



Journal Homepage: -www.journalijar.com
**INTERNATIONAL JOURNAL OF
 ADVANCED RESEARCH (IJAR)**

Article DOI:10.21474/IJAR01/9942
 DOI URL: <http://dx.doi.org/10.21474/IJAR01/9942>



RESEARCH ARTICLE

EFFECTIVENESS OF ANTENATAL EXERCISES AND YOGA ON QUALITY OF LIFE, COMFORT, LABOR PAIN PERCEPTION AND TYPE OF DELIVERY AMONG ANTENATAL MOTHERS: LABOR AND BIRTH OUTCOME.

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Manuscript Info

Manuscript History

Received: 18 August 2019

Final Accepted: 20 September 2019

Published: October 2019

Key words:-

Antenatal exercises ; yoga; Quality of life ; Comfort; Labor pain; Delivery.

Abstract

Recent advancements in Obstetric and Gynecology have minimized the risks during pregnancy and labor. Regular practice of antenatal exercises with yoga in second and third trimester of pregnancy promotes comfort, decreases labor pain and promotes normal deliveries. The aim of the study was to compare the effect of antenatal exercises and yoga on quality of life, comfort, labor pain perception and type of delivery among control and experimental groups of primi and multi gravid mothers. The research design adopted to this study includes true experimental pre-test, post-test and control group design was used. Sample: antenatal second gravid women were selected as study sample by random technique. The estimated sample size was 200 for four groups the size was 100 (for two groups of control) and 100 (for two groups of experimental), with the total sample size of 200. The age groups of control and experimental was divided after the completion of the study. The study was conducted at Government Maternity Hospital, Antenatal out patient department, Tirupati, India-2018. Results of the study revealed that antenatal education related to antenatal exercises and yoga was more effective in experimental group than control group. ($P < 0.001$). Findings revealed that experimental group mothers were more comfortable compare to control group. ($P < 0.001$). Most of the experimental group mothers experienced only with mild labor pain compare to control group. ($P < 0.001$). Most of the experimental group mothers undergone normal delivery compare to control group. ($P < 0.001$). The study findings concluded each group was significantly different from the respective pre-test and post-test of control and experimental groups and compared to control group experimental group mothers gained more knowledge on quality life. Antenatal exercises with yoga was very effective intervention to promote comfort and normal vaginal delivery and this intervention lessens the labor pain perception among women during labor. So antenatal exercises and yoga can be demonstrated safely among antenatal women.

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Introduction:-

Pregnancy and delivery are two beautiful and important events which cause physical, psychological, and social changes in women. Pregnancy is a process which will be ended in physiological form as a vaginal delivery. Giving birth is one of the most natural experience of a woman's life. But women consider normal delivery as often a risky and unbearably painful experience. This is simply because of the less knowledge about normal delivery. Labor is always the most challenging stage of pregnancy. Childbirth is normally a natural process that can be generally managed without medical interventions. Normal delivery is promoted in most of the countries, for its cost-effectiveness, short length of hospital stay, lack of anesthetic requirement, and lower rates of infection and hemorrhage after delivery, when compared to cesarean section. Safe maternity with improved neonatal outcome is predicated in proper antenatal care services. Exercise has become a fundamental aspect of women's lives and it is an important constituent of antenatal care. In many developed countries interventional deliveries have been increased drastically. The rise in interventions rates in labour need to be recognized as a matter of priority as outlined by studies of maternity services and international reports.

Emphasis on antenatal education and the promotion of birth as a normal physiological event is critical if we want to reduce interventions in birth. In the recent past there was a steady rise in caesarean section rate against the vaginal delivery. Maternity care organizations, like the American Congress Obstetricians and Gynecologists, have recognized reducing the rate of primary cesarean birth as an urgent health-care priority. The World Health Organization announced the acceptable level of cesarean section (CS) as 10-15%. In recent years, there is a constant rise in the rate of CS. Lack of appropriate knowledge and attitude among families plays a major role in this regard. CS results in more acute complications including the risk of unconsciousness, high hemorrhage, puerperal infection and postpartum depression, and birth of preterm infants, compared to vaginal delivery. Generally, mortality rate is fourfold to fivefold high in CS compared to vaginal delivery. The mortality rate is 2.1 in vaginal delivery; 5.9 in elective CS (risk ratio = 2.84), and 18.2 in emergency CS (risk ratio = 8.48) out of 100,000 cases.

