

Comparison of Normal Vaginal Delivery with or without Antenatal Exercise in Primigravida Presenting in A Tertiary Care Hospital

FAISAL ASHRAF¹, REHANA KANWAL², IRAM INAM³, MEMUNA KANWAL⁴, MIZRAH MAHREEN⁵, TANZEELA REHMAN⁶

¹MBBS, FCPS, Senior Registrar, Department of Gynecology and Obstetrics, Jinnah Hospital Lahore

²MBBS, FCPS, Dip in Laproscopic surgery (Belgium), Associate Professor, Department of Gynaecology and obstetrics, CMH Lahore

³MBBS, FCPS, Associate Professor, Department of Gynecology and Obstetrics, Continental Medical College, Lahore

⁴MBBS, WMO (Demonstrator), Department of Pharmacology, Sahiwal Medical College, Sahiwal

⁵MBBS, FCPS, WMO, Department of Gynecology and Obstetrics, Jinnah Hospital Lahore

⁶MBBS, FCPS, Senior Registrar, Department of Gynecology and Obstetrics, Jinnah Hospital Lahore

Correspondence to: Faisal Ashraf, Email: drfaisalashrafgrh@yahoo.com, Cell: 03328114019

ABSTRACT

Objective: To compare the frequency of normal vaginal delivery in primigravida females with or without antenatal exercise

Study design: Randomized Controlled Trial

Study Duration: 6 months i.e. 4-5-2021 to 4-11-2021

Setting: Department of Obstetrics & Gynecology, Jinnah hospital, Lahore.

Material and methods:

100 females fulfilled the criteria were enrolled. Then females were randomly divided in two groups. In group A, females were advised to do exercise daily. In group B, females were not advised to do any exercise. Then females were followed-up till delivery. Mode of delivery was noted. All this information was collected on proforma. Data was analyzed in SPSS. The study groups were compared by applying chi-square test. P-value ≤ 0.05 was considered as significant.

Results: In exercise group, the mean age of patients was 26.00 ± 4.76 years. In no exercise group, the mean age of patients was 26.32 ± 4.97 years. In exercise group, normal vaginal delivery occurred in 42 (84%) patients. In no exercise group, normal vaginal delivery occurred in 29 (58%) patients. The difference was significant ($p < 0.05$).

Conclusion: Thus with exercise, then chances of normal vaginal delivery increase significantly in primigravida.

Keywords: Normal vaginal delivery, antenatal exercise, primigravida

INTRODUCTION

Over the past few decades, the relationship between exercise and pregnancy has attracted interest among researchers. As a result, efforts have been made to standardise advice on prenatal physical exercise.¹ Pregnant women are advised to continue exercising according to national norms. Pregnant women are generally unaware of the link between prenatal physical activity and pregnancy outcomes.² Exercise is a necessity of daily life. Exercise raises hormones that elevate mood and lessens the "baby blues." Prenatal exercises showed a substantial difference in the length of labour, the kind of delivery, the mother's behaviour, and her level of discomfort, as well as the existence of hypoxia and birth traumas in the baby. This is because exercising throughout pregnancy is important.³ Exercise can aid in preventing gestational diabetes, preeclampsia, and excessive weight gain during pregnancy.⁴ Overall, either no change or maternal exercise are linked to shorter labours and deliveries. Women who exercised had less trouble giving birth and labouring.⁵ One study reported that with antenatal exercise, normal vaginal delivery occurred in 75% cases as compared to control group (38%). The difference was highly significant ($P=0.000$).⁶

The goal of this study was to examine the likelihood of a normal vaginal delivery in primigravida women who presented to a tertiary care hospital with or without antenatal exercise. Pregnant women in low-resource countries like Pakistan do not care about exercising throughout pregnancy, which ultimately leads to an increase in caesarean sections. According to the literature, adding workouts to a pregnant woman's routine can help with a normal vaginal delivery and minimise the need for a caesarean surgery. However, little progress was made in this area. Furthermore, no local information from the literature that would have benefited in the application of the exercise during the first pregnancy was available. In order to show that prenatal exercise reduces the need for unnecessary caesarean sections while increasing the likelihood of a normal vaginal delivery, we undertook this study. so that future planning can include better management plans for better obstetrical outcomes.

