Original Article

Comparison of the Frequency of Short Labour Duration With or Without Exercise

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ABSTRACT

Objective: To compare the frequency of short labour duration with or without exercise started from second trimester of pregnancy till delivery.

Study Design: Randomized control trial study

Place and Duration of Study: This study was conducted at the Department of Obstetrics &Gynecology, Services Hospital Lahore from 24-01-2021 to 24-12-2021.

Materials and Methods: 400 patients were included in the study. Patients were divided into two groups. One group is with exercise and other is without exercise. Then females were followed up. 12 patients were lost to follow up, leaving 388 patients in the study. Outcome was noted. The collected data was entered and analysed on SPSS version 21.

Results: The mean age of exercise group patients was 30.79 ± 6.32years and in no exercise group was 30.26 ± 6.27years. 113 patients had less than primary education and 125 patients belonged to low socioeconomic group. The efficacy for short labour duration was achieved in 231(59.5%) patients, out of which 139 were from exercise group and 92 were from no exercise group i.e. p-value=0.001.

Conclusion: Exercise started during second trimester of pregnancy and continued till delivery can help in shortening the duration of labour.

Key Words: Duration of labor, Exercise, Women, Pregnancy, Second trimester

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INTRODUCTION

Pregnancy has traditionally been associated with discomfort. Pregnant women remain constantly apprehensive about birth and the attendant discomforts. This apprehension leads to reduced physical activity in antenatal period.[1] Evidence suggests that women should remain physically active throughout pregnancy.[2] Physical activity during pregnancy elevates mood-enhancing hormones in the brain and reduces pregnancy related blues.[3] Prenatal physical exercise has been increasingly suggested across the world in recent years as a vital requirement for healthy pregnancy and uneventful delivery.[4]

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Antenatal exercise leads to maintained maternal health status, less backache and less maternal weight gain during antenatal period. It also impacts labor duration, type of delivery, and severity of pain during labour, leading to a change in attitude of pregnant women towards labour and new born outcome.[5] Women who exercise throughout labour and delivery experience fewer problems than those who do not.[6]

Skeletal muscles movement during exercise improves cardiorespiratory fitness. It helps to maintain body weight, reduces maternal obesity, improves general health status and results in overall maternal wellbeing. Mothers should be motivated to continue physical activity in pregnancy. Controversy regarding association of maternal exercise with miscarriage, restricted fetal growth or preterm labour continues to prevail among some obstetric care providers.[7-9] Proponents of this belief refer to studies where the fetal heart rate rises by 10–30 beats per minute after maternal physical activiy.[10]

The pelvic floor muscles along with abdominal muscles are involved in the labour process .The pelvic floor muscles hang like a sling and support bladder, uterus, and other pelvic organs.These are strengthened by Kegel's exercises. Abdominal muscles along with leg muscles on the other hand are strengthened by stretching activities. It assists to prevent cramping and sprains.

Rationale of this study is to compare the frequency of labour duration in mothers who exercised during second trimester and continued it till delivery with those who did not exercise in the same time period. In our society, routine, exercise is not encouraged during pregnancy. Moreover, no local evidence is available in favour of exercise during pregnancy. However Literature shows that exercise during pregnancy can help in reducing the duration of labour. But not much work has been done in this regard. This study will help to improve local practices and will help mothers to reduce the duration of labour and complications of prolonged labour.

MATERIALS AND METHODS

This Randomized Controlled Trial study was conducted at Department of Obstetrics and Gynecology, Services Hospital Lahore for one year from 24-01-2021 to 24-12-2021.

Sample Size: 400 patients were included in the study. Patients were divided into two groups. One group is with exercise and other is without exercise. Then females were followed up. 12 patients were lost to follow up, leaving 388 patients in the study.194 cases in both groups. This sample size is calculated with 80% power of test, 5% level of significance and taking expected percentage of short duration of labour i.e. 65% with exercise and 51% without exercise.

Sampling technique: Non-probability consecutive sampling.