Antenatal classes are an ideal opportunity to help women to communicate effectively with hospital staff. By this women can make own choice rather than merely conforming to hospital policies, protocols, and professional preferences. Antenatal education is an important instrument which helps future mothers, to take safe decision about birth. It promotes to utilize skills for self-control of labour pain, skills for postnatal care, breastfeeding infant care, and motherhood. Antenatal exercises are extremely helpful and will promote the chances of a normal delivery and decrease labor time and pain. Moreover, regular practice exercise can help throughout pregnancy with improved strength, balance, flexibility, digestion, and circulation and with other added benefits. Practice of 30 minutes of exercise like walking and prenatal yoga on most, if not all days of the week helps to have normal birth. Pelvic Tilts relieves pressure of the lower and upper back by stretching, while strengthening abdominal muscles helps to prepare for delivery.

Certain movements and positions ease the labor pain and the process of delivery. Yes, there are certain exercises that can help to make the labor process smooth. These exercises help pregnant women descend the baby through the birth canal. Many studies proved, the pelvic rocks help in managing pain, and labor process, and offers utmost satisfaction with the delivery. This form of exercise will help to relieve the pressure on the pelvic area. If women participated in a regular exercise activity prior to pregnant, it is best to continue during pregnancy. In 2010, the American College of Sports Medicine recommended that in absence of contraindication, a minimum of three exercise sessions with 15 min per session, gradually up to 30 min per day, preferably all days of the week showed a reduced caesarean section proportion. Antenatal exercises strengthen the PFM by 90%, which is essential for normal delivery. The importance of promoting vaginal delivery among pregnant women, PFM exercise is recommended as a safety, non pharmacological, and inexpensive strategy for lowering caesarean section rates.

prenatal yoga is best way to help women access deep stores of emotional strength and confidence that can put to use during contractions and pushing the baby out of the womb. "A woman's capacity to birth a baby is directly related to ability to let go of gripping in muscles," Yoga's benefits during labor include helping a pregnant woman's physical strength if labor lasts a long time (though regular yoga practice has also been shown to shorten the length of labor by as much as two hours). The increased stamina derives from the physical discipline necessary to hold postures long enough to get strength-building benefits. It also comes from the mental focus that results from yoga's concentration.

Materials And Methods:-

A comparative quantitative evaluation approach was used in the study to assess the Effectiveness of antenatal exercises and yoga on quality of life, comfort, labor pain perception and type of delivery among antenatal mothers. In order to accomplish the objectives of the study true experimental pre-test, post-test and control group 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:

Antenatal second gravid women were selected as study sample by random technique based on the inclusion and exclusion criteria. The estimated sample size was 200 for four groups the size was 100 (for two groups of control) and 100 (for two groups of experimental), with the total sample size of 200. The age groups of control and experimental was divided after the completion of the study.

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 Govt Maternity hospital, Tirupati and obtained permission to conduct study in the antenatal out patient department. Antenatal mothers with completion of 16 weeks i.e. who are in second trimester and who are in Tirupati surroundings up to 10 kms were enrolled to the study based on inclusion criteria. Total sample divided into four groups. 100 for two groups of control and 100 for two groups of experimental. Permission was obtained from Maternity Hospital superintendant 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. Participants satisfaction regarding these exercises and yogasanas was measured with quality of life, comfort, biophysiological 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 quality of life, comfort of mothers, labor pain perception and mode of delivery to estimate study effectiveness.

Results and discussion:-

The data were analyzed by one way ANOVA on ranks with Student Newman Keul's multiple comparison test and the respective pre-test and post-test are compared by Wilcoxon signed rank test and chi-square test was used to analyze comfort, labor pain perception and type of delivery.

Table 1: shows comparison of effect of antenatal exercises with yoga, on quality of life – alpha scale (QOL-K1), knowledge of antenatal exercises (QOL-K2), and knowledge of yoga (QOL-K3), of control and experimental groups of primi and multigravid Women in pre and post test. Related to ALPHA scale (QOL-K1), Control-Primi 'Z' and P values are Z=5.95, P<0.001. Control-multi 'Z' and P values are Z=6.16, P<0.001. Experimental Primi 'Z' and P values are Z=6.15, P<0.001 and experimental -multi 'Z' and P values are Z=6.15, P<0.001. Related to knowledge of antenatal exercises (QOL-K2) Control-Primi 'Z' and P values are Z=4.781, P<0.001. Control-multi 'Z' and P values are Z=5.541, P<0.001. Experimental Primi 'Z' and P values are Z=5.939, P<0.001 and experimental -

multi Z' and P values are $Z=6.014$, $P<0.001$. Related to Knowledge of yoga therapy (QOL-K3) Control-Primi 'Z' and P values are $Z=0.968$, $P<0.339$. Control-multi Z' and P values are $Z=2.711$, $P<0.007$. Experimental Primi 'Z' and P values are $Z=6.250$, $P<0.001$ and experimental -multi Z' and P values are $Z=6.328$, $P<0.001$. It shows that each group was significantly different from the respective pre-test and post-test of control and experimental groups and compared to control group experimental group mothers gained more knowledge on Alpha scale, antenatal exercises and yoga therapy.

