



Research Article

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A STUDY TO ASSESS THE EFFECTIVENESS OF ANTENATAL EXERCISES AND YOGA TO PROMOTE NORMAL VAGINAL DELIVERIES AMONG ANTENATAL MOTHERS

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ABSTRACT

Motherhood is a gifted responsibility and it is women's highest crown of honor. The aim of the study includes evaluating the effectiveness of antenatal exercises and yoga to promote normal vaginal deliveries among antenatal mothers. The research design adapted to this study includes "True-experimental, post-test only control group design". Sample: Primi mothers who are in second trimester of pregnancy. Sampling technique: convenient sampling technique was adopted based on inclusion criteria. The study sample includes 30, 15 in experimental group and 15 in control group. Results of the study revealed that related to comfort in control and experimental group comfortable and not comfortable percentages were 10%, 50%, 40% and 0% respectively. The obtained 'P' value was < 0.001. Related to labor pain perception the control and experimental group median values were 2.00 and 1.00, percentiles were 2-3 and 1-1. The obtained 't' value was 345.00 and 'P' value was < 0.001. Both are significant at 1% level. Related to type of delivery, in control and experimental group normal deliveries and cesarean sections percentages were 20.00, 40.00, 30.00 and 10.00 respectively. The obtained 'P' value was P = 0.060 which was marginally significant at 1% level. The study findings concluded that antenatal exercises and yoga were very effective interventions in promoting normal vaginal deliveries, comfort and reducing labor pain intensity among primi antenatal mothers. Majority of the primigravid mothers in experimental group had normal vaginal delivery

Keywords: antenatal mothers, antenatal exercises, yoga, primi gravid mothers, Vaginal birth and cesarean birth

INTRODUCTION

"Birth is from the womb of a woman it gives life to mankind into the world of light, a world in which to breathe and grow." Women are prime care takers, first educators, bearers and nurturers of the next generation¹. Vaginal delivery is the best end of the pregnancy for the mother and the newborn. Normal delivery is promoted all over the world because it offers low cost, shorter hospitalization after labor, lack of anesthetic requisites, a decreased infection rate, and less hemorrhage compared with cesarean section.² Cesarean section may result in several maternal and neonatal complications such as hemorrhage, infection, increased mortality rate, premature birth and neonatal respiratory distress. Moreover, mother's inabilities after cesarean section lead to unsuccessful breastfeeding and impose financial burdens on families. As recent evidence suggests cesarean section results in post-partum depression and decreases fertility rates³.

A Caesarean section is often performed when vaginal delivery would put the baby's or mother's life or health at risk. In Iran, according to official statistics, the rate of cesarean is estimated to be about 35 percent; that is, three times as many as the global rate. In some Iranian hospitals, this figure has reached up to 80 percent. The high rate of the caesarean section in the country may be due to cultural, economic, professional and physical factors. Financially, the hospitals and specialists are the main beneficiaries of performing cesarean. When it comes to professional factors resulting in high rate of cesarean, lack of attention to training and preparing pregnant women and low quality of services for carrying out natural delivery are the main

causes for cesarean section. Lack of proper education and practice in terms of diet, nutrition and exercise makes mothers feel they do not have the stamina for vaginal delivery. Probably doing exercise during pregnancy is an optimal intervention for promoting the physical and mental health of women both across and after pregnancy.⁴

Antenatal exercise is an important component of antenatal care, women's physical activity lessens, the perception of risk during pregnancy. In the absence of medical or obstetrical complications, pregnant women are encouraged to maintain active lifestyle during their pregnancies. Kegel's exercise is commonly followed prenatal exercise used to strengthen pelvic floor muscle which may stretch during delivery, and prepare for labour.¹ Performing exercises based on the phases of pregnancy can help the mother prepare for an easy and normal delivery, without causing any harm to herself and the child.⁵ Exercising for 30 minutes on most of the days in a week can benefit health during pregnancy; exercising for just 20 minutes, 3 or 4 days a week also beneficial. The important thing is to be active and gets blood flowing during pregnancy. To have success in completing exercises during pregnancy, it is a good idea to plan the days and times during the week⁶.

