

A Study to Assess the Level of Satisfaction of Birthing Ball Technique and Sacral Massage on Maternal and Fetal Outcome among Primi Parturition Mothers

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Abstract

Background of the Study: Every woman has the right to respectful and empathetic care during childbirth. Pain during labour has been described as one of the most extreme pains that can be experienced by mother. Each mother expects effective pain management. This is integral in the labour management. In order to manage the pain, pharmacological approaches are commonly used, such as injection of the analgesic pethidine. Intramuscular pethidine causes sedatives, dizziness, as well as nausea and vomiting for mother. Under these circumstances, pregnant women commonly feel to remain in bed and also if newborns exposed to pethidine have significantly decreased the normal behaviour, particularly sucking effort and breastfeeding, because opioids readily cross the placenta and influence fetal-neonatal activity and impair breast feeding. Ultimately pharmacological management affects their labour progress and mother birthing experience. So Birth ball exercises and sacral massage constitute a non-pharmacological means of pain relief, which not only address labour pains, but also attempt to enhance the psychological and emotional components of mother care. Leung et al¹ found that efficacy of birth ball exercises in terms of reducing labour pain and back pain, decreasing anxiety levels, and promoting relaxation among the labour mother. **Objective:** Assess the level of satisfaction of birthing ball technique and sacral massage on maternal and fetal outcome among primi parturition mothers. **Materials And Methods:** Quasi experimental with Posttest only control group design was chosen for the study to assess the level of satisfaction of birthing ball technique and sacral massage on maternal and fetal outcome among primi parturition mothers in selected Maternity Health Centres, Bangalore. A total of 300 primigravidae with 150 each in the control and experiment groups were selected by Non Probability Purposive sampling technique, with the total duration of data collection was one year. Primigravidae in the experimental group underwent two sessions of 15-20 minutes of birthing ball exercises when uterus is in relaxed state and 10-15 minutes of sacral massage when uterus is in contraction state at a subsequent gap of 20 minutes interval during their latent phase of labour (<4 cm cervical dilation) with total duration of 25-35 minutes in each session. Primigravidae in the control group received routine standard care that included continuous observation and monitoring of vital signs and progress of labour. Posttest was conducted after half an hour and one hour of intervention to assess the progress of labour by modified WHO Partogram and level of pain perception by using Visual Analogue Scale (VAS) was assessed in the transition phase (cervical dilation 8 cm to 10cm) and level of anxiety is measured by GAD-7 Anxiety Severity scale after intervention in both experimental and control group. Maternal satisfaction regarding intervention assessed by rating scale among

Parturient women and fetal outcomes were assessed after delivery in both groups by Apgar score. Results: The satisfaction among women was compared by Student's unpaired 't' test. A probability of 0.05 and less was considered statistically significant. The mean value of levels of satisfaction regarding procedure in control group was 38.720 with standard error of 0.238, whereas in the experimental group, the mean value of levels of satisfaction was 41.480 with standard error of 0.202. The mean difference between control and experimental group was 2.8 so it was statistically significant at $p < 0.001$. Conclusion: Birthing Ball technique and Sacral Massage is strongly recommended to be incorporated as an approach to labour management as non pharmacological management to improve the level of satisfaction on maternal and fetal outcome among primi parturient mothers.

Keywords: Birthing Ball Technique, Sacral Massage, Satisfaction, Maternal and Fetal Outcome, Parturition Mothers.

INTRODUCTION

Pregnancy and labour are essential events in a woman's life. Both pregnancy and childbirth are physiological events and the body of the female is prepared to conceive carry and give birth to a baby. Labour pain though physiological can be very challenging for women to bear. Every woman expects respectful and empathetic care during childbirth that addresses pain management and allows her the liberty to make it a memorable experience³

Labour is regarded as a time of suffering in a woman's life, during which she may experience intensive pain that lasts for many hours. Ineffective Labour pain management could create a negative life experience for a woman, which may negatively impact postpartum sexual and marital satisfaction. Labour pain involves both physical and psychological elements such as uterine contractions, tension, fear, anxiety, and the sensations of powerlessness and a loss of control.

