EFFECTIVENESS OF ANTENATAL EXERCISE INCLUDING YOGA ON LABOUR COURSE OUTCOME AMONG ANTENATAL MOTHER AT SAIDAPET UPHC, CHENNAI

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Abstract

Background: The present study aims to determine the effectiveness of antenatal exercise including yoga on Labour course of outcome among antenatal mothers at UPHC saidapet, chennai. **Materials and methods:** A Quasi experimental- pretest post-test with control group research design was used. Using non-probability purposive sampling technique recruited 60 postpartum mothers who met the criteria. In which 30 in experimental group and 30 in control group, level of pain was assessed by using visual analog scale in both groups pretest was done on the day of 28 weeks. For Experimental group investigator educate do Kegel exercise and pelvic tilting for 10 seconds for 2 times a day, 3 repetitions each time and mother to do three prenatal exercise like deep breathing, Gentle stretching, Postures asana for two times a day with 3 repetitions Control group follows routine antenatal care posttest was conducted. The demographic variable and pre posttest level of health status was assessed using structured questioner and, followed by that data was gathered and analyzed. *RESULTS:* The study results concluded that, the pain mean difference was 0.53, 1.70, 1.80 and 4.03. The calculated paired "t" test value of t=5.757 between pretest and post-test 1, t = 12.420 between the post-test 1 and posttest 2, t = 12.953 between post-test 2 and post-test 3 and t=21.378 between pretest and posttest 3 was found to be statistically significant at p>0.001. *CONCLUSION*: There was a statistically significant association in the post test level of pain perception among antenatal mother in the experimental group than the control group. This indicates that the Antenatal mother including Yoga is most effective non-pharmacological method and had no side effect which can be used to manage the level of pain perception during their antenatal period.

Keywords: Antenatal Exercise, Yoga, Antenatal Mother, Pain, Labour Outcome.

INTRODUCTION

The happy journey that only a mother may take after giving birth to a child is known as motherhood. It brings about a new position in her life and significantly alters her daily routine.[1] A woman's desire and decision to seek pain relief during labor are influenced by a variety of factors, including the nature of the mild ailment that she experienced during her pregnancy.[2]There are several phases of giving birth. [3]Every phase of parenthood has a certain function. There are three main categories that can be identified between the phases. [4]The stages of pregnancy and lactation are called perinatal.

Stress can result from pregnancy's physiological changes and psychological responsibilities.[5] The two most particular activities that are recommended to be done during the antenatal time are yoga and exercise.[6] Yoga is an age-old, multifaceted discipline of self-care and spiritual growth that originated in India more than 3,000 years ago and is still practiced in various parts of the world.[7] To lessen the mild pain brought on by the physiological changes that take place during pregnancy, there are both non-pharmacological and pharmaceutical treatments available. [8]Pregnancy yoga seeks to assist expectant mothers in bringing their unborn child into the world with as little difficulty and health concerns as possible. [9] Maternal mortality remains a global health problem and the reduction of maternal mortality and morbidity has been identified as a priority area that needs urgent attention by the health sector.

As a result, WHO and partners developed a strategy and adopted Sustainable Development Goal target 3.1: to reduce MMR to less than 70 per 100,000 live births by 2030. [10]Yoga alone isn't enough; it also needs to be practiced in a comfortable setting and under the guidance of a professional. Quality of life and ability to cope with physical discomforts of pregnancy as well as pain during labor were some of the psychological results that persuaded.

MATERIAL AND METHODS

After obtaining and ethical clearance from the institutional ethical committee of saveetha institute of medical and technical science and formal permission letter the present study was conducted. For the present study quasi experimental research design was adopted. The data were collected using a non-probability purposive sampling technique from 60 samples. The inclusion criteria for the study, participants, both primi gravida and multi gravida, Singleton gestation, who were at the gestational age of 28 weeks and during 36 weeks of the gestation mother.