Table 2: shows comparison of effectiveness of antenatal exercises with yoga on comfort, labor pain perception and type of delivery between control and experimental group of primi and multi gravid women. The results revealed that related to comfort in control group 10 primi and 15 multi mothers were comfortable. In experimental group 32 primi and 38 multi mothers were comfortable. The obtained χ^2 and P values are 43.048 and $P < 0.001$. Findings revealed that experimental group mothers were more comfortable compare to control group. Related to labor pain perception in control group 10 primi and 18 multi mothers experienced with mild pain and 40 primi 32 multi mothers experienced with moderate pain. Among them nearly 10 women experienced with severe pain also. In experimental group 35 primi and 42 multi mothers experienced with mild pain and only 15 primi 8 multi mothers experienced with moderate pain. Among them only 3 primi women experienced with severe pain and no multi mother experienced with severe pain. The obtained χ^2 and P values are 52.672 and $P < 0.001$. Findings revealed that most of the experimental group mothers experienced only with mild labor pain compare to control group.

Related to type of delivery in control group 15 primi and 21 multi mothers undergone normal delivery and 35 primi 29 multi mothers undergone cesarean section. In experimental group 35 primi and 39 multi mothers undergone normal delivery and 15 primi, 11 multi undergone cesarean section. The obtained χ^2 and P values are 31.273 and $P < 0.001$. Findings revealed that most of the experimental group mothers undergone normal delivery compare to control group.

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 quality of life, comfort, labor pain perception and mode of delivery. Thus the study proved that antenatal exercises and yoga were very effective interventions to promote comfort, to lessen labor pain and to promote normal vaginal deliveries among antenatal mothers.

Results of the study revealed that for all parameters the obtained P value was $P=<0.001$. It shows that antenatal exercises with yoga was very effective intervention to promote comfort and normal vaginal delivery and this intervention lessens the labor pain perception among women during labor.

Conclusions:-

The study findings concluded each group was significantly different from the respective pre-test and post-test of control and experimental groups and compared to control group experimental group mothers gained more knowledge on quality life. Antenatal exercises with yoga was very effective intervention to promote comfort and normal vaginal delivery and this intervention lessens the labor pain perception among women during labor. So antenatal exercises and yoga can be demonstrated safely among antenatal women.

Recommendations

1. A similar study can be carried out in other areas than Tirupati.
2. A similar study can be carried out with different parameters like different yogasanas and other exercises.
3. A similar study can be carried out with large sample size.

Acknowledgement:-

Author express sincere thanks to all the experts for their valuable suggestions. Dr.K.Jayasree Prof &HOD of OBG dep., Dr. R .Vijayaraghavan ,Director research and Dr .S. Senthil kumar Saveetha Medical college and Hospital, Saveetha university, Chennai.

Table 1:-Comparison of effect of antenatal exercises and yoga, on quality of life – alpha scale (QOLK1), knowledge of antenatal exercises (QOL- K2), and knowledge of yoga (QOL- K3), of control (C) and experimental (E) groups of primigravid (Pri) and multigravid (Multi) Women in pre and post test