Labour pain usually brings many concerns for a parturient and her family. The majority of the women in labour pain may require some sort of pain relief method during this period, it can be either pharmacological or non-pharmacological methods⁴

Current remedies for Labour pain include pharmacological and non-pharmacological interventions. The most common pharmacological interventions are associated with adverse effects such as nausea and vomiting, longer first and second stages of Labour, hypotension, motor blockade, fever, and urinary retention; they can also lead to neonatal respiratory depression and newborn sleepiness that affects breastfeeding. Hence, women prefer safer and simpler non-pharmacological pain relief methods. A notable non-pharmacological remedy is massage, which may provide pain relief to the site of application, along with overall psychological relaxation. The pressure applied during massage is presumed to block the transmission of pain impulses to the brain, while stimulating local release of endorphins.⁵

Alleviating labor pain and improving the childbirth experience has been ongoing goals worldwide for the past decade. Most women experience a great deal of labor pain while giving birth, and professional support is not always helpful. Women have reported receiving positive and negative support from birthing professionals. Women often choose different coping strategies to reduce labor pain, including both pharmacological and non-pharmacological, or more natural, strategies. The non-pharmacological coping strategies refer to methods other than medication that is designed to reduce labor pain. The non-pharmacological management of pain during labor can improve childbirth satisfaction⁶

Labor pain is caused by contracting the uterine muscles pushing the fetus out. Labor mothers find it difficult to adapt to the pain of labor, especially primigravidas, this can cause prolongation of the first stage of labor. There are two ways to reduce labor pain, namely pharmacology and non-pharmacology. One of the non-pharmacological methods is the use of a birth ball.⁷

The birthing ball is helped to enhance the progress of labour by optimally positioning the fetus in relation to the pelvis⁷. There are multiple benefits associated with maternal position changes, including increased maternal-fetal circulation, decreased pain, improved quality of uterine contractions, facilitation of fetal descent and decreased length of labour⁸. Apart from the physiological benefits of birth, other benefits include less risk of postpartum haemorrhage⁹, improved maternal-infant bonding¹⁰, less psychological morbidity postnatally¹¹, increased rates of successful breastfeeding^{10,11} and improved maternal satisfaction¹³. The woman is also able to independently care for her baby following the birth, whereas women having a caesarean may require more assistance with feeding and general care of the baby. Therefore, widening the pelvic outlet is one way of supporting natural progression of birth.

Nonpharmacologic pain control methods, which are increasingly becoming widespread in coping with labor pain, are the methods that allow women to completely relax without using any medication and direct them to perceive the pain at the lowest level¹⁴

NEED FOR THE STUDY

In the presence of acute pain, women during the labour may present with physiological manifestations, such as increased blood pressure, heart rate and respiratory rate, sweating, nausea and vomiting and also stress and anxiety, which are usually present during labour, appear to be mechanisms of adjustment and defence of the body and activate a neuroendocrine response, which will result in an overload of the respiratory, circulatory and metabolic systems and may have an impact on the foetus or the newborn. Interventions that minimise the consequences of pain on the course of labour and increase women pain tolerance at this childbirth stage are often necessary.

The use of pain relief methods is relevant to obstetric care and should be encouraged in addition to promoting comfort and contribute to the quality and safety birth. Adoption of these practices is intended to make childbirth as natural as possible and to reduce the number of interventions, medication administrations and unnecessary caesarean sections. They also can enable women as the protagonist of the labour and birth, ensuring that this process is a milestone for women's and their family, and promoting changes on the behaviour for healthcare professionals involved with childbirth assistance and the community.

Sometimes, the use of elements that stimulate the senses and invasive practices increase pain, while freedom of movement, companionship, use of Sacral massage and Perineal exercises with a birthing ball, either alone or in combination, are related to comfort and empirical reduction in pain. Sacral massage, is widely used during labour and are well accepted by women. The sacral massage provide comfort, relaxation and improvement of pain, anxiety and stress, increases cervical dilation, decreases blood pressure and reduces the use of pharmacological analgesia. The birthing ball is used during labour for performing perineal exercises as a way of stimulating the cervical dilation, progression foetal through the pelvis and perineal relaxation muscles, resulting in pain relief and comfort in the perineum The using of birthing ball with sacral massage can play a key role as non-pharmacological method of pain and anxiety relief, as well as enhancing the positive birth experience by achieving good labor progress and outcome.