Yoga promotes intimate attachment between the mother and baby. Pregnancy and labor are the necessary events in every woman life. Labor is under the predominant influence of the mind and body, and prenatal yoga helps the women to retain emotional strength and confidence that can allow the mother to put the baby out of the womb. Yoga makes the mother to tolerate when labor

prolongs. Yoga gives strength and stamina to promote normal deliveries. Yoga increases lung capacity with breathing exercise that can improve mother's concentration to cope up with delivery process. Yoga is a complementary therapy without medications to promote normal delivery among mothers. Yoga also helps to unexpected cesarean section mothers and even for home delivery mothers as drug free method.⁷

The butterfly asana offers plenty of benefits to pregnant women. It reduces fatigue, stretches the knees and thighs and enhances flexibility in the groin and hip region. Practicing this exercise regularly during pregnancy will help you have a smooth delivery.⁸ Regular exercise during pregnancy appears to be modestly, increase the chance for normal delivery among healthy pregnant women. According to the recommendations of the American College of Obstetricians and Gynecologists (ACOG), a large number of women have misbelieved on exercise during pregnancy. Studies proved that exercise has beneficial effects during pregnancy. Exercise is one of the best ways to reduce the adverse effects of pregnancy and delivery process. Exercise reduces pain and intensity and meanwhile improves heart and lung functions. Post-delivery exercise makes the mother to return more quickly to pre-pregnancy shape, increasing capabilities regarding the activities related to neonatal care.⁹

MATERIALS AND METHODS

A comparative quantitative evaluation approach was used in the study to assess the effectiveness of antenatal exercises and yogasanas to promote normal vaginal deliveries among antenatal mothers. The parameters studied were type of delivery, comfort of mothers, labor pain perception, bio physiological parameters like temperature, pulse rate, respiration rate and blood pressure and quality of life among antenatal mothers. In order to accomplish the objectives of the study a True-experimental, post-test only control group research design was adopted in the present study.

The study was conducted after getting approval from the Institutional Ethics committee of Sri Venkateswara Medical College, Tirupati (Approval No: 001/ SRC/2018 and dated 16/06/2018, L.r.04/2018). Permission was obtained from Medical Superintendent of the Government Maternity Hospital, Tirupati to conduct the study. The purpose of the study was explained to the participants. After explaining about the study, written consent was obtained from each pregnant woman. Ethical principles were followed and adhered to protect the rights of the participants. Confidentiality of the data was ensured throughout the study.

Participants

The study was conducted among the primigravid mothers in different groups, one was control group and another one was experimental group at Government Maternity Hospital Tirupati. Total population selected to study was 30 primi gravid mothers who were in second trimester, 15 in control group and 15 in experimental group based on the inclusion and exclusion criteria. They were selected by convenient sampling technique.

Inclusion and exclusion criteria

The study included second trimester mothers who gave informed consent to participate in the study. The study excluded second trimester mothers suffering from heart disease, incompetent cervix and any other medical and obstetrical illnesses and complications.

Data collection procedure

The importance of the study was explained and discussed with the superintendent of Government Maternity hospital, Tirupati and obtained permission to conduct study in the antenatal outpatient department. Antenatal mothers with completion of 16 weeks i.e. who are in second trimester and who are in Tirupati surroundings up to 10 km were enrolled to the study based on inclusion criteria. Total sample divided into two groups. One group considered as control group and another group considered as experimental group. Permission was obtained from Maternity Hospital superintendent for arrangement of hall for intervention. First Tuesday experimental group was called and assembled in the hall. Written consent obtained from each sample. Physical examination done with thorough health history, In practical session each woman was advised and demonstrated to do the antenatal exercises and yogasanas without further assistance. Every Tuesday up to delivery (follow up sessions) mothers were advised to attend for practical session. If mothers are unable to come to O.P the investigator contacted mothers directly. Once in two days mothers were communicated on phone call. Participant's satisfaction regarding these exercises and yogasanas was measured with bio physiological parameters, labor pain scale and type of delivery. Every Wednesday up to delivery control group mothers were called and assembled in a hall and written consent was obtained to participate in study. During follow up the control group mothers were given health education on antenatal care and future lactation. Complete medical and physical examination was done for control group. After completion of sessions all the cases in experimental and control group assessed for mode of delivery, comfort of mothers, labor pain perception, bio physiological parameters and quality of life to estimate study effectiveness.