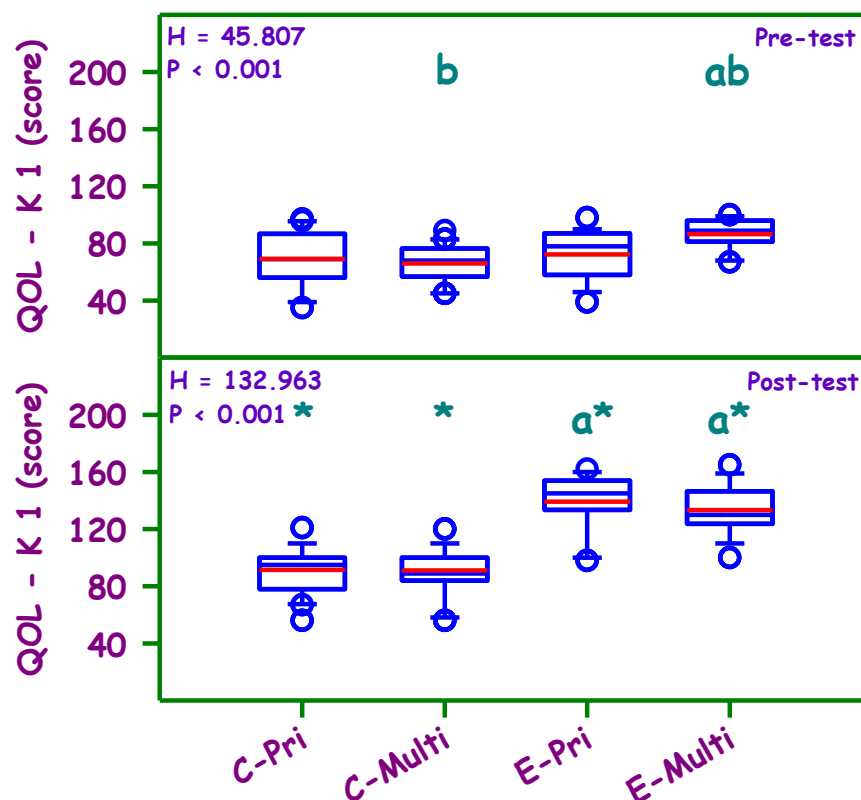
n=50

S.no	Parameter	Group	Test	Median	Percentile 25%-75%	Wilcoxon signed rank test.
1.	Quality of life – Alpha scale (QOL-K1)	Control-Primi	Pre	69.0	56.0-86.7	Z=5.95
			Post	95.0	78.0-100.0	P<0.001
		Control-Multi	Pre	68.0	56.7-76.5	Z=6.16
			Post	89.0	84.0-100.0	P<0.001
		Experimental-Primi	Pre	78.0	58.0-87.0	Z=6.15
			Post	145.0	133.7-154.0	P<0.001
		Experimental-Multi	Pre	89.0	81.2-96.0	Z=6.15
			Post	130.0	123.7-146.5	P<0.001
2.	Knowledge related to antenatal exercises(QOL-K2)	Control-Primi	Pre	4.0	3.0-4.2	Z=4.781
			Post	5.0	5.0-6.0	P<0.001
		Control-Multi	Pre	4.0	3.0-4.0	Z=5.541
			Post	6.0	5.0-6.0	P<0.001
		Experimental-Primi	Pre	4.5	4.0-5.0	Z=5.939
			Post	8.0	8.0-9.0	P<0.001
		Experimental-Multi	Pre	5.0	4.0-6.0	Z=6.014
			Post	8.0	7.0-8.2	P<0.001
3.	Knowledge related to yoga therapy (QOL-K3)	Control-Primi	Pre	1.0	0.0-1.0	Z=0.968
			Post	1.0	0.0-1.0	P<0.339
		Control-Multi	Pre	1.0	0.0-1.0	Z=2.711
			Post	1.0	0.0-1.0	P<0.007
		Experimental-Primi	Pre	1.0	1.0-2.0	Z=6.250
			Post	4.0	4.0-5.0	P<0.001
		Experimental-Multi	Pre	2.0	1.0-2.0	Z=6.328
			Post	4.0	3.0-4.0	P<0.001
(statistically significant at the level of P<0.001).						

Table 2:-Comparison of effectiveness of antenatal exercises with yoga on comfort, labor pain perception and type of delivery between control and experimental group of primi and multi gravid women
n=50

S.no	Parameter	category	Group				Chi-square test
			Control		Experimental		$\chi^2 = 43.048$
			Primi	Multi	Primi	Multi	
1.	Comfort	Comfortable	10	15	32	38	P < 0.001.
		Not comfortable	40	35	18	12	
2.	Labor pain perception	Mild	10	18	35	42	$\chi^2 = 52.672$ P < 0.001
		Moderate	40	32	15	8	
3.	Type of delivery	Normal	15	21	35	39	$\chi^2 = 31.273$ P < 0.001
		Cesarean	35	29	15	11	

Figure 1:-Effect of antenatal exercises with yoga, on quality of life – alpha scale (QOL-K1) of control (C) and experimental (E) groups of primigravid (Pri) and multigravid (Multi) women.



The middle blue line is the median and the red line is the mean (n = 50 each)

The 'H' and 'P' values are by one way ANOVA on ranks with Student Newman Keul's multiple comparison test.

^aSignificantly different from the primigravid of control and experimental groups; or multigravid of control and experimental groups

^bSignificantly different from the primigravid and multigravid of control; or primigravid and multigravid of experimental groups.

The respective pre-test and post-test are compared by Wilcoxon signed rank test.

The 'Z' and 'P' values for C-Pre-Pri and C-Post-Pri are 5.957 and 0.001 respectively.

The 'Z' and 'P' values for C-Pre-Multi and C-Post-Multi are 6.169 and 0.001 respectively.

The 'Z' and 'P' values for E-Pre-Pri and E-Post-Pri are 6.157 and 0.001 respectively.

The 'Z' and 'P' values for E-Pre-Multi and E-Post-Multi are 6.158 and 0.001 respectively.

*Significantly different from the respective pre-test and post-test of control and experimental groups.

Figure 2:-Effect of antenatal exercises with yoga, on quality of life –antenatal exercises (QOL-K2) of control (C) and experimental (E) groups of primigravid (Pri) and multigravid (Multi) women.