MATERIALS AND METHODS

This randomized controlled trial was conducted at Department of Obstetrics & Gynecology, Jinnah Hospital Lahore from 4-5-2021 to

4-11-2021. Total 100 married females having age 18-35 years, primigravida presenting at gestational age >12 weeks and <20 weeks assessed on LMP were selected by using non-probability (consecutive) sampling technique. Females with asthma, Diabetes, Hypertension, abortion, cephalopelvic disproportion and Twin pregnancy and malpresentation were excluded from the study. Informed consent was obtained. Demographic information was also obtained. Then females were randomly divided in two groups by using lottery method. In group A, females were advised to do exercise of at least 30 minutes daily including walking, stretching, kegel exercise and tailor exercises for 30 minutes/day till delivery. In group B, females were not advised to do any exercise. Then females were followed-up in OPD till delivery. All females were evaluated continuously for normal vaginal delivery if female delivered baby through vagina without assistance of instrument and within 12 hours of initiation of active labor pain (>3 contractions in 10 minutes, bishop >4 , cervical dilatation >4 cm) after 34 weeks of gestational age. If there were reduced labor pain, abnormal cardiotocography or meconium staining, occurred, then cesarean section was done. All this information was collected on a proforma.

Data was analyzed by SPSS version 20. The study groups were compared by applying chi-square test for normal vaginal delivery. P-values ≤ 0.05 was considered as significant.

RESULTS

In exercise group, mean age was 26.00 ± 4.76 years. In no exercise group, the mean age of patients was 26.32 ± 4.97 years. In exercise group, the mean gestational age at presentation was 16.18 ± 2.00 weeks. In no exercise group, the mean gestational age at presentation was 16.46 ± 2.04 weeks. In exercise group, the mean gestational age at delivery was 38.08 ± 1.46 weeks. In no exercise group, the mean gestational age at delivery was 37.78 ± 1.40 weeks. In exercise group, the mean BMI was 23.92 ± 3.93 kg/m². In no exercise group, the mean BMI was 23.71 ± 3.21 kg/m². Table 1

In exercise group, normal vaginal delivery occurred in 42 (84%) patients. In no exercise group, normal vaginal delivery occurred in 29 (58%) patients. The difference was significant ($p < 0.05$). Table 2

Data was stratified for age of patients. In patients aged 18-25 years, normal vaginal delivery occurred in 19 (82.6%) in exercise group and in 19 (79.2%) in no exercise group (p>0.05). In patients aged 26-30 years, normal vaginal delivery occurred in 16 (84.2%) in exercise group and in 4 (30.8%) in no exercise group (p<0.05). In patients aged 30-35years, normal vaginal delivery occurred in 7 (87.5%) in exercise group and in 6 (46.2%) in no exercise group (p>0.05). Data was stratified for gestational age at presentation. In patients presented at 13-16weeks, normal vaginal delivery occurred in 22 (88%) in exercise group and in 14 (58.3%) in no exercise group (p<0.05). In patients presented at 17-19 weeks, normal vaginal delivery occurred in 20 (80%) in exercise group and in 15 (57.7%) in no exercise group. The difference was insignificant (p>0.05). Data was stratified for BMI of patients. In normal BMI patients, normal vaginal delivery occurred in 28 (87.5%) in exercise group and in 21 (61.8%) in no exercise group (p<0.05). In overweight & obese patients, normal vaginal delivery occurred in 14 (77.8%) in exercise group and in 8 (50%) in no exercise group (p>0.05). Table 3

Table 1: Baseline characteristics of females

	Group	
	Exercise	No exercise
n	50	50
Age (years)	26.00 ± 4.76	26.32 ± 4.97
Gestational Age at recruitment	16.18 ± 2.00	16.46 ± 2.04
Gestational Age at delivery	38.08 ± 1.46	37.78 ± 1.40
BMI (kg/m ²)	23.92 ± 3.93	23.71 ± 3.21