Willing to participate along with cooperative and who understand both Tamil and English. Exclusion criteria for the study are samples that are not willing to participate in the study and any congenital abnormally, history of previous cesarean section and had high risk pregnancy. And also who are less than 18 years and 40 years old women. The purpose of the study was explained by the investigator to each of the study participants and a written informed consent was obtained from them.

The data were analyzed by biostatistics. Chi-Square was computed for pair matching the selection of demographic variables in both the experimental and control groups and it was observed that homogeneity had been maintained for all the demographic variables. The level of pain was assessed through numerical scale by investigator.

RESULTS AND DISCUSSION

SECTION A: Frequency and Percentage Distribution of Demographic Variables of Antenatal Mothers in the Experimental and Control Group.

The majority of antenatal mothers were between the ages of 21 and 25 and 31 and 35, respectively; 15(50%) of the experimental group were Christians, and 16(53.3%) of the control group were Hindus; 14(46.7%) of the experimental group had a secondary education and were graduates or above; and 16(53.3%) of the control group had the same education. , 10(33.4%) in the experimental group and 15(50%) in the control group had an income of Rs.10,000 – 15,000 and >Rs.20,000, respectively; 20(66.7%) in the

experimental group belonged to joint families, and 16(53.3%) in the control group belonged to nuclear families.

Twenty-eight percent of the experimental group and twenty-one percent of the control group were non-vegetarian, and nineteen percent of the experimental group and twenty-one percent of the control group had reached menarche at the age of twelve to fifteen.

Additionally, fourteen percent of the experimental group and thirteen percent of the control group were taller than 156 centimeters, and thirteen percent of the experimental group and forty percent of the control group were taller than 146 to 150 centimeters, respectively. After calculating the Chi-Square for pair matching the demographic variable selection in the experimental and control groups, it was found that all of the demographic variables had remained homogeneous.

Table 1: Frequency and Percentage Distribution of Pretest and Post-Test Clinical Variables of Antenatal Mothers in the Experimental and Control Group. N = 60(30+30)

Clinical Variables	Experimental Group		Control Group		Chi-Square value
	Frequency	Percentage	Frequency	Percentage	
Gravida status					χ^2=0.800 d.f=1 p=0.371 N. S
Primi gravida	18	60.0	16	53.3	
Multi gravida	12	40.0	14	46.7	
Parity					χ^2=1.456 d.f=2 p=0.483 N. S
First baby	18	60.0	16	53.3	
Second baby	10	33.3	9	30.0	
More than two baby	2	6.7	5	16.7	
History of complication during previous pregnancy					χ^2=0.218 d.f=1 p=0.640 N. S
Yes	2	6.7	3	10.0	
No	28	93.3	27	90.0	
Duration of first stage of labour					χ^2=5.700 d.f=2 p=0.058 N. S
4 – 6 hours	9	30.0	6	20.0	
6 – 12 hours	21	70.0	19	63.3	
<12 hours	0	0	5	16.7	
Duration of second stage of labour					χ^2=2.052 d.f=1 p=0.152 N. S
5 – 10 minutes	6	20.0	11	36.7	
10 – 15 minutes	24	80.0	18	63.3	
16 – 20 minutes	-	-	-	-	

N.S – Not Significant

Table 1 shows that, most of the Antenatal mothers, 18(60%) in the experimental group and 16(53.3%) in the control group were primi gravida mothers, 18(60%) in the experimental group and 16(53.3%) in the control group were of 1st parity, 28(93.3%) in the experimental group and 27(90%) in the control group had not history of complication during previous pregnancy, 21(70%) in the experimental group and 19(63.3%) in the control group had 6 – 12 hours of duration of first stage of labour and 24(80%) in the experimental group and 18(63.3%) in the control group had 10 – 15 minutes duration of second stage of labour.

The calculated chi-square value shows that homogeneity had been maintained between the clinical variables in the groups.