However, few studies have analyzed the direct relationship between the effects of non-pharmacological methods on clinical and neuroendocrine responses of stress and uterine contractility as well as the clinical conditions of the foetus and newborn. This study aims to analyse the effects of sacral massage, perineal exercises with a birthing ball or both during the labour in maternal and perinatal parameters.⁷

MATERIALS AND METHODS

After obtaining permission from the Administrative officer and Institutional Ethical clearance from Saveetha Institute of Medical and Technical Sciences, The investigator was given self-introduction and explanation about the study protocol to the samples. After this, informed consent was obtained from all the samples. The quantitative evaluative research approach was adopted to analyze the effectiveness of Birthing ball technique and Sacral Massage on Maternal and fetal outcome among Parturient women in selected Maternity Health Centres, Bangalore. The Study used a Quasi-Experimental with Posttest only control group design. The Shanthakumari and Hoshahalli Maternity Referral hospital, in Bangalore served as the setting for the Research study. The sample of 300 parturient women who fulfill inclusive criteria for control and experimental group were chosen using a Non- Probability Purposive Sampling Method. The instruments used in this study were demographic variable proforma, Modified WHO Partograph, pain perception scale, Apgar score and Rating scale on satisfaction of use of birthing ball and sacral massage upon labour pain. Each woman in the study group the investigator meet individually during the latent phase, meanwhile they were informed about the advantages of using the birth ball during the first stage of labour and video shown for 15 minutes to clarify how to use the birth ball with different positions during the first stage of labour followed by live demonstration by the researchers also.

INTERVENTION PROTOCOL

As a non randomization procedure, the Primi Parturient women in the first stage of labour who fulfilled the inclusion criteria, got admitted in Shanthakumari maternity hospital and Hosahalli maternity referral hospital for vaginal delivery are assigned to be the participants in study group. After obtaining informed consent from study sample, For the experimental group the Investigator administered birthing ball technique like, Explain the procedure to the Primi Parturient women by a detailed description about the use of the birthing ball, including a reference pamphlet after assessing anxiety level by with GAD-7 Anxiety severity scale. Then investigator make sample to sit on the birthing ball in the upright position and rock from side to side and from front to back for duration of 15-20 minutes when uterus is in relaxed state. Followed by the investigator administered Sacral Massage (Sacral massage is the procedure like Place both the hands on either sides of the spine in the sacral region with the hands pointing in an upward direction). During inspiration, the investigator's hands go up to the waist level. During expiration, move hands smoothly down the sides of the hip until they arrive at the starting position (each minute 15 strokes) during uterine contraction in late latent phase of first stage of labour for a duration of 10 -15 minutes. Repeat the both procedure for two times in 20 minutes interval. For the control group, hospital routine was followed with same tools. Posttest was conducted after half an hour and one hour of intervention to assess the progress of labour by modified WHO Partogram and level of pain perception by using Visual Analogue Scale (VAS) during active phase of the first stage of labour and level of anxiety is measure with GAD-7 Anxiety Severity scale after intervention in both experimental and control group. Maternal satisfaction regarding intervention was assessed by rating scale among Parturient women and fetal outcome was assessed by Apgar score after vaginal delivery.

RESULTS

Table 1: Comparison of Control and Experimental Groups of Mothers on Cervical Dilatation and Uterine Contraction

S. No.	Parameter	Groups	Median	Percentile (25-75)	Statistics
1	Cervical dilatation (score)	Con-Pre	4	4-4	H =485.705 P < 0.001
		Con-Post 1	5	4-5	
		Con-Post 2	5	5-6	
		Exp-Pre	4	4-4	
		Exp-Post 1	6	4-7	
		Exp-Post 2	8	7-8	
2	Uterine contraction (score)	Con-Pre	3	3-3	H =279.013 P < 0.001
		Con-Post 1	3	3-4	
		Con-Post 2	4	3-4	
		Exp-Pre	3	3-8	
		Exp-Post 1	4	3-4	
		Exp-Post 2	4	4-5	
Con = Control; Exp = Experimental. Pre = pre-test; Post 1 = post-test 1; Post 2 = post-test 2. The ‘H’ and ‘P’ values are by Kruskal Wallis one way ANOVA on ranks with Tukey’s multiple comparison test for within group and between group.					

The above table shows the outcome of Kruskal Wallis one way ANOVA on ranks with Tukey's multiple comparison test within the control and experimental groups of parturient woman on cervical dilatation and uterine contraction.

The median and percentiles of cervical dilatation and uterine contraction of mothers in control and experimental groups are given in Table 2

The median of cervical dilatation score in control pre-test, post-test 1 and post-test 2 are 4, 5 and 5 respectively. The median of cervical dilatation score in experimental pre-test, post-test 1 and post-test 2 are 4, 6 and 8 respectively. It was found to be statistically significant by Kruskal Wallis one way ANOVA on ranks ($P < 0.001$).