Table 2: Comparison of normal vaginal delivery in both groups

		Group		Total
		Exercise	No exercise	
Normal vaginal delivery	Yes	42 84.0%	29 58.0%	71 71.0%
	No	8 16.0%	21 42.0%	29 29.0%
Total		50 100%	50 100%	100 100%

p-value = 0.004 (Significant)

Table 3: Comparison of normal vaginal delivery in both groups stratified for effect modifiers

		Group		Total	P-value
		Exercise	No exercise		
Age (years)	18-25	19 82.6%	19 79.2%	38 80.9%	0.764
	26-30	16 84.2%	4 30.8%	20 62.5%	
	31-35	7 87.5%	6 46.2%	13 61.9%	
Gestational Age	13-16	22 88.0%	14 58.3%	36 73.5%	0.019
	17-19	20 80.0%	15 57.7%	35 68.6%	
BMI	Normal	28 87.5%	21 61.8%	49 74.2%	0.017
	Overweight & obese	14 77.8%	8 50.0%	22 64.7%	0.091

DISCUSSION

Pregnancy is a unique experience for the expecting mother. The woman suddenly recognises how powerful it is to be a woman who can create a human from her own body. Because this is such a special period, the mother should take extra care of her body, as her every activity will have an impact on her baby.³ Prenatal care is a type of preventive medicine that aims to provide regular checkups so that doctors can treat and prevent potential health issues throughout the course of the pregnancy while also encouraging healthy lifestyles that are advantageous to unborn child and mother.⁷⁻¹⁰

Exercise regimes should be tailored to the needs of women with obstetric or medical comorbidities. Before making suggestions about physical activity during pregnancy, obstetric care professionals should thoroughly evaluate patients with medical or obstetric difficulties.¹¹⁻¹⁶ Regular aerobic exercise has been shown to enhance or maintain physical fitness throughout pregnancy. There is some indication that it improves pregnancy outcomes, despite the scarcity of the evidence, and when it is not contraindicated, there is no evidence that it causes harm. Although evidence from randomised controlled trials is scarce, observational studies of women who exercise throughout pregnancy have revealed benefits such as reduced gestational diabetes mellitus, caesarean and surgical vaginal birth, and postpartum recovery time. In normal weight, overweight, and obese women, exercise has only showed a little reduction in overall weight increase (1–2 kg).¹⁷⁻²¹

In our study, normal vaginal delivery occurred in 42 (84%) patients with antenatal exercise while in 29 (58%) patients without antenatal exercise. The difference was significant (p<0.05). One study reported that with antenatal exercise, normal vaginal delivery occurred in 75% cases as compared to control group (38%). The difference was highly significant (P=0.000).⁶

Exercising while pregnant does not cause labour or premature labour, contrary to popular perception. Exercising has been linked to delivering closer to the deadline. Additionally, maternal activity is linked to either no change or a shortened labour and delivery time. Women who exercised throughout labour and delivery experienced fewer complications than those who did not. More importantly, no signs of foetal distress were detected during the labour and delivery procedure. Measures of foetal distress, such as increased Apgar scores, indicated no difference or benefits in response to exercise exposure. In comparison to non-exercising moms and their children, exercised mothers and their children spent less time in the hospital. Overall, the findings of possible shorter labour, less preterm labour, fewer problems, and a shorter stay in the hospital all add up to lower health-care expenses. In this area, more research is required.⁵

When compared to a sedentary lifestyle, Abd El Hamid et al. discovered that moderate exercise on a regular basis throughout pregnancy is likely to result in a better pregnancy and easier childbirth. The goal of a study was to see how antenatal exercises affected maternal and neonatal outcomes. The participants were segregated it into two groups: those who received routine prenatal care and followed the recommended antenatal exercise protocol, and those who received routine antenatal care. The frequency and length of uterine contractions were higher in the study group than in the control group, and cervical dilation occurred faster in the study group than in the control group, according to the findings. Also, the total labor duration mean in the study group was shorter than control group. These differences were highly statistically significant. Moreover, the incidence of complications which occurred either during first or second stage of labor were lower in the study group than control group. In conclusion, antenatal exercises have positive effects either to the mother or to her fetus/ neonate.²²

Clapp et al., suggested that exercise in pregnancy may lead to reduce duration of labor and delivery.²³ Pomerance et al., found shorter duration of labor in multiparas, but not nulliparas.²⁴ Results of this study matches with results of our study and suggested exercise during pregnancy can reduce the duration of labour and reduce post-delivery complications.