Selection criteria: Pregnant females of 20-40years of age with parity of 1 with previous SVD (spontaneous vertex delivery) with or without episiotomy were included in the study. They presented for antenatal check-up with singleton pregnancy at gestational age of 24-32 weeks. While females with multiple pregnancy, history of uterine surgery, or medical disorders were excluded. Also females with intrauterine fetal death, with antepartum hemorrhage or with abnormal placental implantation (previa, accrete, increta) were also excluded from the study.

Data collection procedure: 400 patients who fulfilled the inclusion criteria were included in the study. These patients initially reported in OPD of Department of Obstetrics & Gynecology, Services hospital Lahore. Informed consent was taken. Demographic information (name, age, parity, gestational age, BMI) was recorded on predesigned performa. Women were randomised into two groups by lottery method. In group A, females were advised to exercise while in group B, females were not given specific advise to exercise. Group A women were advised strengthening and stretching exercises for 2 sessions per week till delivery. These involved abdominal, pelvic, and back muscles. Duration of exercise was increased from 30 minutes in the early sessions to 60 minutes in later sessions.12 patients were lost to follow up, leaving 388 patients in the study. 194 cases in both groups. Both groups were followed-up till delivery. If duration of labour was less than 12 hours, then efficacy was labeled. All this information was recorded through proforma (attached).

Data analysis: Data entry and analysis was performed by using IBM-SPSS 21.0. Mean and standard deviation was calculated for continuous (quantitative) variables. Both groups were compared for efficacy for short labour duration by using chi-square test with p-value≤0.05 taken as significant. Data is presented in tables.

RESULTS

Table No.1: Demographic Profile of Women

	Study Groups		
	Exercise	No exercise	
n	194	194	
Age (years)	30.79 ± 6.32	30.26 ± 6.27	
Gestational Age (weeks)	27.99 ± 2.43	27.47 ± 2.61	
BMI (Kg/m^2)	23.72 ± 3.37	24.33 ± 3.23	
Education of female			Total
Less than primary education	56	57	113
Below matric	63	67	130
Matric & above	75	70	145
Socioeconomic status			
Low	60	65	125
Middle	79	55	134
High	55	74	129

The mean age of patients in exercise group (Group A) was 22.79±6.32years and in group with no exercise (Group B) was 22.26±6.27years.The mean gestational age at delivery of the patients in exercise group was 37.99±2.43 weeks and in no exercise group was 37.47±2.61 weeks. The mean BMI of patients in exercise group was 23.72±3.37kg/m^2while in no exercise group was 24.33±3.23kg/m^2. Statistically insignificant difference was found between groups for gestational age at delivery and BMI of women i.e. p-value=0.077 and p-value=0.069. In this study 113 patients had less than primary education. Out of theses 113 patients, 56 performed exercise (Group A) and 57 did not do exercise (Group B).The patients with education below matric were 130. Out of theses 130

patients, 63 performed exercise (Group A) and 67 did not do exercise (Group B). Similarly, the patients with education of matric & above were 145. From these 145 patients 75 performed exercise (Group A) while 70 did not do exercise (Group B). In our study, 125 patients had low socioeconomic status , from which 60 were from exercise group and 65 were from no exercise group, 134 patients had middle socioeconomic status. From which 79 were from exercise group and 55 were from no exercise group and 129 patients had high socioeconomic status, from which 55 were from exercise group and 74 were from no exercise group. Table 1

The mean duration of labour for patients of exercise group was 9.97±3.68 hours and for patients of no exercise group was 13.25±4.52hours. Statistically significant difference was found between groups for duration of labour i.e. p-value=0.000. Table 2

Efficacy was reached in total of 231 cases. Out of these 231 cases, 139 were from exercise group and 92 were from no exercise group. Efficacy could not be reached in 157 cases from which 55 were from exercise group and 102 were from no exercise group. Statistically significant difference was found between the two groups in terms of efficacy (p-value=0.000). Table 3.