Within group comparison of control pre-test with control post-test 1 and control post-test 2, showed significance ($P < 0.001$ and < 0.001 , respectively). Within group comparison of experimental pre-test with experimental post-test 1 and experimental post-test 2, showed significance ($P < 0.001$ and < 0.001 , respectively).

Between group comparisons of control and experimental in pre-test, post-test 1 and post-test 2 showed statistical significance except pre test and post test 1 ($P < 0.085$, < 0.024 and < 0.001 , respectively).

The control group from pre-test to post-test 2, showed that cervical dilatation score was slightly increased from 4cm to 5cm. The experimental group, from pre-test to post-test 2, showed that cervical dilatation score was increased from 4cm to 8cm. This shows that the intervention is beneficial in increasing cervical dilatation.

The median of uterine contraction score in control pre-test, post-test 1 and post-test 2 are 3, 3 and 4 respectively. The median of uterine contraction score in experimental pre-test, post-test 1 and post-test 2 are 3, 4 and 4 respectively. It was found to be statistically significant by Kruskal Wallis one way ANOVA on ranks ($P < 0.001$).

Within group comparison of control pre-test with control post-test 1 and control post-test 2, showed significance ($P < 0.001$, < 0.001 and < 0.001 , respectively). Within group comparison of experimental pre-test with experimental post-test 1 and experimental post-test 2, showed significance except pretest with post test1 ($P = .900$, < 0.001 and < 0.001 , respectively).

Between group comparisons of control and experimental in pre-test, post-test 1 and post-test 2 showed statistical significance except post test 1 ($P < 0.001$, < 0.060 and < 0.001 , respectively).

The control group from pre-test to post-test 2, showed that uterine contraction score was slightly increased from 3cm to 4cm. The experimental group, from pre-test to post-test 2, showed that uterine contraction score was steadily increased. This shows that the intervention is beneficial in increasing uterine contraction.

The finding was same as, found by Karaduman, S et al (2020) in their study conducted to determine the effect of sacral massage on labor pain and anxiety among primigravidae Parturient Mothers among 60 Primiparous women. The women in the experimental group were administered a massage to the sacral region for 30 min. The questionnaire form, birth action follow-up form, postpartum interview form, visual analog scale (VAS) and state-trait anxiety inventory were used to collect data in the study. The study findings revealed that the latent phase VAS averages (3.57 ± 1.43), active phase VAS averages (7.03 ± 1.5) and transition phase VAS averages (8.83 ± 1.78) of the experimental group were found to be statistically significantly lower than those of the control group ($P < .05$). The study concluded that that sacral massage applied during labor reduced women's labor pain, lowered the levels of concern and anxiety, led to greater feelings of satisfaction among pregnant women in terms of labor, positively affected the perception of labor and had no fetal side effects.

Table 2: Comparison of Control and Experimental Groups of Mothers on Systolic Blood Pressure

S.No.	Group comparison	Test comparison	Mean	SEM	Statistics
1	Control	Pre-test	127.0	0.5	Two-way RM ANOVA followed by Bonferroni 't' test
	Control	Post-test 1	124.3	0.4	
	Control	Post-test 2	123.0	0.3	
	Experimental	Pre-test	126.8	0.5	
	Experimental	Post-test 1	123.2	0.4	
	Experimental	Post-test 2	121.7	0.4	
2	Between group comparison (control and experimental)				F = 3.143 P = 0.077
	Within group comparison (pre-test, post-test 1 and post-test 2)				F = 87.784 P < 0.001
	Group X Test interaction (control/experimental/pre-test/post-test 1/post-test 2)				F = 1.462 P = 0.233
3	Between pre-test (control and experimental)				t = 0.292 P = 0.771
	Between post-test 1 (control and experimental)				t = 1.771 P = 0.077
	Between post-test 2 (control and experimental)				t = 2.042 P = 0.042
4	Within control (pre-test and post-test 1)				t = 5.294 P < 0.001
	Within control (pre-test and post-test 2)				t = 8.049 P < 0.001
	Within control (post-test 1 and post-test 2)				t = 2.754 P = 0.018

5	Within experimental (pre-test and post-test 1)	t = 7.193 P < 0.001
	Within experimental (pre-test and post-test 2)	t = 10.295 P < 0.001
	Within experimental (post-test 1 and post-test 2)	t = 3.102 P = 0.006
n = 150 each		

The data were expressed as mean and standard error of mean (SEM). The means were compared by two-way repeated measures analysis of variance (2-way RM ANOVA) for one factor repetition. Factor A, was groups (between group comparison – control and experimental), Factor B, was tests (within group comparison i.e., repetition factor – pre-test, post-test 1 and post-test 2) and the group X test interaction. For post hoc multiple comparisons, Bonferroni ‘t’ test was carried after ANOVA, for between group and within group comparisons.

