

## Original Article

## EFFECT OF ANTENATAL EXERCISE ON OUTCOME OF LABOR

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Khatri AK, Sirohi S, Dixit S, Rai S, Pandey D. Effect of Antenatal Exercise on Outcome of Labor. Natl J Community Med 2014; 5(3):342-5.

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Email: pandit.dhruv06@gmail.com**Date of Submission:** 28-02-14**Date of Acceptance:** 24-05-14**Date of Publication:** 30-9-14

## ABSTRACT

**Background:** Safe maternity with improved neonatal outcomes is predicated on proper antenatal care services. Exercise has become a fundamental aspect of women's lives and an important constituent of antenatal care.**Objective:** To find out effectiveness of antenatal exercise in facilitating normal labor and also other benefits associated with antenatal exercise during pregnancy.**Methodology:** A cross-sectional study was conducted in urban area (private clinic and government institution) of Indore district where antenatal exercise facility was available. Samples were selected using sequential sampling method. Sample size included 200 females (100 performing antenatal exercise and 100 non exercising females). Inclusion Criteria included all the recently delivered females practice exercise or not during their pregnancy, stand in age group of 20 to 35 years, not had any history of medical condition like Asthma, Diabetes, Hypertension, Bad obstetric history, Cephalo-pelvic disproportion and Twin pregnancy, and gave informed consent to participate in study. A semi structured questionnaire was used as study tool for interview. Chi square test was applied for significance association between variable.**Result:** In this study, only 36% group B females were delivered normally, as compared to 74% group A females who delivered normally. In group A only 9% females had urinary incontinence after delivery and 30% females had complain of backache. Major source of information (87%) for females were gynecologist. Main reason for not doing antenatal exercise was not having enough time (42%) followed by not having enough knowledge (31%).**Conclusion:** Females practiced antenatal exercise had less chances of caesarean section, back ache and urinary incontinence. Gynecologists were major source of information for antenatal exercise.**Key Words:** Antenatal exercise, Pregnancy, birth weight, urinary incontinence, Caesarean section.

## INTRODUCTION

Safe maternity with improved neonatal outcomes is predicated on proper antenatal care services.<sup>1,2</sup> Common issues during pregnancy can include low back pain, sciatica, carpal tunnel syndrome, sacroiliac joint pain, pelvic floor weakness and incontinence. These problems can be attributed to the change in posture due to the forward shift in centre of gravity and associated weight gain, and pregnancy related hormones. Some of these complaints may continue after giving birth as well as the development of diastasis recti, separation of the superficial abdominal muscles.<sup>3,4,5</sup> A number of factors contribute to muscle and joint prob-

lems during pregnancy. These include release of the hormone relaxin (loosens ligaments especially around the pelvis), exaggeration of the lumbar lordosis (curve) and Weakening of the pelvic floor and lower abdominal area.<sup>6,7,8</sup>

Exercise has become a fundamental aspect of women's lives and an important constituent of antenatal care.<sup>9,10,11</sup> Pregnancy Exercise relieves the discomfort experienced by pregnant women and to help them prepare the body for an easier delivery and recovery process.<sup>12</sup> The behavior of antenatal exercises revealed a significant difference in duration of labour, nature of delivery, behavior manifestations, and level of pain in

mother and presence of asphyxia and birth injuries in new born.<sup>13</sup> Furthermore, exercise in pregnancy is correlated with a decrease in many common problems of pregnancy<sup>14</sup> and the stress of exercises produces certain adaptation such as healthier placenta and increased ability to deal with short decrease in oxygen.<sup>15</sup> Studies have recommended that women should initiate or continue exercise in most pregnancies.<sup>9,10,16</sup> as it is safe for mother and not harmful to the fetus.<sup>9,17,18</sup> Knowledge about benefit of and contraindication to antenatal exercise significantly influenced the attitude towards exercise in pregnancy. However, the women had positive attitude towards exercise in spite of their inadequate knowledge.<sup>19</sup>

The present study principally aim to find out effectiveness of antenatal exercise in facilitating normal labor and also other benefits associated with antenatal exercise during pregnancy.