RESULTS AND DISCUSSION

The data were analyzed by means of descriptive and inferential statistics. Frequency and percentage distribution were used to describe demographic variables. The data were analyzed by fisher exact test, Mann-Whitney rank sum test to find out comparison of comfort, type of delivery and labor pain perception, knowledge related to antenatal exercise and yoga. Paired 't' test was used for the comparison of control and experimental groups bio physiological parameters A probability of 0.05 or less was taken as statistically significant. The analysis and plotting of graphs were carried out using Sigma Plot 13 (Systat Soft ware Inc., USA).

Table 1 shows that the demographic description of primigravid mothers, both in the control and experimental majority of mothers belongs to 53.3% the age group of 20-25 years, related to religion, in the experimental group, 60.3% were Hindus. In control group, 40.0% were Hindus. The data on education 60.0 % had secondary education in both groups. With regards to occupation in the experimental group, 80.0% were housewives, in control group 60.0% were housewives. In the experimental group, 60.0% were with joint families. In control 53.3% were with joint families Pertaining to family income in the experimental group, 73.3% were belongs to above 20000 rupees. In control group 66.7% were belongs to above 20000 rupees. In the experimental group, 60.0% were residing at urban area, In control group 73.3% were residing at urban area, In the experimental group 66.7% had 3-5 years of marital life in control group 46.7% had 3-5 years of marital life. With regards to gestational age in weeks, in the experimental group, 86.7% were in 24-28 weeks of gestation In control group 80.0% were in 24-28 weeks of gestation.

Table 1: Frequency and percentage distribution of demographic variables among antenatal mothers

			Group		Total
			Experimental	Control	
Age of the mother in years	18-22	N	8	8	16
		%	53.30%	53.30%	53.30%
	23-26	N	6	6	12
		%	40.00%	40.00%	40.00%
	27-30	N	1	1	2
		%	6.70%	6.70%	6.70%
Religion	Hindu	N	9	6	15
		%	60.00%	40.00%	50.00%
	Muslim	N	3	6	9
		%	20.00%	40.00%	30.00%
	Christian	N	3	3	6
		%	20.00%	20.00%	20.00%
Education of the mother	Primary Education	N	2	2	4
		%	13.30%	13.30%	13.30%
	Secondary Education	N	9	9	18
		%	60.00%	60.00%	60.00%
	Higher Education	N	3	4	7
		%	20.00%	26.70%	23.30%
	Graduation	N	1	0	1
		%	6.70%	0.00%	3.30%
Occupation of the mother	Housewife	N	12	9	21
		%	80.00%	60.00%	70.00%
	Coolie	N	1	4	5
		%	6.70%	26.70%	16.70%
	Employee	N	2	2	4
		%	13.30%	13.30%	13.30%
Type of family	Nuclear family	N	6	5	11
		%	40.00%	33.30%	36.70%
	Joint family	N	9	8	17
		%	60.00%	53.30%	56.70%
	Extended family	N	0	2	2
		%	0.00%	13.30%	6.70%
Monthly Income in rupees	Below 2000	N	2	2	4
		%	13.30%	13.30%	13.30%
	2001-3000	N	2	3	5
		%	13.30%	20.00%	16.70%
	above 3000	N	11	10	21
		%	73.30%	66.70%	70.00%
Residence	Urban	N	9	11	20
		%	60.00%	73.30%	66.70%
	Rural	N	4	2	6
		%	26.70%	13.30%	20.00%
	Urban slum	N	2	2	4
		%	13.30%	13.30%	13.30%
Martial Life in years	Below 3 years	N	2	4	6
		%	13.30%	26.70%	20.00%
	3-5 years	N	10	7	17
		%	66.70%	46.70%	56.70%
	above 5 years	N	3	4	7
		%	20.00%	26.70%	23.30%
Gestational age in weeks	24-28	N	13	12	25
		%	86.70%	80.00%	83.30%
	29-32	N	2	3	5
		%	13.30%	20.00%	16.70%
Total		N	15	15	30
		%	100.00%	100.00%	100.00%