The mean and standard error of systolic blood pressure are given in Table 3. The mean of systolic blood pressure in control pre-test, post-test 1 and post-test 2 are 127.0, 124.3 and 123.0 mmHg, respectively. The mean of systolic blood pressure in experimental pre-test, post-test 1 and post-test 2 are 126.8, 123.2 and 121.7 mmHg, respectively. Comparison of the groups did not reveal significance (P = 0.077). While comparison of the tests showed statistical significance as expected (P < 0.001). Group X test interaction did not show significance (P = 0.233).

Within group comparisons in control of pre-test with post-test 1, pre-test with post-test 2, and post-test 1 with post-test 2 systolic blood pressure, showed significance (P < 0.001, < 0.001 and 0.018, respectively). Within group comparisons in experimental of pre-test with post-test 1, pre-test with post-test 2, and post-test 1 with post-test 2 systolic blood pressure, showed significance (P < 0.001, < 0.001 and 0.006, respectively).

Between group comparisons of control and experimental in pre-test and post-test 1 did not show significance (P = 0.771 and 0.077, respectively). Between group comparison of control and experimental in post-test 2 showed significance (P = 0.042). The control group from pre-test to post-test 2, showed 4 mmHg decrease, while in experimental group 5.1 mmHg decrease was observed. This shows that the control (regular care) and the intervention are beneficial in reducing the systolic blood pressure, and the experimental group was better than the control group.

Table 3: Comparison of Control and Experimental Groups of mothers on Diastolic Blood Pressure

S.No.	Group comparison	Test comparison	Mean	SEM	Statistics
1	Control	Pre-test	82.7	0.4	Two-way RM ANOVA followed by Bonferroni ‘t’ test
	Control	Post-test 1	81.1	0.3	
	Control	Post-test 2	81.0	0.2	
	Experimental	Pre-test	83.0	0.3	
	Experimental	Post-test 1	81.0	0.3	
	Experimental	Post-test 2	79.8	0.1	
2	Between group comparison (control and experimental)				F = 1.116 P = 0.292
	Within group comparison (pre-test, post-test 1 and post-test 2)				F = 50.757 P < 0.001
	Group X Test interaction (control/experimental/pre-test/post-test 1/post-test 2)				F = 5.174 P = 0.006
3	Between pre-test (control and experimental)				t = 0.635 P = 0.526
	Between post-test 1 (control and experimental)				t = 0.375 P = 0.708

	Between post-test 2 (control and experimental)	t = 2.741 P = 0.006
4	Within control (pre-test and post-test 1)	t = 4.394 P < 0.001
	Within control (pre-test and post-test 2)	t = 4.659 P < 0.001
	Within control (post-test 1 and post-test 2)	t = 0.265 P = 1.000
5	Within experimental (pre-test and post-test 1)	t = 5.719 P < 0.001
	Within experimental (pre-test and post-test 2)	t = 9.090 P < 0.001
	Within experimental (post-test 1 and post-test 2)	t = 3.371 P = 0.002
n = 150 each		

The mean and standard error of systolic blood pressure are given in Table 4. The mean of diastolic blood pressure in control pre-test, post-test 1 and post-test 2 are 82.7, 81.1 and 81.0 mmHg, respectively. The mean of diastolic blood pressure in experimental pre-test, post-test 1 and post-test 2 are 83.0, 81.0 and 79.8 mmHg, respectively.

Comparison of the groups did not reveal significance ($P = 0.292$). While comparison of the tests showed statistical significance as expected ($P < 0.001$). Group X test interaction did not show significance ($P = 0.006$).

Within group comparisons in control of pre-test with post-test 1, pre-test with post-test 2, and post-test 1 with post-test 2 of diastolic blood pressure, showed significance ($P < 0.001$, < 0.001 and 1.000 , respectively). Within group comparisons in experimental of pre-test with post-test 1, pre-test with post-test 2, and post-test 1 with post-test 2 diastolic blood pressure, showed significance ($P < 0.001$, < 0.001 and 0.002 , respectively).