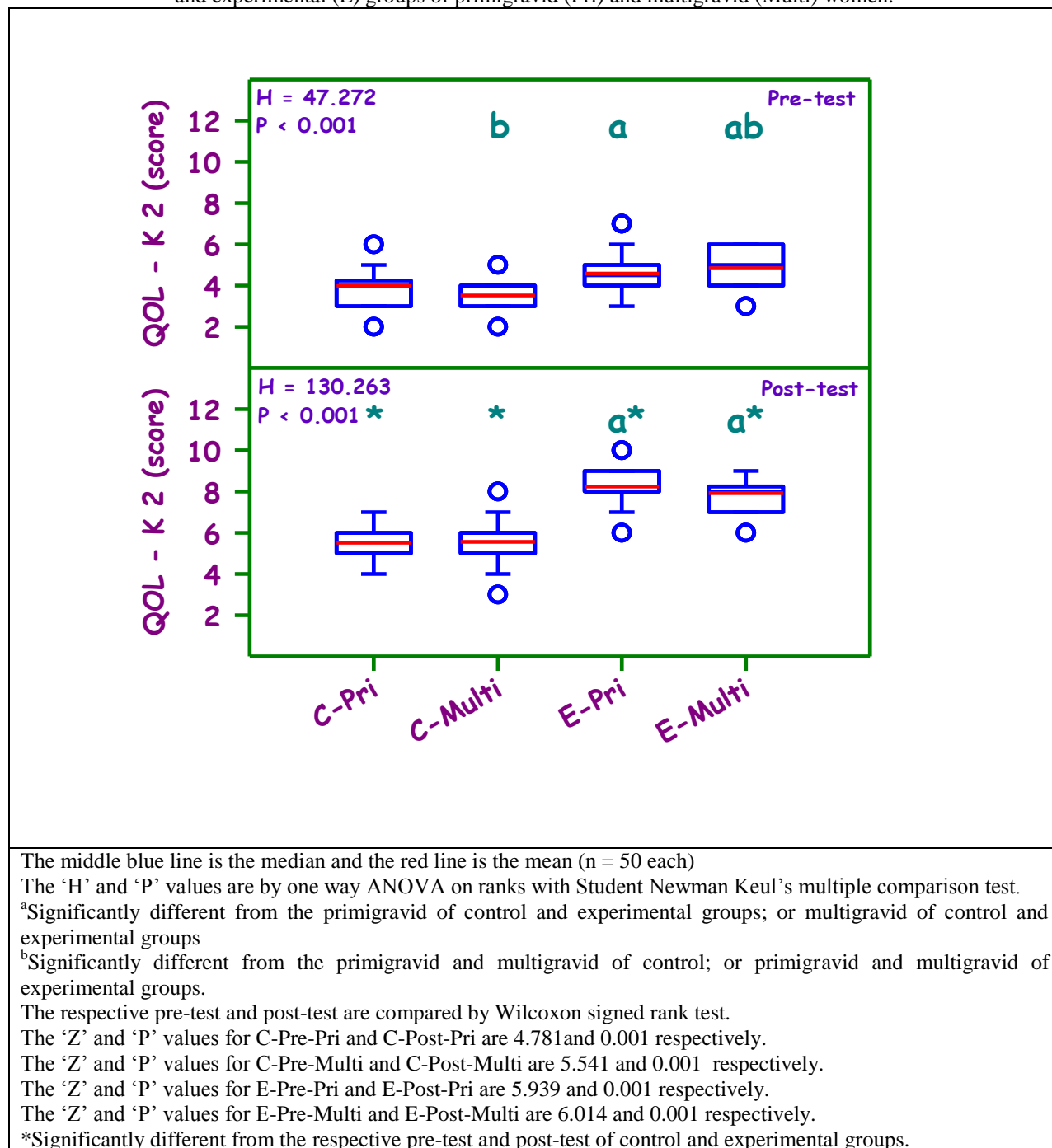


Figure 3:-Effect of antenatal exercises with yoga, on quality of life – yoga knowledge (QOL-3) of control (C) and experimental (E) groups of primigravid (Pri) and multigravid (Multi) women.