Table 2: Comparison of comfort related to antenatal exercises with yoga between control and experimental group

Comfort	N	Control group	Percentage	Experimental Group	Percentage	Fisher exact test
Comfortable	15	3	10.00	15	50.00	
Not comfortable	15	12	40.00	0	0.00	P<0.001

Table 2 shows that related to comfort in control group and experimental group comfortable and not comfortable percentages were 10%, 50%, 40% and 0% respectively. The obtained 'P' value was < 0.001 which was significant at 1% level. This shows that antenatal exercises with yoga were very effective in promoting comfort to the antenatal mothers

Table 3: Comparison of labor pain perception with practice of antenatal Exercises and yoga between control and experimental group

Group	N	Median	Percentile	Mann-whitney Rank Sum test
Control	15	2.000	2.00-3.00	T=345.00
Experimental	15	1.000	1 - 1	P< 0.001

Table 3 shows that related to labor pain perception the control group and experimental group median values were 2.00 and 1.00, percentiles were 2-3 and 1-1. The obtained 't' value was 345.00 and 'P' value was < 0.001 which was significant at 1% level. This shows that antenatal exercises with yoga was very effective in lessening the labor pain among antenatal mothers

Table 4: Comparison of type of delivery related to antenatal exercises with yoga between control and experimental group

Type of delivery	N	Control group	Percentage	Experimental Group	Percentage	Fisher exact test
Normal	15	6	20.00	12	40.00	
Cesarean section	15	9	30.00	3	10.00	P=0.060

Table 4 shows that related to type of delivery, in control group and experimental group normal deliveries and cesarean sections percentages were 20.00, 40.00, 30.00 and 10.00 respectively. The obtained 'P' value was P = 0.060 which was marginally significant at 1% level. This shows that antenatal exercises with yoga was very effective in promoting normal deliveries among antenatal mothers

Table 5: Comparison of bio physiological parameters related to antenatal exercises with yoga between control and experimental group

Parameter	Group	N	Mean	Std Deviation	SEM	Paired t- test
Temperature	Control	15	98.38	0.41	0.10	t = -2.36 p = 0.007
	Experimental	15	98.73	0.19	0.05	
Pulse rate	Control	15	75.20	3.91	1.01	t = -2.91 p = 0.025
	Experimental	15	78.66	4.11	1.06	
Respiration rate	Control	15	19.20	1.26	0.32	t = -1.57 p = 0.127
	Experimental	15	20.00	1.51	0.39	
SBP	Control	15	113.33	10.13	2.61	t = 0.405 p = 0.689
	Experimental	15	112.00	7.74	2.00	
DBP	Control	15	78.53	2.06	0.53	t = 1.781 p = 0.085
	Experimental	15	71.60	14.93	3.85	

Table 5 shows that related to bio physiological parameters like temperature, pulse rate, respiration rate, SBP and DBP the mean and standard deviation values of control group were 98.38, sd: 0.41, 75.20, sd: 3.91, 19.20, sd: 1.26, 113.33, sd: 10.13 and 78.53, sd: 0.53 and experimental group were 98.73, sd: 0.19, 78.66, sd: 4.11, 20.00, sd: 1.51, 112.00, sd: 7.74 and 71.60, sd: 14.93 respectively. The Temperature and Pulse rate values (t = -2.36, p = 0.007) and (t = -2.91 p = 0.025) which was significant at 1% level. The respiration rate, SBP and DBP values (t = -1.57, p = 0.127), (t = 0.405, p = 0.689) and (t = 1.781, p = 0.085) which was not significant