**MATERIAL AND METHODS**

A cross-sectional study was conducted in urban area of Indore district. Study site included private clinic and government institution where antenatal exercise facility was available. Study population included all recent delivered females who delivered at these private or government institute. Written informed consent was obtained prior to interview. Samples were selected using sequential sampling method, sampling initiated from October 2013 till 100 subjects were sampled who had under gone exercise (Satisfying inclusion criteria, reckoned as Group A) and 100 subjects who had not undergone exercise, named as Group B. Study Duration was 4 months duration (Oct.2013 to Jan 2014). Inclusion Criteria included all the recently delivered females practice exercise or not during their pregnancy, stand in age group of 20 to 35 years, not had any history of medical condition like Asthma, Diabetes, Hypertension, Bad obstetric history, Cephalopelvic disproportion and Twin pregnancy, and gave informed consent to participate in study. A semi structured questionnaire was used as study tool for interview. The questionnaire was designed to know their outcome of pregnancy, problem faced during pregnancy and labor, Duration of returning to routine work, Source of information and Antenatal exercise. Pretesting of questionnaire was done by using it in females delivered in community health training center attached with Department of Community Medicine and appropriate changes were done on the basis of their results. Ethical permission was obtained both

from departmental and institutional review committee. The data was analyzed using appropriate statistical software (MS excel and SPSS version 20). Chi square test was applied for significance association between variable. Risk ratio (RR) and Confidence interval (CI) was calculated. P value less than 0.05 considered statistically significant.

**RESULTS**

All the females of Group A and B were belonging to age group of 20 to 35 years. Out of 100 females of Group A (performing antenatal exercise) 74 (74%) were have normal delivery and 26 (26%) were have caesarean section. In Group B out of 100 females, 38 (38%) had normal delivery and 62 (62%) had caesarean section. (Table 1)

**Table 1: Showing Distribution of females according to outcome process of pregnancy**

	Group A	Group B
Normal Delivery	74	38
Caesarean section	26	62
Total	100	100

$\chi^2=27.599$ ,  $df=1$ ,  $p<0.000$ ; Risk Ration 2.287 (1.611 - 3.246)

In group A only 9% females had urinary incontinence after delivery and 30% females had complain of backache. (Table 2) 70% females started exercise during second trimester, 30% were perform every day while 26% done twice a week and 21% performed exercise as and when convenient, 70% had 15 minute duration of each session. 63% females were done exercise for maximum 3 to 5 months in term of total duration. Major source of information (87%) for females were gynecologist. (Table 3)

75% females of group A had gained weight up to 10 Kg during pregnancy while on group B 89% had weight up to 10 Kg. 65% females of group A had labour duration of less than 12 hours in comparison to 51% of Group B. 65% females of group A had 2.5 to 3 kg birth weight of their child and 20% had baby weight of 3-3.5 kg while in group B, 70% had 2.5 to 3 kg baby weight and 17% had average weight of baby between 3 to 3.5 kg. Approximately 57% females were return to their routine normal work within 15 to 30 days in group A in comparison to 39% females of group B. (Table 4)

**Table 2: Showing distribution of problems associated with pregnancy among both groups**

	Group A (n=100)		Group B (n=100)		Significance ( $\chi^2$ (df), p value)	Risk Ratio (95% CI)
	Yes	No	Yes	No		
Backache	30	70	63	37	21.887 (1), <0.001	0.493 (0.356 - 0.683)
Urinary incontinence	9	91	27	73	10.976 (1), 0.001	0.451 (0.252 - 0.806)

**Table 3: Distribution of females according to different parameters of exercise in Group A**

Parameters of exercise	Females (n=100)
<b>Started Antenatal exercise</b>	
First Trimester	6
Second Trimester	70
Third Trimester	24
<b>Frequency of Antenatal exercise</b>	
Everyday	30
Twice a week	26
Thrice a week	23
As and when convenient	21
<b>Duration of each session</b>	
15 minute	70
30 minute	25
45 minute	3
60 minute	2
<b>Total duration of antenatal exercise</b>	
<3 months	19
3 to 5 months	63
5 to 7 months	16
>7months	1
<b>Source of information</b>	
Gynecologist	87
Relatives/friends	7
Internet	4
Others	2