Table 2: Frequency and Percentage Distribution of Pretest and Post-Tests Level of Pain among the Antenatal Mothers in the Experimental and Control Group N= 60(30+30)

Pain	Pretest		Post Test 1		Post Test 2		Post Test 3	
	F	%	F	%	F	%	F	%
Experimental Group								
No pain (0)	-	-	-	-	-	-	-	-
Mild (1 – 3)	-	-	-	-	-	-	4	13.3
Moderate (4 – 6)	-	-	1	3.3	23	76.67	26	86.67
Severe (7 – 9)	30	100.0	29	96.67	7	23.33	-	-
Worst possible (10)	-	-	-	-	-	-	-	-
Control Group								
No pain (0)	-	-	-	-	-	-	-	-
Mild (1 – 3)	-	-	-	-	-	-	-	-
Moderate (4 – 6)	-	-	-	-	1	3.3	30	100.0
Severe (7 – 9)	30	100.0	30	100.0	29	96.7	-	-
Worst possible (10)	-	-	-	-	-	-	-	-

The table 2 shows that in the pretest, all the Antenatal mothers in the experimental group 30(100%) had severe pain. Most of them, 29(96.67%) in post-test 1 had severe pain and 1(3.3%) had moderate pain. Most of them, 23(76.67%) in the post-test 2 had moderate pain and 7(23.33%) had severe pain. In post-test 3, most of them 26(86.67%) had moderate pain and 4(13.3%) had mid pain. In the pretest and post-test 1, all the postpartum mothers in theexperimental group 30(100%) had severe pain. Most of them, 29(96.67%) in post-test 2 had severe pain and 1(3.3%) had moderate pain. All 30(100%) had moderate pain in post-test 3.

SECTION-II

Table 3:   Effectiveness of Antenatal Exercise including Yoga on Labour Course Outcome among Antenatal Mothers in the Experimental Group n=30

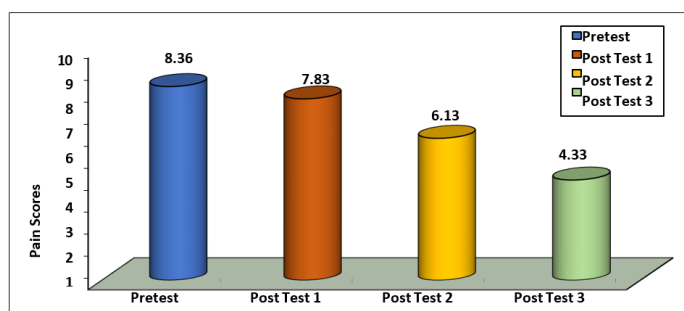| Pain	Mean	S.D	Mean Difference	Paired 't' test value
Pretest	8.36	0.66	0.53	t=5.757 p=0.0001, S***
Post Test 1	7.83	0.46		
Post Test 1	7.83	0.46	1.70	t=12.420 p=0.0001, S***
Post Test 2	6.13	0.57		
Post Test 2	6.13	0.57	1.80	t=12.953 p=0.0001, S***
Post Test 3	4.33	0.71		
Pretest	8.36	0.66	4.03	t=21.378 p=0.0001, S***
Post Test 1	4.33	0.71		

***p<0.001, S – Significant

Figure 1: Comparison of Pretest and Post-tests Pain Scores among Antenatal Mothers in the Experimental Group

The findings of the analysis presented in table 3 shows that the mean score of pain in pretest was 8.36±0.66, post-test 1 was 7.83±0.46, post-test 2 was 6.13±0.57 and post-test 3 was 4.33±0.71. The mean difference was 0.53, 1.70, 1.80 and 4.03 respectively. The calculated paired "t" test value of t=5.757 between pretest and post-test 1, t = 12.420 between the post- test 1 and post-test 2, t = 12.953 between post-test 2 and post-test 3 and t=21.378 between pretest and post-test 3 was found to be statistically significant at $p<0.001$ level. This infers that there was statistically significant difference between post-test 1, post-test 2 and post-test 3 pain scores among the Antenatal mothers in the experimental group who had been administered with Antenatal exercise including Yoga. This shows that Antenatal exercise including Yoga on labour course of outcome was found to be effective in the improving labour course of outcome in the post tests.