Table 6: Comparison of quality of life with practice of antenatal Exercises and yoga between control and experimental group

Knowledge	Group	N	Median	Percentile		Mann-Whitney rank sum test
				25%	75%	
Related to antenatal exercises	Control	15	6.00	4.0	8.0	T = 120.00 P < 0.001
	Experimental	15	10.00	9.0	10.0	
Related to yoga	Control	15	0.00	0.0	1.00	T = 120.00 P < 0.001
	Experimental	15	5.00	4.0	5.00	

Table 6 shows that related to knowledge of antenatal exercises and yoga the control group and experimental group median values were 6.00, 0.00, 10.00 and 5.00, percentiles were 4.0 - 8.0, 0.0 - 1.00, 9.0 - 10.0 and 4.0 - 5.00 respectively. The obtained 't' value was 120.00 and 'P' value was < 0.001 for both types of knowledge; which was significant at 1% level. This shows that antenatal exercises with yoga education were very effective among experimental group women than the control group women

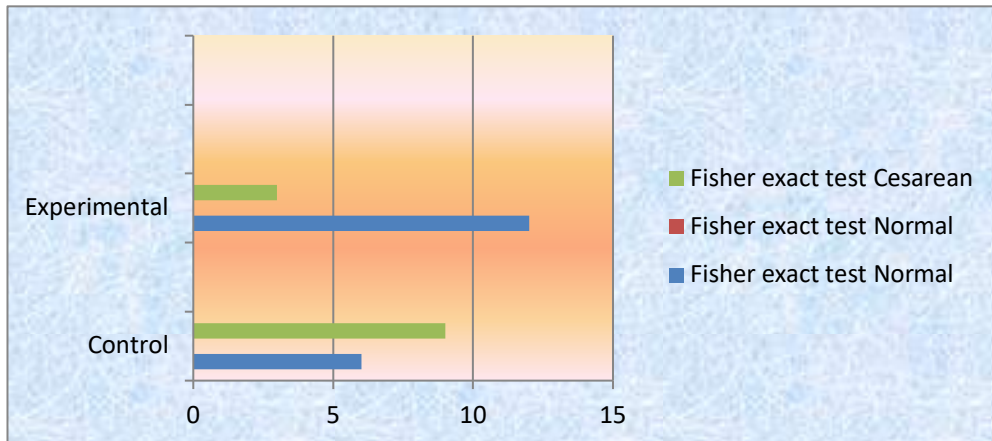


Figure 1: Comparison of type of delivery related to antenatal exercises with yoga between control and experimental group

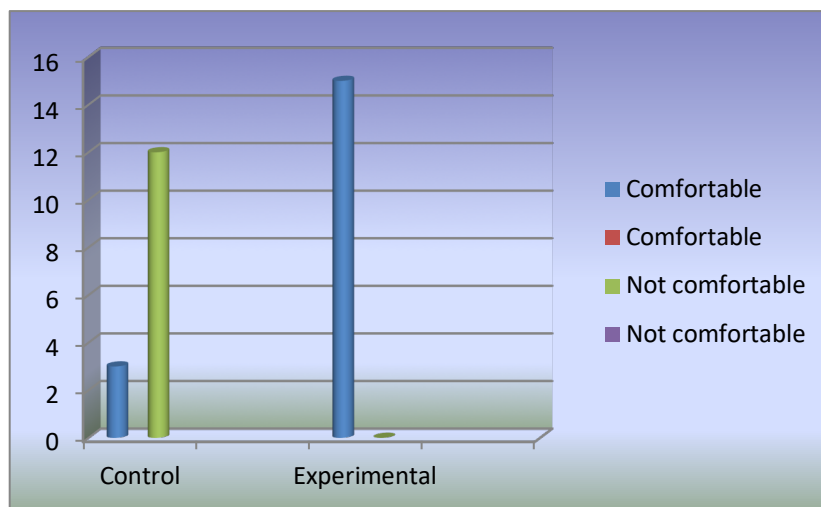


Figure 2: Comparison of comfort related to antenatal exercises with yoga between control and experimental group