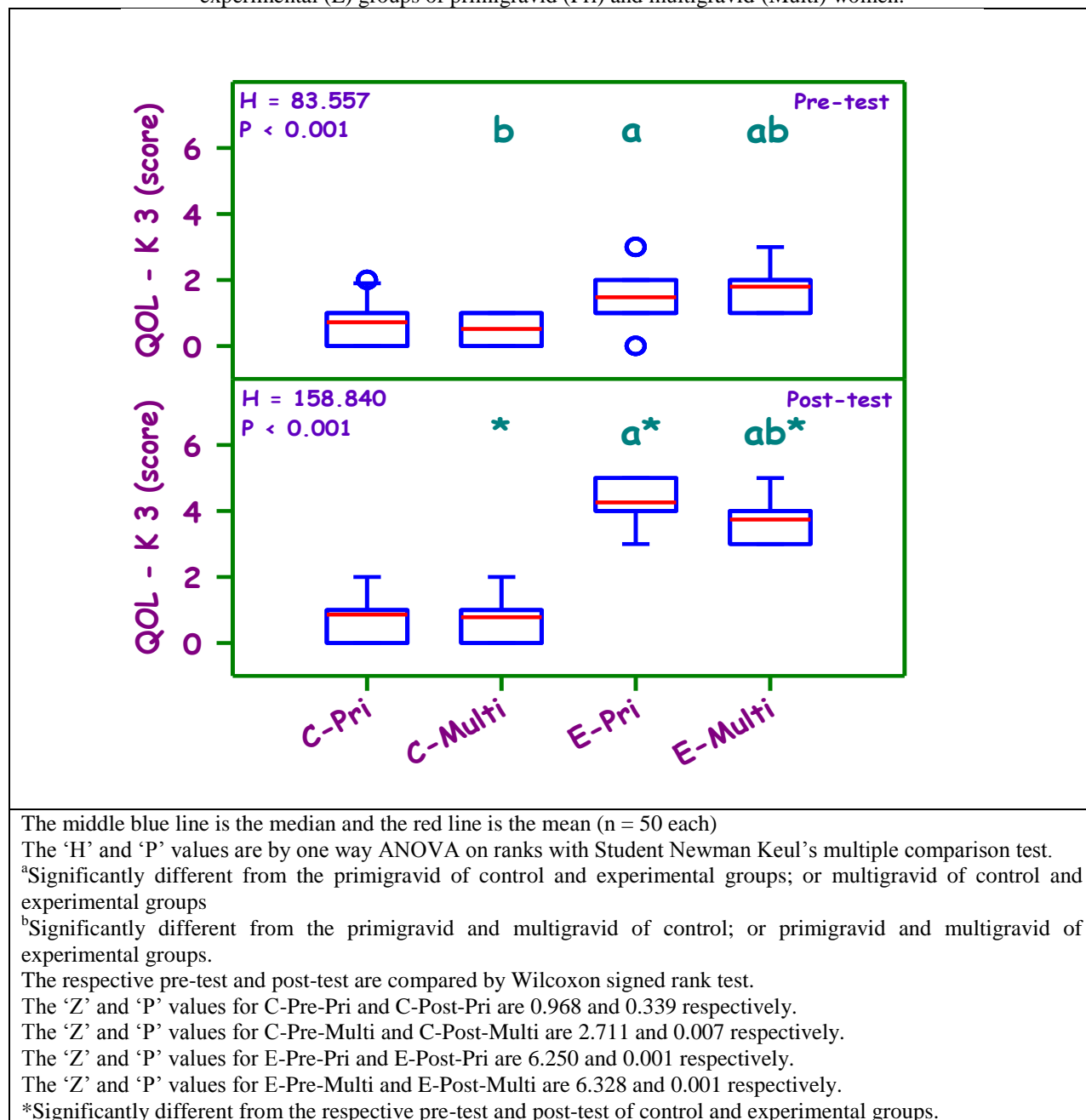
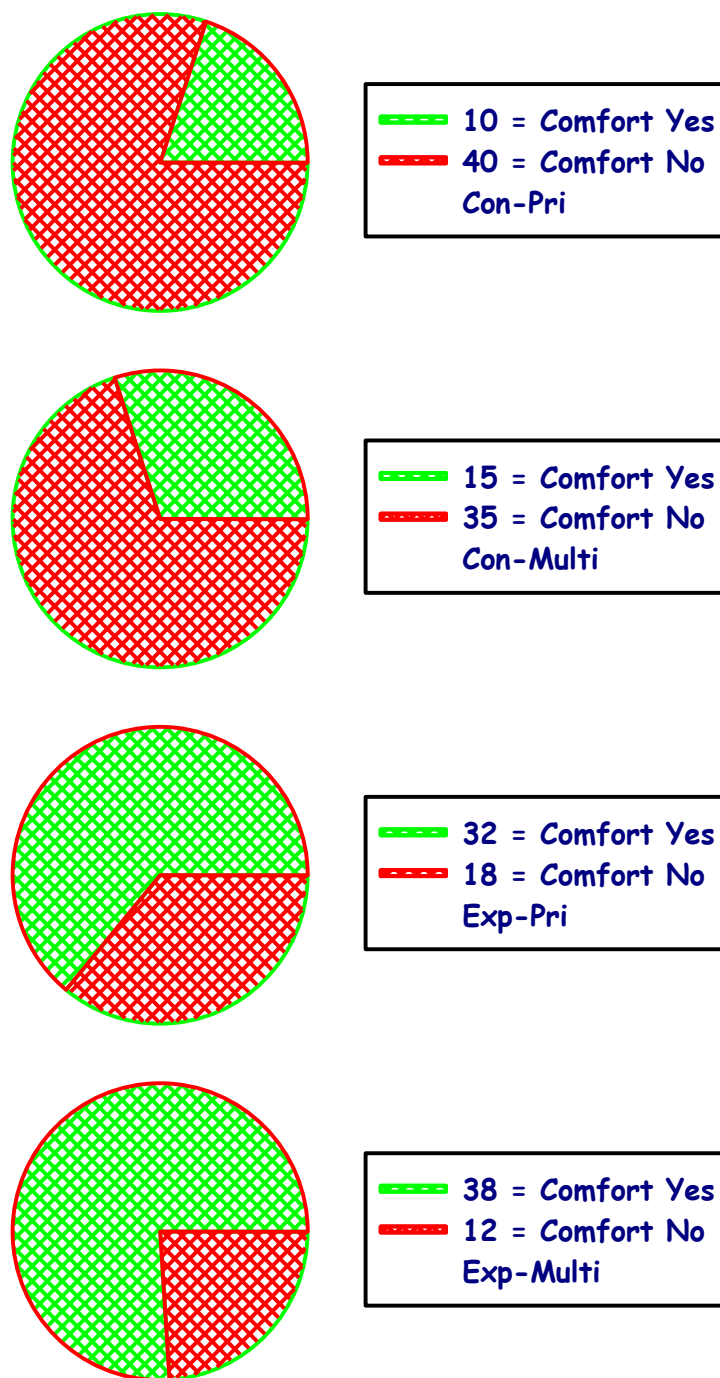