Between group comparisons of control and experimental in pre-test and post-test 1 did not show significance ($P = 0.526$ and 0.708 respectively). Between group comparison of control and experimental in post-test 2 showed significance ($P = 0.006$).

The control group from pre-test to post-test 2, showed 1.7 mmHg decrease, while in experimental group 3.2 mmHg decrease was observed. This shows that the control (regular care) and the intervention are beneficial in reducing the systolic blood pressure, and the experimental group was better than the control group.

Table 4: Comparison of Control and Experimental Groups of Mothers on Fetal Heart Rate

S.No.	Group comparison	Test comparison	Mean	SEM	Statistics
1	Control	Pre-test	130.5	0.8	Two-way RM ANOVA followed by Bonferroni 't' test
	Control	Post-test 1	126.0	0.6	
	Control	Post-test 2	125.0	0.5	
	Experimental	Pre-test	126.8	0.7	
	Experimental	Post-test 1	120.6	0.7	
	Experimental	Post-test 2	122.2	0.4	
2	Between group comparison (control and experimental)				F = 32.064 P < 0.001
	Within group comparison (pre-test, post-test 1 and post-test 2)				F = 59.414 P < 0.001
	Group X Test interaction (control/experimental/pre-test/post-test 1/post-test 2)				F = 2.947 P = 0.053
3	Between pre-test				t = 3.945

	(control and experimental)	P < 0.001
	Between post-test 1 (control and experimental)	t = 5.690 P < 0.001
	Between post-test 2 (control and experimental)	t = 2.869 P = 0.004
4	Within control (pre-test and post-test 1)	t = 5.820 P < 0.001
	Within control (pre-test and post-test 2)	t = 7.109 P < 0.001
	Within control (post-test 1 and post-test 2)	t = 1.289 P = 0.593
5	Within experimental (pre-test and post-test 1)	t = 7.924 P < 0.001
	Within experimental (pre-test and post-test 2)	t = 5.811 P < 0.001
	Within experimental (post-test 1 and post-test 2)	t = 2.112 P = 0.105
n = 150 each		

The mean and standard error of fetal heart rate are given in Table 5. The mean of fetal heart rate in control pre-test, post-test 1 and post-test 2 are 130.0, 126.3 and 125.0 mmHg, respectively. The mean of fetal heart rate in experimental pre-test, post-test 1 and post-test 2 are 126.8, 120.6 and 122.2 mmHg, respectively. Comparison of the groups revealed significance ($P < 0.001$). While comparison of the tests showed statistical significance as expected ($P < 0.001$). Group X test interaction did not show significance ($P = 0.053$).

Within group comparisons in control of pre-test with post-test 1 and pre-test with post-test 2 showed significance except post-test 1 with post-test 2 ($P < 0.001$, < 0.001 and 0.593, respectively). Within group comparisons in experimental of pre-test with post-test 1 and pre-test with post-test 2 showed significance except post-test 1 with post-test 2 ($P < 0.001$, < 0.001 and 0.105, respectively).

Between group comparisons of control and experimental in pre-test, post-test 1 and post-test 2 shown significance ($P < 0.001$, < 0.001 and 0.004, respectively). The control group from pre-test to post-test 2, showed around 6 beats increased fetal heart rate per minute, while in experimental group around 4 beats increased fetal heart rate per minute was observed. This shows that the control (regular care) and the intervention are beneficial in maintaining the fetal heart rate, and the experimental group was better than the control group.

Table 5: Comparison of control and experimental groups on satisfaction among mothers by Student 't' test

Groups	Mean	SE	Statistical analysis
Control	38.720	0.238	t = 8.846 P < 0.001
Experimental	41.480	0.202	
n = 150 each			

The satisfaction among women was compared by Student's unpaired 't' test. A probability of 0.05 and less was considered statistically significant. SigmaPlot 14.5 version (Systat Software Inc., San Jose, USA) was used for the statistical analysis and graph plotting.

This table revealed that the level of satisfaction between control and experimental group among parturient woman regarding the intervention.

