%	10	43.48%	0	0.00%	12	P=0.72
	Left Occiput Posterior	2	28.57%	4	17.39%	0	0.00%	6	(NS)
	Right Occiput Posterior	0	0.00%	0	0.00%	0	0.00%	0	
Presenting part	Vertex presentation	7	100.00%	22	95.65%	0	0.00%	29	$\chi 2$=1.00
	Breech presentation	0	0.00%	1	4.35%	0	0.00%	1	P=0.33
	Face presentation	0	0.00%	0	0.00%	0	0.00%	0	(NS)
Duration of first stage of labour	≤ 10 Hours	0	0.00%	0	0.00%	0	0.00%	0	$\chi 2$=0.41
	11-14 Hours	5	71.43%	19	82.61%	0	0.00%	24	P=0.50
	15-17 Hours	2	28.57%	4	17.39%	0	0.00%	6	(NS)
	≥ 18 Hours	0	0.00%	0	0.00%	0	0.00%	0	

Section – V

Description correlation of between level of pain and behavioural responses among primigravid mothers during first stage of labour with their selected socio demographic variables and obstetrical variables intervention group and control group.

Table 26:- Correlation between the level pain and behavioral responses in intervention group n= 60.

Correlation between	**Pre test**	**Post test**	**Mean Difference**	**Karl pearson coefficient of correlation**
	Mean ± SD	**Mean ± SD**	**Mean ± SD**	
Level of Pain	7.00±1.39	4.30±0.99	2.70±1.95	r=0.46
Behavioral responses	10.70±1.34	15.70±1.90	5.00±2.10	P≤0.001 **(significant)**

Table 27:- Correlation between the level of pain and behavior responsesin control group n= 60.

Correlation between	**Pretest**	**Posttest**	**Mean Difference**	**Karl pearson coefficient of correlation**
	Mean ± SD	**Mean ± SD**	**Mean ± SD**	
Level of Pain	6.67±1.09	6.17±1.46	0.50±1.78	r=0.16
Behavioral responses	10.87±1.81	11.53±2.29	0.67±2.25	P=0.34 not significant

Conclusion:-

The study finding evidenced that Transcutaneous Electrical Nerve Stimulation (TENS) application is an effective intervention to enhanced the level pain and behavioural responses which comfort to primigravid mothers while on the process of delivery period. Further the study revealed that there was significant association between the post test level of pain and behavioural responses with their socio demographic and obstetrical variables.

Implications of the study

The finding of the study have several implications on nursing practice, education, administration and nursing research that can be used in the following areas of profession.

Implication for nursing practice

1. Midwives have many opportunities the primigravid mothers, by giving adequate information and motivation to choose proper pain relieving measures.
2. The findings of the study support that TENS applications is very safe, cost effective method to reduce the level of pain and behavioural responses among primigravid mothers during first stage of labour
3. The study findings helps the nursing personnel to have knowledge on uses of TENS application and its physiology and include it as the part of nursing intervention in the management of pain and behavioural responses.
4. Nurses can uses the TENS application in various forms in various types of non invasive Procedure.

Implication for nursing education

1. Nursing students to have adequate knowledge on about TENS and its benefits and it is encouraged by Nurse educator.
2. Nursingstudents can apply TENS for various pain reduction purpose

3. This knowledge and learning experience of students will helps to adopting various comfort measures during care for the patients.

Implication in nursing research

1. The researcher can encourage to use TENS along with pharmacological therapy.
2. This study can be baseline for further studies to build upon and motivate other investigators to conduct further studies

Implications for nursing administration

1. Continuing nursing education and in-service education can be planned by nurse administrators also aid in formulating protocols to practicing TENS
2. Appropriate and feasible organizational intervention like health education, domiciliary care services and health promotion activities will plan for TENS application by nursing administrators
3. The nurse administrator should organize activities to explain and train the nurses about their role in decreasing the level of pain and its complications among primigravid motherswith the help of complementary therapy

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