Table 2 shows that related to comfort in control group and experimental group comfortable and not comfortable percentages were 10%, 50%, 40% and 0% respectively. The obtained 'P' value was < 0.001 which was significant at 1% level. This shows that antenatal exercises with yoga were very effective in promoting comfort to the antenatal mothers.

Table 3 shows that related to labor pain perception the control group and experimental group median values were 2.00 and 1.00, percentiles were 2-3 and 1-1. The obtained 't' value was 345.00 and 'P' value was < 0.001 which was significant at 1% level. This shows that antenatal exercises with yoga were very effective in lessening the labor pain among antenatal mothers.

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Table 5 shows that related to bio physiological parameters like temperature, pulse rate, respiration rate, SBP and DBP the mean and standard deviation values of control group were 98.38, sd: 0.41, 75.20, sd: 3.91, 19.20, sd: 1.26, 113.33, sd: 10.13 and 78.53, sd: 0.53 and experimental group were 98.73, sd: 0, 19, 78.66, sd:

4.11, 20.00, sd: 1.51, 112.00, sd: 7.74 and 71.60, sd: 14.93 respectively. The Temperature and Pulse rate values ($t = -2.36$, $p = 0.007$) and ($t = -2.91$, $p = 0.025$) which was significant at 1% level. The respiration rate, SBP and DBP values ($t = -1.57$, $p = 0.127$), ($t = 0.405$, $p = 0.689$) and ($t = 1.781$, $p = 0.085$) which was not significant.

Table 6 shows that knowledge of antenatal mothers related to antenatal exercises and yoga, the control group and experimental group median values were 6.00, 0.00, 10.00 and 5.00, percentiles were 4.0 -8.0, 0.0 -1.00, 9.0 - 10.0 and 4.0 - 5.00 respectively. The obtained 't' value was 120.00 and 'P' value was < 0.001 for both types of knowledge; which was significant at 1% level. This shows that antenatal exercises with yoga education were very effective among experimental group women than the control group women.

The test of significance (difference in proportions) showed the difference was statistically significant and hence it is concluded that there was a strong evidence of a difference in mode of delivery. Thus, the study proved that antenatal exercises and yoga were very effective interventions in promoting normal vaginal deliveries, comfort to the mothers and reduced labor pain intensity among primi antenatal mothers.

Results of the study revealed that related to comfort in control group and experimental group comfortable and not comfortable

percentages were 10%, 50%, 40% and 0% respectively. The obtained 'P' value was < 0.001 which was significant at 1% level. Related to labor pain perception the control group and experimental group median values were 2.00 and 1.00, percentiles were 2-3 and 1-1. The obtained 't' value was 345.00 and 'P' value was < 0.001 001 which was significant at 1% level. Related to type of delivery, in control group and experimental group normal deliveries and cesarean sections percentages were 20.00, 40.00, 30.00 and 10.00 respectively. The obtained 'P' value was P = 0.060 which was marginally significant at 1% level.

CONCLUSION

The study results showed that antenatal exercises and yoga were very effective interventions in promoting normal vaginal deliveries, comfort to the mothers and reduced labor pain intensity among primi antenatal mothers. Majority of the primigravid mothers in experimental group had normal vaginal delivery and it is observed that significant reduction in cesarean section in experimental group compared to control group mothers. So, it was concluded that there was a strong evidence of difference in mode of delivery. Participants were very co-operative throughout the study.

Recommendations

- A similar study can be carried out with comparison of primi with multi.
- A similar study can be carried out in other areas than Tirupati.
- A similar study can be carried out with different parameters like different yogasanas and other exercises.
- A similar study can be carried out with large sample size.

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