The mean value of levels of satisfaction regarding procedure in control group was 38.720 with standard error of 0.238, whereas in the experimental group, the mean value of levels of satisfaction

was 41.480 with standard error of 0.202. The mean difference between control and experimental group was 2.8 so it was statistically significant at $p < 0.001$. The study finding shown that increasing the level of satisfaction of birthing ball technique and sacral massage on maternal and fetal outcome among primi parturition mothers

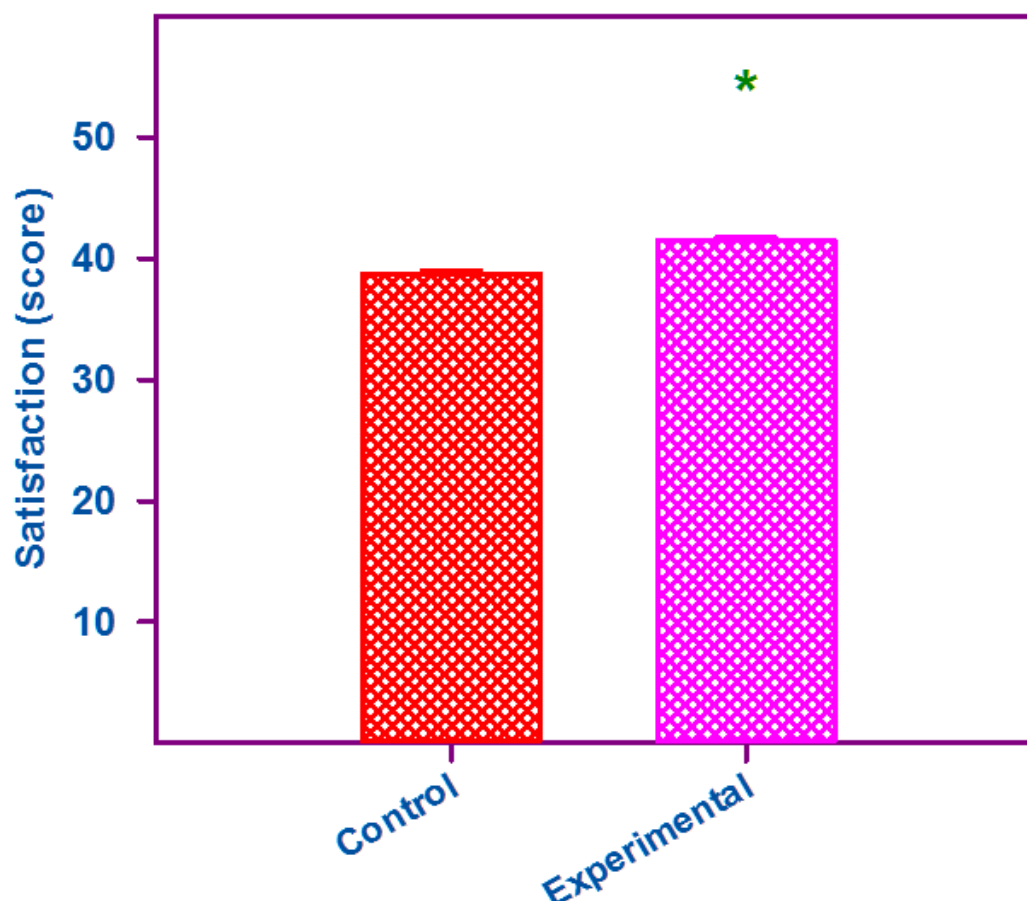


Figure 8: Comparison of Control (Con) and Experimental (Exp) Groups on satisfaction among mothers in post-test

The values are mean + SE (n = 150 each).

The data were analysed by Student 't' unpaired test.

*Significant from the control group

DISCUSSION OF THE RESEARCH FINDINGS

The purpose of this to assess the level of satisfaction of birthing ball technique and sacral massage on maternal and fetal outcome among primi parturition mothers .The findings of the study were discuss with references to the objective assumption stated, in this section the major finding of the present study have been discussed with the reference to the result obtained by the other researcher

The finding of the study is supported by the researcher conducted by Grenvik JM et tal (2021). Birthing ball for reducing labor pain: a systematic review and meta-analysis of randomized controlled trials.the study finding shows that Labor pain significantly decreased by 1.70 points in the birthing ball group compared to the control group (MD -1.70 points; 95% CI -2.20 to -1.20). Use of the birthing ball versus no birthing ball did not result in a significant difference in incidence of

spontaneous vaginal delivery, operative vaginal delivery, cesarean delivery, or perineal lacerations. The study concluded that the birthing ball is an effective method of pain reduction during labor for women laboring without an epidural¹⁵.