Szymanski et al. measured umbilical artery blood flow, foetal heart rates, and biophysical profiles in a cohort study. They found that women and fetuses in both active and inactive pregnant women withstood 30 minutes of vigorous exercise well. As a result, exercising during pregnancy has been shown to be advantageous.²⁵ Clapp and Sternfeld et al., on the other hand, found a negligible tendency for earlier commencement of labour and delivery at term, shorter labour, and lower incidence of problems during delivery in their investigations. There was also no

increase in foetal cord entanglement. In these trials, babies born to women who exercised had better Apgar ratings, and their moms recovered faster after giving birth.^{26, 27}

In our study, the mean gestational age at presentation in exercise group was 16.18±2.00weeks. In no exercise group, the mean gestational age at presentation was 16.46±2.04weeks. Data was stratified for gestational age at presentation. In patients presented at 13-16weeks, normal vaginal delivery occurred in 22 (88%) in exercise group and in 14 (58.3%) in no exercise group (p<0.05). In patients presented at 17-19weeks, normal vaginal delivery occurred in 20 (80%) in exercise group and in 15 (57.7%) in no exercise group (p>0.05). Thus females who present in early pregnancy for antenatal check-up and started exercised had more chances of vaginal delivery.

In our study, the mean BMI in exercise group was 23.92±3.93kg/m². In no exercise group, the mean BMI was 23.71±3.21kg/m². Data was stratified for BMI of patients. In normal BMI patients, normal vaginal delivery occurred in 28 (87.5%) in exercise group and in 21 (61.8%) in no exercise group (p<0.05). In overweight & obese patients, normal vaginal delivery occurred in 14 (77.8%) in exercise group and in 8 (50%) in no exercise group (p>0.05). Females with normal BMI had better outcome and more chances of vaginal delivery, especially after exercise than non-exercise group.

CONCLUSION

Thus with exercise, then chances of normal vaginal delivery increase significantly in primigravida. Now we have got the local evidence which favors antenatal exercise and we will recommend the antenatal exercise to improve outcome of delivery. Now the efficacy of antenatal exercise during pregnancy has proved to reduce the number of unnecessary cesarean sections and promote the normal vaginal delivery.