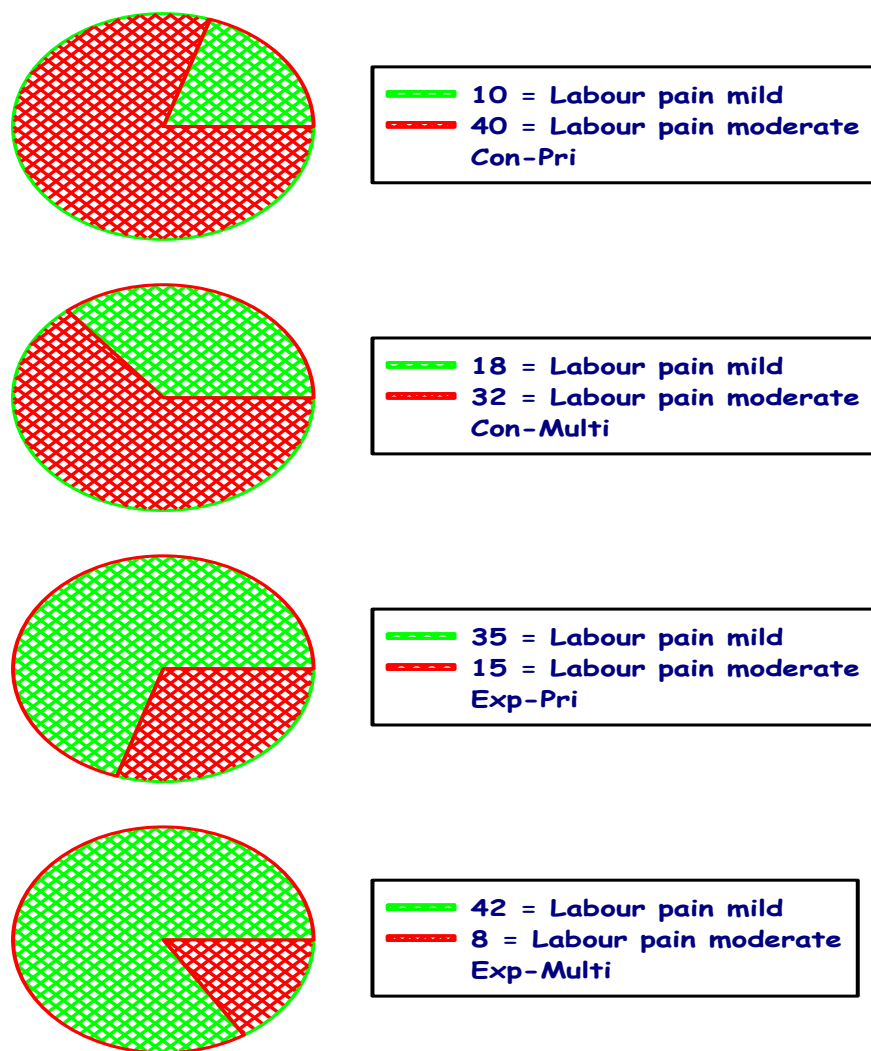