Another finding of the study is supported by the researcher conducted by Shanthi T (2010). The effectiveness of sacral massage in reduction of pain during first stage of labour among primi gravida mothers at selected hospital in Madurai, Tamilnadu .the study finding shows thst in control group 100% had severe pain. Experimental had 93% moderate pain and 7% severe pain in the post test. The effectiveness of sacral massage was found between control and experimental group showed significant improvement in pain score. The observed value was 26.42 at 95% of confidential interval (2.73704- 3.19629). Comparison of pain score control and experimental group after sacral massage. In pain, significant value is not less than 0.05, it is noted that improved in pain score level. There was a significant association between post test pain score of experimental group¹⁶.

The finding was same as that found by Jha, S., Vyas et tal (2012) in their study conducted to investigate the The effect of Birthing Ball Exercises on Labor Pain and Labor Outcome among primigraviade Parturient Mothers at a Tertiary Care Hospitalamong 60 Primiparous women The experiment group had significantly labour better labour outcomes in terms of labour pain, cervical dilatation, and duration of labour compared to the Primigravidae in the control group ($p < 0.05$). In addition, the majority of mothers in the experiment group (86.7 %) underwent vaginal delivery with episiotomy compared to the control group (53.3%). Findings also revealed a statistically significant difference in the newborns of both groups regarding appearance, pulse, grimace, activity, and respiration (APGAR) score, crying immediately after birth, and admission to the neonatal intensive care unit (NICU) at $p < 0.05$. The study concluded that Non-pharmacologic methods like Birthing Ball Exercises help decrease these discomforts by reducing labour pain and improving maternal and neonatal outcomes⁴.

CONCLUSION

According to Kruskal Wallis one way ANOVA on ranks with Tukey's multiple comparison test within the control and experimental groups of parturient woman on pain, Cervical dilatation and uterine contraction .The findings of the study shown that The median of cervical dilatation score in control pre-test, post-test 1 and post-test 2 are 4, 5 and 5 respectively. The median of cervical dilatation score in experimental pre-test, post-test 1 and post-test 2 are 4, 6 and 8 respectively. It was found to be statistically significant by Kruskal Wallis one way ANOVA on ranks ($P < 0.001$). The median of uterine contraction score in control pre-test, post-test 1 and post-test 2 are 3, 3 and 4 respectively. The median of uterine contraction score in experimental pre-test, post-test 1 and post-test 2 are 3, 4 and 4 respectively. It was found to be statistically significant by Kruskal Wallis one way ANOVA on ranks ($P < 0.001$).

Within group comparisons in control of pre-test with post-test 1, pre-test with post-test 2, and post-test 1 with post-test 2 of diastolic blood pressure, showed significance ($P < 0.001$, < 0.001 and 1.000, respectively). Within group comparisons in experimental of pre-test with post-test 1, pre-test with post-test 2, and post-test 1 with post-test 2 diastolic blood pressure, showed significance ($P < 0.001$, < 0.001 and 0.002, respectively). Within group comparisons in control of pre-test with post-test 1, pre-test with post-test 2, and post-test 1 with post-test 2 systolic blood pressure, showed significance ($P < 0.001$, < 0.001 and 0.018, respectively). Within group comparisons in experimental of pre-test with post-test 1, pre-test with post-test 2, and post-test 1 with post-test 2 systolic blood pressure, showed significance ($P < 0.001$, < 0.001 and 0.006, respectively).

The mean value of levels of satisfaction regarding procedure in control group was 38.720 with standard error of 0.238 , where as in the experimental group, the mean value of levels of satisfaction was 41.480 with standard error of 0.202. The mean difference between control and experimental group was 2.8 so it was statistically significant at $p < 0.001$. The study concluded that Non-pharmacologic methods of labour management like Birthing Ball Exercises and Sacral massage helps to improve the levels of satisfaction regarding maternal and fetal outcomes among primi parturient mothers.

IMPLICATION: The study's findings were beneficial to the nurse in the following ways: Clinical nurse have to take up responsibilities to plan teaching programme to parturient women as well as to their family members regarding Maternal and fetal wellbeing in labour and the Nursing curriculum should consist knowledge related to improve the Maternal and fetal wellbeing among Parturient women in labour.

Conflict of Interest: The authors have declared that no competing interests exist.

Imprint

M. Sundaram, Dr. G. Bhuvaneswari ³Dr.Chandrika Anand M.B.B.S, OG, MD “to assess the level of satisfaction of birthing ball technique and sacral massage on maternal and fetal outcome among primi parturition mothers”

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