

How to Cite:

Makwana Viral, B., & Ashokbhai, G. H. (2022). Impact of physical activity during pregnancy on mode and duration of delivery in Indian women. *International Journal of Health Sciences*, 6(S8), 5166–5172. <https://doi.org/10.53730/ijhs.v6nS8.13410>

Impact of physical activity during pregnancy on mode and duration of delivery in Indian women

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Abstract---Background : In India , traditionally at many classes it may be believed that physical activities should be avoided during pregnancy and the rest during pregnancy approach will give best outcome to avoid unnecessary interventions and will result in a healthy neonate. However in middle and lower middle class and in lower socioeconomical class women, rest during pregnancy is neither possible as well activity will bring fear regarding the outcome and possible need of cesarean section . Vaginal delivery is of great importance for further obstetric outcome as well it excludes intraoperative and postoperative complication of CS. Over the past many years there is significant rise in need of cesarean delivery in India which raise the requirement of a detail research for possibly editable factors which can be associated with need of cesarean delivery . Exercise may be such a factor that may be associated with type of delivery, so This study is to evaluate the real impact of physical activity during pregnancy regarding need of cesarean section and outcome as well need of other interventions during pregnancy. Objective: To identify and analyze the importance of physical activity in Indian pregnant women and its effect especially on mode of delivery and need of any instrumental delivery. Materials and Methods: Retrospective evaluation of pregnant women physical activity during pregnancy was done by proper detail history and record of mode of delivery and fetal weight as well need of intervention during pregnancy was done and correlated. This study was conducted in Dhiraj hospital, Pipariya from February 2022 to May 2022. Results: Among 200 Pregnant patients who had been delivered at Dheeraj Hospital , 176 women were doing good physically activities and were

doing activity similar to mild to moderate exercise during pregnancy period. Out of these 176 physically active women, only 6.81 % need to undergo cesarean and need of instrumental delivery was in only 0.28% . From the 24 mother who became inactive at 28-32 weeks and done very minimal or least physical activity, 28 % underwent cesarean section and need of instrumental delivery was in 2 %.

Conclusions: Nonstructured Physical exercise during pregnancy reduces the risk of cesarean delivery and reduce the need of any other intervention during pregnancy . However in this study there is no effect of physical activity on birth weight of the neonate .This findings help to convince women to be physically active during pregnancy and the obstetrician should recommend physical exercise to pregnant women for better outcome and to reduce need of cesarean delivery and instrumental delivery as well preterm delivery.

Keywords---physical activities pregnancy, cesarean, mode delivery, birth weight, instrumental delivery, exercise.

Introduction

There is a need of a reference for importance of physical activity during pregnancy to give proper advise and to explain benefits to the pregnant women . The purpose of this study was to evaluate effect of physical activities during pregnancy on the need of instrumental delivery and especially the need of Cesarean section and effect on fetal weight as well mental well being of the mother during pregnancy . evaluating of all these parameter done and correlated with the degree of physical activity or exercise done and usefulness of each for the guidance to the patient for the benefits and to clear the doubts of patients if any were to be done . Cesarean section (CS) rate in India has been increasing very much since last decade . There is many study evidences that physical activity indoor household activities , outdoor recreational and other activities, and mild to moderate physical exercise has beneficial effects for both the mother and fetus. Moreover, regular exercise helps maintain cardiorespiratory fitness levels during the pregnancy as well also help in hasten the postpartum recovery

Aim and objective

Our study aimed to identify the impact physical activity or exercise during pregnancy with special focus on need of cesarean section correlation with the degree of physical activity and effect on maternal mental health as well fetal weight and complications in pregnancy which may need interventions .The aim of the study was also to describe the mode, frequency, duration, and intensity of physical activity among pregnant women, to explore how to advise pregnant women to reach to the recommended levels of activity, and to explore how these patterns influence the outcome and mode of delivery and need of instrumental delivery.

Material and Method

The study was conducted in Obstetrics & Gynec department of Dheeraj Hospital, Smt. B.K. Shah Medical Institute & Research Center, Sumandeep. Vidhyapeeth, Piparia, Vadodara, Gujarat, India a tertiary care hospital in a rural area from February 2022 to May 2022. About 200 deliveries during the study period were included in the study. Patients included in this study were patients who consulted and visited in third trimester of pregnancy.

Inclusion Criteria

1. The LMP (Last menstrual period) of the patient was well known.
2. The gestational age of patient was between 31 and 41 weeks (derived from LMP).
3. The pregnancy was single.

Measuring Physical Activity During Pregnancy

A protocol was fixed for a past 15 days recall questionnaire on physical activity during the consultation in the third and second trimester as well to recall activities in first and second trimester. It was also assessed about the frequency and duration of all physical activities separately for any occupational, if having other child and/or adult then activity for care of them and indoor and outdoor household activity, any recreations activity or exercise , yoga etc . These questions were repeated for occupational, transportation, child and adult care giving, indoor household, and outdoor household activity.

Women were classified according to the activity status based on whether they reported any minimally hard physical activity at the 18–22 and 28–32 weeks' gestation. Those who were active at both these 2nd and 3rd trimesters were defined as 'active' and those not active at both trimesters were 'inactive'. Those women who stopped physical activity between the two time points were categorized as 'became inactive'. If the participant was inactive in the second trimester and active at the third trimester, she was categorized as 'became active'. In our study, we used randomized controlled trials (RCT) that evaluated the effects of exercise programs during pregnancy on labor and delivery. The results are summarized as relative risks.

Results

In this RCTs we had included 200 pregnant women. Table 1 represents the activity measurement and division of the groups accordingly the activity and significant reduction or cessation of the previous physical activity.