SECTION- III

Table 4: Comparison of Pretest and Post-Tests Pain Scores among Antenatal Mothers in the Control Group N =30

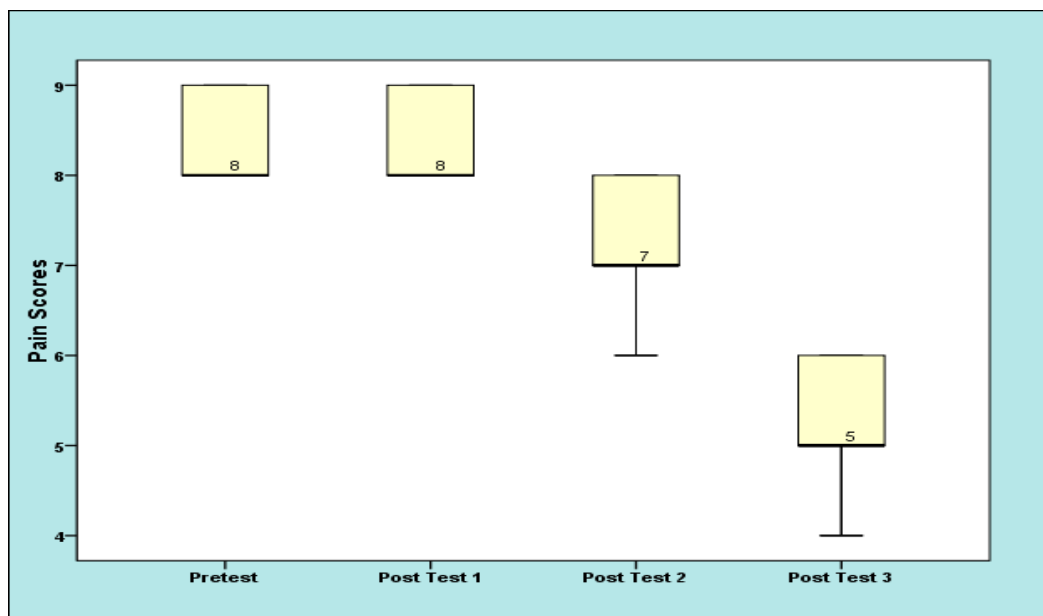| Pain	Mean	S.D	Mean Difference	Paired 't' test value
Pretest	8.46	0.50	-	-
Post Test 1	8.46	0.50		
Post Test 1	8.46	0.50	1.13	t=9.109 p=0.0001, S***
Post Test 2	7.33	0.54		
Post Test 2	7.33	0.54	2.27	t=15.817 p=0.0001, S***
Post Test 3	5.06	0.73		
Pretest	8.46	0.50	3.40	t=25.723 p=0.0001, S***
Post Test 3	5.06	0.73		

***$p<0.001$, S – Significant

Figure 2: Comparison of Pretest and Posttests Pain Scores among Antenatal Mothers in the Control Group

The findings of the analysis presented in table 4 shows that the mean score of pain in pretest was 8.46±0.50, posttest 1 was 8.46±0.50, posttest 2 was 7.33±0.54 and posttest 3 was 5.06±0.73. The mean difference was 1.13, 2.27 and 3.40 respectively. The calculated paired "t" test value of t = 9.109 between the posttest 1 and posttest 2, t = 15.817 between posttest 2 and posttest 3 and t=25.723 between pretest and posttest 3

was found to be statistically significant at p<0.001 level. This infers that there was statistically significant difference between posttest 1, posttest 2 and posttest 3 pain scores among the Antenatal mothers in the control group who had undergone normal hospital routines.