REFERENCES

- Smith KM, Campbell CG. Physical activity during pregnancy: impact of applying different physical activity guidelines. *Journal of pregnancy*. 2013;2013.
- Jayakody O, Senanayake H. Effect of physical activity during pregnancy on birth outcomes in mothers presenting at the antenatal clinic of De Soysa Maternity Hospital, Colombo 08. *Asia Pac J Multidisc Res*. 2015;3(2).
- Jayasudha A. Effect of antenatal exercises on labour outcome among primigravid mothers. *Nurs J India*. 2013;104(1):10.
- Tobias DK, Zhang C, Van Dam RM, Bowers K, Hu FB. Physical activity before and during pregnancy and risk of gestational diabetes mellitus A meta-analysis. *Diabetes care*. 2011;34(1):223-9.
- May LE. Effects of Maternal Exercise on Labor and Delivery. In: May LE, editor. *Physiology of Prenatal Exercise and Fetal Development*. Philadelphia, Pa: Springer; 2012. p. 11-4.
- Khatri A, Sirohi S, Dixit S, Rai S, Pandey D. Effect of Antenatal Exercise on Outcome of Labor. *National Journal of Community Medicine*. 2014;5(3):342-5.
- Wikipedia. Prenatal care 2016 [cited 2016]. Available from: https://en.wikipedia.org/wiki/Prenatal_care.
- Sun H, De Florio V, Gui N, Blondia C, editors. Promises and challenges of ambient assisted living systems. *Information Technology: New Generations*, 2009 ITNG'09 Sixth International Conference on; 2009: leee.
- Health WHOR. Medical eligibility criteria for contraceptive use: World Health Organization; 2010.
- Garber CE, Blissmer B, Deschenes MR, Franklin BA, Lamonte MJ, Lee I-M, et al. American College of Sports Medicine position stand. Quantity and quality of exercise for developing and maintaining cardiorespiratory, musculoskeletal, and neuromotor fitness in apparently healthy adults: guidance for prescribing exercise. *Medicine and science in sports and exercise*. 2011;43(7):1334-59.
- Practice ACoO. Obesity in pregnancy. ACOG committee opinion. No. 549. *Obstet Gynecol*. 2013;121:213-7.
- Artal R. The role of exercise in reducing the risks of gestational diabetes mellitus in obese women. *Best practice & research Clinical obstetrics & gynaecology*. 2015;29(1):123-32.
- Dye TD, Knox KL, Artal R, Aubry RH, Wojtowycz MA. Physical activity, obesity, and diabetes in pregnancy. *American Journal of Epidemiology*. 1997;146(11):961-5.
- de Oliveria Melo AS, Silva JLP, Tavares JS, Barros VO, Leite DF, Amorim MM. Effect of a physical exercise program during pregnancy on uteroplacental and fetal blood flow and fetal growth: a randomized controlled trial. *Obstetrics & Gynecology*. 2012;120(2, Part 1):302-10.
- Barakat R, Pelaez M, Montejó R, Refoyo I, Coterón J. Exercise throughout pregnancy does not cause preterm delivery: a randomized, controlled trial. *Journal of physical activity and health*. 2014;11(5):1012-7.
- Thangaratinam S, Rogozińska E, Jolly K, Glinkowski S, Duda W, Borowiack E, et al. Interventions to reduce or prevent obesity in pregnant women: a systematic review. 2012.
- Kihlstrand M, Stenman B, Nilsson S, Axelsson O. Water-gymnastics reduced the intensity of back/low back pain in pregnant women. *Acta Obstetrica et Gynecologica Scandinavica*. 1999;78(3):180-5.
- Jovanovic-Peterson L, Durak EP, Peterson CM. Randomized trial of diet versus diet plus cardiovascular conditioning on glucose levels in gestational diabetes. *American journal of obstetrics and gynecology*. 1989;161(2):415-9.
- García-Patterson A, Martín E, Ubeda J, María MA, de Leiva A, Corcoy R. Evaluation of light exercise in the treatment of gestational diabetes. *Diabetes Care*. 2001;24(11):2006-7.
- Choi J, Fukuoka Y, Lee JH. The effects of physical activity and physical activity plus diet interventions on body weight in overweight or obese women who are pregnant or in postpartum: a systematic review and meta-analysis of randomized controlled trials. *Preventive medicine*. 2013;56(6):351-64.
- Muktabhant B, Lawrie TA, Lumbiganon P, Laopaiboon M. Diet or exercise, or both, for preventing excessive weight gain in pregnancy. *The Cochrane Library*. 2015.
- Hamid AAAE, Badry SME, Mohamed KR, Rabbo RAA. Effect of antenatal exercises on pregnancy outcome among women attending Elmanial University Hospital. Giza, Egypt: Cairo University; 2005.
- Clapp JF. Exercise during pregnancy: a clinical update. *Clinics in sports medicine*. 2000;19(2):273-86.
- Pomerance JJ, Gluck L, Lynch VA. Physical fitness in pregnancy: its effect on pregnancy outcome. *American journal of obstetrics and gynecology*. 1974;119(7):867-76.
- Szymanski LM, Satin AJ. Exercise during pregnancy: fetal responses to current public health guidelines. *Obstetrics and gynecology*. 2012;119(3):603.
- Clapp III JF, Cram C. *Exercising through your pregnancy*: Addicus Books; 1998.
- Sternfeld B, Quesenberry Jr CP, Eskenazi B, Newman LA. Exercise during pregnancy and pregnancy outcome. *Medicine and science in sports and exercise*. 1995;27(5):634-40.