Table 1
Participation in any physical activity stratified by whether women remained active, became active, or became inactive at 18–22 and 28–32 weeks' gestation

		18-22 Weeks	28-32 Weeks
ALL MODE OF ACTIVITY	ACTIVE	172	176
	BECAME ACTIVE	22	-
	BECAME INACTIVE	6	24
CARE RELATED ACTIVITY	ACTIVE	49	45
	BECAME ACTIVE	8	-
	BECAME INACTIVE	10	4
HOUSEHOLD RELATED ACTIVITY	ACTIVE	68	68
	BECAME ACTIVE	17	-
	BECAME INACTIVE	15	-
LIGHT EXERCISE LIKE YOGA ETC	ACTIVE	10	11
	BECAME ACTIVE	2	3
	BECAME INACTIVE	-	-
OCCUPATIONAL ACTIVITY	ACTIVE	54	58
	BECAME ACTIVE	2	4
	BECAME INACTIVE	17	-
RECREATIONAL ACTIVITY	ACTIVE	47	47
	BECAME ACTIVE	12	12
	BECAME INACTIVE	16	16

This table represents number of women who were physically active at 18–22 and 28–32 weeks' gestation (active), became physically active at 28–32 weeks' gestation (became active), and became physically inactive at 27–30 weeks' gestation (became inactive). The percent was calculated separately for each mode of activity. Those women who reported no physical activity at both time points are not included in the table. Most of the women had done physical activity in care related activities of elders or other children as well household activities. Few women had done light exercise like Yoga etc, it was observed that none of them became inactive in any of trimester, possibly the mental well being and strong belief in advantages of yoga played a role.

Few women earlier physically inactive became active in 2nd trimester and few of them remain active in 3rd trimester also. 24 out of 194 active women in second trimester became inactive in 3rd trimester with the most common reason being advise from the elder women in family or relative to decrease activity. 20 women were doing mild activity only approximately equivalent to minimal exercise, while 18 women avoid activity due to advise from the family members or their self only due to misbelieve. It was also noted from the recall and history that the mental well being was significantly better in yoga exercise group women than in others.

Table 2
Physical activity and need of cesarean section or instrumental delivery in pregnancy

		18-22 WEEKS	28-32 weeks	Delivery through Cesarean Section	Need of Instrumental Delivery
ALL MODES OF ACTIVITY	ACTIVE	172	176	12(6.81 %)	5 (0.28%)
	BECAME ACTIVE	22	-	-	
	BECAME INACTIVE	6	24	20 (83%)	5 (2%)

It was observed that in physical active pregnant women there was significantly reduced need of caesarean section , Only 12 women form the final 176 active women in 28-32 weeks need caesarean section, while 20 (83%) from 24 inactive women need cesarean delivery. 5 (0.28%) women from these 176 active women need instrumental delivery .From the total 32 Caesarean delivery 2 patients had Post partum hemorrhage , one form the active group and one form the became inactive group in 28-32 weeks , both of which managed by medical treatment only without any further complications. Further from these 10 women who need to undergo instrumental delivery 7 underwent vacuum delivery and 3 underwent forceps delivery one child out of these 3 forceps delivery had suffered minor facial injuries which by proper management healed completely in 1 week.

Thus in our study, women in physically active groups need significantly lower need of cesarean delivery (only 15%).. The risk of instrumental delivery was similarly lower in physically active group. Though data on episiotomy, epidural anesthesia, perineal tear, length of labor were not significantly different in both the groups . Birth weight was not significantly altered in exercise groups then the other group.

Discussion

In this study it is revealed that there is a good level of consciousness to be physical active in pregnant women. Moreover many women tend to do yoga exercise in pregnancy which also gives better mental well being. The care related , household, and recreational activities constituted the largest proportion of the total activity level. The women who were consistently active throughout pregnancy reported higher levels of activity in all activity modes than those who became active or inactive during pregnancy. In this study with a detailed assessment of physical activity, it was revealed that the overall physical activity level slightly decreased between 17–22 and 27–30 weeks' gestation, particularly in outdoor household, and recreational activity. No women reported being entirely inactive during pregnancy. Most women continued working especially household works during pregnancy and few had jobs with no or little activity that was reported as at least fairly light. The prevalence of women who reached the recommended level of physical activity varied largely based on the definition and intensity used, though by all definitions the majority of women did not reach the recommended

level of activity. In a study by Ruben Barakat et al , Moderate-intensity exercise performed throughout pregnancy was associated with a reduction in the rate of cesarean, instrumental deliveries and can be recommended for healthy women in pregnancy.⁶

It was further observed that light yoga exercise during pregnancy induces mental well being and has psychological benefits in a systemic review by Kathryn Curtis, improvements were observed on psychological domains during pregnancy and labour. Exercise during pregnancy was associated with a reduced risk of cesarean delivery, particularly for acute cesarean delivery.^{7,8} It was observed that there is a nonlinear association for physical activity frequency and intensity in weeks 17 and 30 and risk of cesarean delivery especially the nonelective CS. More significant risk reduction was observed for acute cesarean delivery among women who exercised regularly during weeks 17 and 30 compared with nonexercisers . In other study association of high impact of physical activity or exercises with the greatest reduction in risk of cesarean delivery especially the acute CS was also noted. ⁷

Conclusion

Thus from this study it can be postulated that with proper physical activity in pregnancy the need of Caesarean section and instrumental delivery can be minimized. Moreover light yoga exercise has added advantage of mental well being . Thus even the care related, mild exercise , house hold work and recreational activities even can help in reduce the need of Caesarean section or instrumental delivery. However there is no significant effect of physical activity on birth weight of the neonate. Thus it can be recommend that medical professionals should encourage the patients for regular and standard light physical activities in pregnancy and may motivate pregnant women for light yoga exercises.

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