Table 5: Comparison of Pretest and Post-Tests Pain Scores among Antenatal Mothers between the Experimental and Control Group N =60(30+30)

Test	Pain	Mean	S.D	Mean Difference	Student Independent 't' test value
Pretest	Experimental	8.36	0.66	0.10	t=0.653 p=0.517, N.S
	Control	8.46	0.50		
Post Test 1	Experimental	7.83	0.46	0.63	**t=5.059 p=0.0001, S***
	Control	8.46	0.50		
Post Test 2	Experimental	6.13	0.57	1.20	**t=8.312 p=0.0001, S***
	Control	7.33	0.54		
Post Test 3	Experimental	4.33	0.71	0.73	**t=3.914 p=0.0001, S***
	Control	5.06	0.73		

***p<0.001, S – Significant   p>0.05, Not Significant

Table 5 shows that in the pretest, the mean score of pain in the experimental group was

8.36±0.66 and the mean score in the control group was 8.46±0.50. The mean difference score was 0.10.

In the posttest 1, the mean score of pain in the experimental group was 7.83±0.46 and the mean score in the control group was 8.46±0.50. The mean difference score was 0.63.

In the posttest 2, the mean score of pain in the experimental group was 6.13±0.57 and the mean score in the control group was 7.33±0.54. The mean difference score was 1.20.
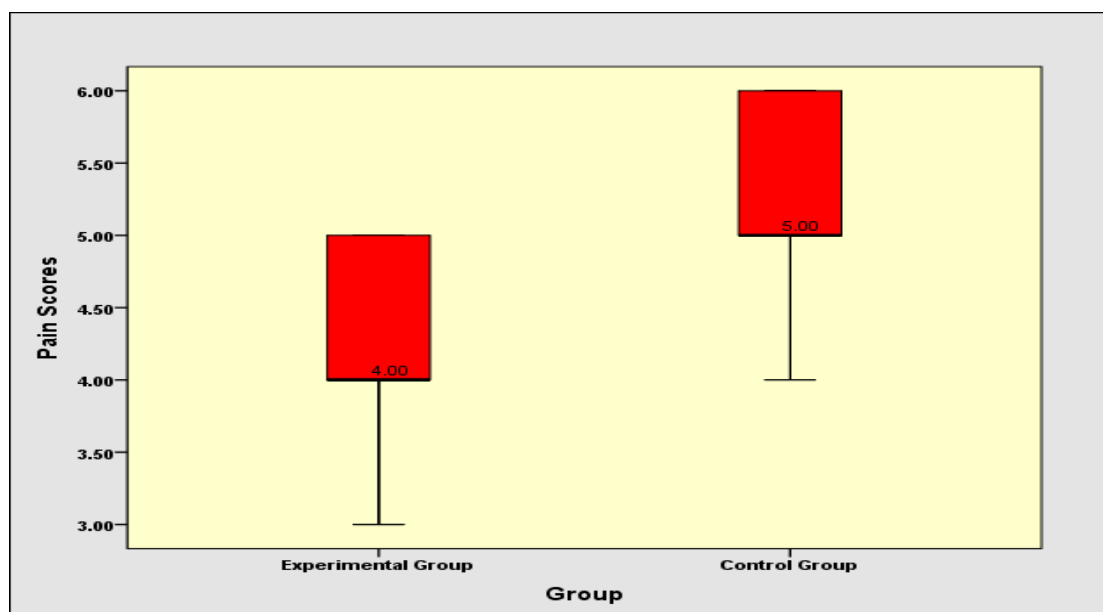

Figure 3: Comparison of post-test 3 after Pain Scores among Antenatal Mothers Between the Experimental and Control Group

In the posttest 3, the mean score of pain in the experimental group was 4.33±0.71 and the mean score in the control group was 5.06±0.73. The mean difference score was 0.73.