Figure 4:-Effect of antenatal exercises with yoga, on comfort during delivery of control (Con) and experimental (Exp) groups of primigravid (Pri) and multigravid (Multi) women



Findings revealed that experimental group mothers were more comfortable compare to control group. (n = 50 each). $\chi^2 = 43.048$ $P < 0.001$.

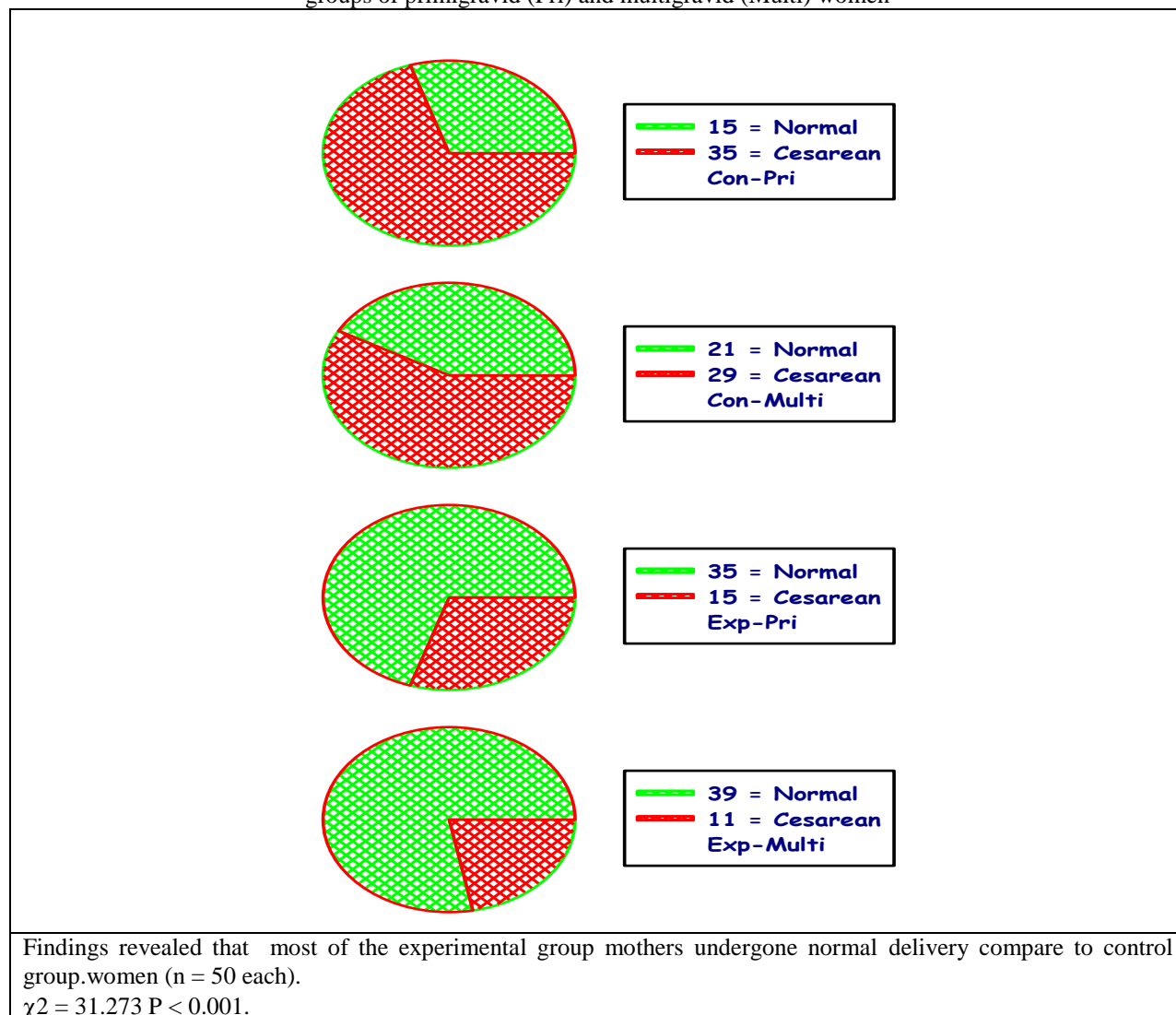
Figure 5:-Effect of antenatal exercises with yoga, on labor pain perception during delivery of control (Con) and experimental (Exp) groups of primigravid (Pri) and multigravid (Multi) women



Findings revealed that most of the experimental group mothers experienced only with mild labor pain compare to control group. (n = 50 each).

$\chi^2 = 52.672$ $P < 0.001$.

Figure 6:-Effect of antenatal exercises with yoga, on type of delivery of control (Con) and experimental (Exp) groups of primigravid (Pri) and multigravid (Multi) women



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