Table No.2: Comparison of duration of labour

		Study Groups	
		Exercise	No exercise
Duration of labour	n	194	194
	Mean	9.97	13.25
	SD	3.68	4.52

Ind. t test= 7.831, p-value=0.000*

Table No.3: Comparison of efficacy

		Study Groups		Total
		Exercise	No exercise	
Efficacy	Yes	139 (71.6%)	92 (47.4%)	231 (59.5%)
	No	55 (28.4%)	102 (52.6%)	157 (40.5%)
Total		194 (100%)	194 (100%)	388 (%)

Chi value=23.633, p-value=0.000*

DISCUSSION

It is commonly known that maternal activity during pregnancy provides several health benefits for mothers, ranging from enhanced fitness, reduction of unnecessary weight gain to reduced incidence of maternal medical disorders, and enhanced post-partum recovery. The American College of Obstetricians and Gynecologists recommends encouraging the low risk pregnant women to exercise for at least 30 minutes.[11]Our study shows that the efficacy for the shorter duration of labour was achieved in 231(59.5%) patients. 71.6% (139) of these patients who attained efficacy performed exercise during pregnancy while 47.4% (92) did not perform exercise during pregnancy. The result shows statistically significant difference in terms of efficacy attained for shorter duration of labour between the two groups, with the group performing exercise showing better results (p-value=0.001). Very less data is available on this topic and results of those available studies are comparable with our study. In our study, exercise group showed better outcome than no exercise group.

Szymanski et al.in a cohort study, studied the effects of vigorous activity on the umbilical artery blood flow, fetal heart rate, and biophysical profiles before and after exercise. They found that both women and fetuses withstood 30 minutes of vigorous exercise well, in both active and sedentary pregnant women. Thus showing the beneficial effects of exercise during pregnancy.[12] May et al., in a study found that exerciser moms and their babies spent less time in the hospital than non-exercisers [6].Overall, the shorter labor, less preterm labor, fewer problems, and a shorter stay in the hospital all add up to lower health-care expenses.This study's findings are consistent with our findings, indicating that exercise during pregnancy can help shorten labor duration, enhance vaginal birth, and less cesarean sections, all of which minimize hospital stay after birth.The link between exercise during pregnancy and pregnancy outcomes is poorly known.[2] However, a research found that short labour length (less than 12 hours) was effective in 65 percent of exercising pregnant women, whereas in the control group, the shorter duration of labor was only accomplished in 51 percent of instances.[13]

Similar results were reported by Clapp et al. According to this study exercise during pregnancy may result in reduced labor and delivery times for all women.[14] Parity affects the duration of labor. Multiparas had shorter labor than nulliparas, according to Pomerance et al.[15] To overcome this compounding factor only those women with parity of one were inducted in our study. Although data from randomized controlled trials is scarce, observational studies have suggested that women who exercise throughout pregnancy have reduced risks of gestational diabetes mellitus,[9,16-18] cesarean births and surgical vaginal procedures.[19-21] These women also have better postpartum recovery.[21]

Exercise during pregnancy also helps to maintain maternal weight. Meta-analysis of gestational weight gain interventions suggests that physical activity is a

successful strategy in restricting excessive maternal gestational weight gain.[22]

The other school of thought suggests insignificant tendency among exerciser mothers for earlier commencement of labour and delivery at term, shorter labour, and reduced incidence of problems during delivery (like cesarean delivery, using forceps or induction of labor, vaginal tears, and fatigue) as reported by Clapp and Sternfeld et al.[23,24] However in these trials, infants born to women who exercised had better Apgar ratings, and their moms recovered faster after giving birth. Clapp also discovered that women who stay active during their pregnancies are more likely to return to their pre-pregnancy physical state earlier after childbirth.[23]

Exercising during pregnancy does not cause premature labor, contrary to common perception. Rather women who exercised throughout labour and delivery experienced fewer problems than those who did not. More significantly, no signs of fetal distress were detected during the labour and delivery procedure. Measures of fetal distress, such as Apgar scores, indicated no difference or benefits in response to exercise exposure. In comparison to non-exercising moms and their children, exercising women along with 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 study is required.[25]

CONCLUSION

According to this study patients who exercised during second and third trimester of pregnancy and remained active till delivery showed significantly shorter duration of labour than to those without exercise. Efficacy for shorter duration of labour was achieved in 71.6% patients with exercise during pregnancy.

Author's Contribution:

Concept & Design of Study:	Ammara Gill
Drafting:	Bushra Haq, Saira Riaz
Data Analysis:	Wajid Ali, Tabeer Malik
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Conflict of Interest: The study has no conflict of interest to declare by any author.

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