The findings revealed that there was no significant difference in the level of pain in the pretest between the groups.

The calculated student independent't' test value of t = 5.059 in posttest 1, t=8.312 in posttest 2 and t = 3.914 in posttest 3 shows that there was statistically significant difference in the pain scores between the two groups at p<0.001 level.

This clearly infers that antenatal exercise including Yoga on labour course of outcome administered among antenatal mothers in the experimental group was found to be more effective than the antenatal mothers in the control group who had undergone normal hospital routines protocol.

Table 6: Analysis of pain by two-way RM ANOVA with Bonferroni 't' test N = 60(30+30)

S.No.	Factors and comparisons	Pain	p-value
1	Factor 1, Groups (Control, F & M and F)	F = 46.633	**P<0.001***
2	Factor 2, Tests (Pre-test, Post-test1 and Post-test2)	F = 498.787	**P<0.001***
3	Interaction, Group x Test	F = 15.118	**P<0.001***
4	**Between the group comparison**	**Mean Diff.**	**Sig.**
	Pretest		
	Experimental Group	0.100	0.501
	Control Group		p>0.05
	Post Test 1		
	Experimental Group	**0.633***	**0.0001**
	Control Group		**P<0.05**
	Post Test 2		
	Experimental Group		**0.0001**
	Control Group	**1.200***	**P<0.05**
	Post Test 3		
	Experimental Group		**0.0001**
	Control Group	**0.733***	**P<0.05**
5.	**Within the group comparison**	**Mean Diff.**	**Sig.**
	Experimental Group		
	Pretest – Post Test 1	**0.533***	**0.0001, P<0.05**
	Pretest – Post Test 2	**2.333***	**0.0001, P<0.05**
	Pretest – Post Test 3	**4.033***	**0.0001, P<0.05**
	Post Test 1 – Post Test 2	**1.700***	**0.0001, P<0.05**
	Post Test 1 – Post Test 3	**3.500***	**0.0001, P<0.05**
	Post Test 2 – Post Test 3	**1.800***	**0.0001, P<0.05**
	Control Group		
	Pretest – Post Test 1	0.000	P>0.05
	Pretest – Post Test 2	**1.333***	**0.0001, P<0.05**
	Pretest – Post Test 3	**3.400***	**0.0001, P<0.05**
	Post Test 1 – Post Test 2	**1.333***	**0.0001, P<0.05**
	Post Test 1 – Post Test 3	**3.400***	**0.0001, P<0.05**
	Post Test 2 – Post Test 3	**2.267***	**0.0001, P<0.05**

***p<0.001, *p<0.05, S – Significant   p>0.05, N.S – Not Significant

Table 6 shows the Two-way Repeated Measures ANOVA with Bonferroni adjustment of the pain scores between the experimental and control groups from baseline to post-test 3.

The findings shows that there was statistically significant difference in Factor 1, Groups, with F value of F = 46.633 at p<0.001 level.

The findings shows that there was statistically significant difference in Factor 2, tests, with F value of F = 498.787 at p<0.001 level.