**Table 4: Distribution of different variables among both the groups during Pregnancy**

Parameter	Group A (n=100)	Group B (n=100)	P value
<b>Weight gain during pregnancy</b>			
5 to 10 Kg	75	89	0.031
10 to 15 kg	19	10	
>15 kg	2	1	
<b>Duration of Labour</b>			
<12 hours	65	51	0.045
>12hours	35	49	
<b>Birth weight of baby</b>			
<2.5kg	9	10	<0.001
2.5 to 3 kg	65	70	
3 to 3.5 kg	20	17	
>3.5 kg	7	3	
<b>Return to normal routine work</b>			
< 15 days	4	8	<0.001
15 to 30 days	57	39	
30 to 45 days	24	11	
>45 days	14	42	

**Table 5: Reasons of not doing exercise among group 2 females**

	Females (n=100)
No knowledge	31
Not having enough time	42
Thought of high consultancy fees	25
Some other reasons	2

Main reason for not doing antenatal exercise were not having enough time (42%) in females of group B followed by not having enough knowledge (31%). (Table 5)

## DISCUSSION

In the study, only 36% group B females were delivered normally, as compared to 74% group A females who delivered normally and difference was found statistically significant with p value <0.001 and RR of 2.287 (CI 1.611 – 3.246). This finding is in compliance with the findings of Jayasudha A. et al<sup>12</sup> conducted at selected Urban Health Centres in Coimbatore (Tamilnadu), that the practice of antenatal exercises revealed a significant difference in duration of labor and nature of delivery.

In this study, only 30% females of group A had the problem of backache, as compared to 63% group B females who suffered from same problem. ( $X^2=21.887$ ,  $p=0.001$ ,  $RR=0.493$ ,  $CI\ 0.356-0.683$ ) This finding is in compliance with the findings of Shim MJ et al<sup>20</sup> that promoting good posture and regular exercise can be recommended as a method to relieve back pain in pregnant women and Richards E et al<sup>21</sup> that physical therapy using exercise, acupuncture and pelvic supports may be useful in relieving backache in pregnancy. 9% group A females had problem of urinary incontinence as compared to 26.6% females of group B. ( $X^2=10.976$ ,  $p=0.001$ ,  $RR=0.451$ ,  $CI=0.252-0.806$ ) This is in accordance with the findings of study by Miquelutti MA et al<sup>22</sup> and Stafne SN et al<sup>23</sup> There were significant difference ( $X^2=4.023$ ,  $p=0.045$ ) was found in duration of labor in between females performing exercise and not, as 35% females of group A had duration of more than 12 hour in comparison to 49% females of group B.

Significant association were found between birth weight of baby and antenatal exercise as females with antenatal exercise had more towards normal birth weight babies. ( $X^2=40.562$ ,  $p=<0.001$ ) 61% group A females were return to their routine work within 30 days which was significantly different from 47% non exercising females with chi square value of 55.854 and p value of <0.001.

This study was carried out with 200 females who was not representative of all the females of different socioeconomic status of Indore District, needs more sample size to be incorporated which unfortunately was not included due to time constraint.

The findings in the present study reiterate the need for re-enforcing health education. Significant difference has been observed between female with antenatal exercise and females without antenatal exercise through health education programmes conducted by gynecologists and peripheral/community health worker in different regions. While the peripheral/community health worker plays a pivotal role in imparting education, the use of multi-pronged methods such as films, group discussions, dramas, puppet shows and role-

plays must be incorporated. There is a strong need that health education must directly address beneficial effects of exercise during pregnancy. The culture of birth preparation plans should be advocated in national policies so that it can be benefited to all the pregnant females of country. Birth Preparation plans should include antenatal checkups, educational activities, antenatal exercises and stress busters for a healthy pregnancy experience and favorable outcome.

The study had concluded as females practiced antenatal exercise reported much more normal deliveries and problem of backache and urinary incontinence was less. Gynecologists were the most important sources to advocate antenatal exercise. The most common reason for not doing antenatal exercises was lack of time.

**Acknowledgement:** The authors gratefully acknowledge all the females who volunteered for this study. Also, they are grateful to the administrative, medical and paramedical staff of the different hospitals and clinics selected for this survey.

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