The findings of the comparison in the interaction, Group ☐ Test shows statistically significant difference with F value of F = 15.118 at p<0.001 level.
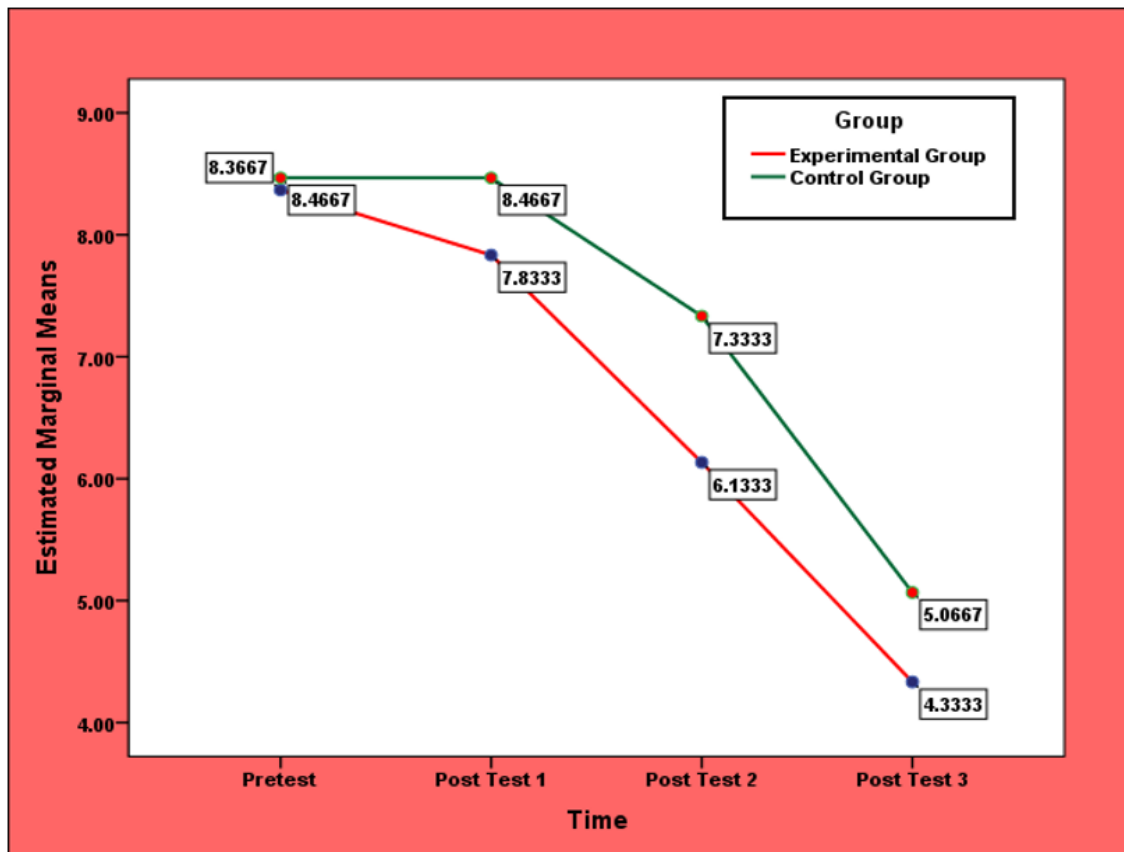

Figure 4: Trend Graph Showing the Comparison of Pretest and Posttests Pain Scores between the Experimental and Control Group

The Bonferroni between the comparison shows that significant difference was observed in the post-test 1, posttest 2 and post-test 3 scores of involution of uterus between the group with mean difference score of 0.633, 1.200 and 0.733 which was statistically significant at p<0.05 level.

The Bonferroni within the group comparison shows that significant difference was observed from baseline to post-test 3 scores of pain in the experimental group with mean difference scores of 0.533, 2.333, 4.033, 1.700, 3.500 and 1.800 which was statistically significant at p<0.05 level.

This clearly infers that Kegel Exercise and Prone position was found to be effective in the reduction of pain among the postpartum mothers in the experimental group. The Bonferroni within the group comparison shows that significant difference was observed from baseline to post-test 3 scores of pain scores in the control group with mean difference scores of 1.333, 3.400, 1.333, 3.400 and 2.267 which was statistically significant at p<0.05 level.

This clearly infers that normal hospital routine protocol was found to be effective in the reduction of pain among the postpartum mothers in the control group who had undergone hospital routine measures.

SECTION- IV

Table 7: Association of post-test 3 level of pain among Antenatal Mothers with their Selected Demographic Variables in the Experimental Group

S. No.	Factors and comparisons	Pain	p-value
1	Factor 1, Groups (Control, F & M and F)	F = 46.633	**P<0.001*** **
2	Factor 2, Tests (Pre-test, Post-test1 and Post-test2)	F = 498.787	**P<0.001*** **
3	Interaction, Group x Test	F = 15.118	**P<0.001*** **
4	**Between the group comparison**	**Mean Diff.**	**Sig.**
	Pretest		
	Experimental Group		0.501
	Control Group	0.100	p>0.05
	Post Test 1		
	Experimental Group		**0.0001**
	Control Group	**0.633***	**P<0.05**
	Post Test 2		
	Experimental Group		**0.0001**
	Control Group	**1.200***	**P<0.05**
	Post Test 3		
	Experimental Group		**0.0001**
	Control Group	**0.733***	**P<0.05**
5.	**Within the group comparison**	**Mean Diff.**	**Sig.**
	Experimental Group		
	Pretest – Post Test 1	**0.533***	**0.0001, P<0.05**
	Pretest – Post Test 2	**2.333***	**0.0001, P<0.05**
	Pretest – Post Test 3	**4.033***	**0.0001, P<0.05**
	Post Test 1 – Post Test 2	**1.700***	**0.0001, P<0.05**
	Post Test 1 – Post Test 3	**3.500***	**0.0001, P<0.05**
	Post Test 2 – Post Test 3	**1.800***	**0.0001, P<0.05**
	Control Group		
	Pretest – Post Test 1	0.000	P>0.05
	Pretest – Post Test 2	**1.333***	**0.0001, P<0.05**
	Pretest – Post Test 3	**3.400***	**0.0001, P<0.05**
	Post Test 1 – Post Test 2	**1.333***	**0.0001, P<0.05**
	Post Test 1 – Post Test 3	**3.400***	**0.0001, P<0.05**
	Post Test 2 – Post Test 3	**2.267***	**0.0001, P<0.05**

The demographic variables age of the mother **(χ^2=7.953, p=0.047)** and type of marriage **(χ^2=5.370, p=0.020)** had shown statistically significant association with post-test 3 level of pain among postpartum mothers at p<0.05 level and the other demographic variables had not shown statistically significant association with post-test 3 level of pain among antenatal mothers in the experimental group

Table 8: Association of post-test 3 Level of Pain Among Antenatal Mothers Among Antenatal Mothers with their Selected Clinical Variables in the Experimental Group n = 30

Clinical Variables	Frequency	Chi-Square test & p-value
Gravida status		x^2=0.433
Primi gravida	18	d.f=1
Multi gravida	12	p=0.511 N.S
Parity		x^2=0.577
First baby	18	d.f=2
Second baby	10	p=0.749
More than two baby	2	N.S
History of complication during previous Pregnancy		x^2=0.330 d.f=1
Yes	2	p=0.566
No	28	N.S
Duration of first stage of labour		x^2=0.055
4 – 6 hours	9	d.f=1
6 – 12 hours	21	p=0.815
<12 hours	0	N.S
Duration of second stage of labour		x^2=0.072
5 – 10 minutes	6	
10 – 15 minutes	24	d.f=1 p=0.788 N.S
16 – 20 minutes	-	

N.S – Not Significant

Table 9 shows that the clinical variables had not shown statistically significant association with post-test 3 level of pain among antenatal mothers in the experimental group

CONCLUSION

The result showed that there was a statistically significant association in the post test level of pain perception among antenatal mother in the experimental group than the control group. post-test 3 scores of pain in the experimental group with mean difference scores of 0.533, 2.333, 4.033, 1.700, 3.500 and 1.800 which was statistically significant at p<0.05 level.

This clearly infers that Kegel Exercise and Prone position was found to be effective in the reduction of pain among the postpartum mothers in the experimental group.

This indicates that the Antenatal mother including Yoga is most effective non-pharmacological method and had no side effect which can be used to manage the level of pain perception during their antenatal period.

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