

Effect of Antenatal Exercises on Labour Outcome among Primigravid Mothers

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Before you were conceived I wanted you, before you were born I loved you, before you were here an hour I would die for you, this is the miracle of Mother's Love.

- Maureen Hawkins

Abstract

Exercise is a natural part of life. Physical exercises increase mood-elevating chemicals in the brain and thereby reduce pregnancy-related blues. As the women need to exercise during pregnancy, the present study was conducted to determine the effect of antenatal exercises on labour process among primigravid mothers at selected Urban Health Centres in Coimbatore (Tamilnadu). The practise of antenatal exercises revealed a significant difference in duration of labour, nature of delivery, behaviour manifestations, and level of pain in mother and presence of asphyxia and birth injuries in new born.

Pregnancy is a special feeling for the mother-to-be. The woman suddenly realises the power of being a woman being able to make a human out of her body. Being special time, the woman should take special care of her body as every action of her will have effect on her baby. The body becomes heavier, weight distribution alters and there is increased joint movement in the pelvis which requires special attention in the art of standing, walking, sitting and lifting without straining. Her abdominal muscles get longer and bigger in order to accommodate growing baby.

It is important that all pregnant women must be prepared during antenatal period itself for safe and natural childbirth. Daily practice of relaxation and exercises are essential for the pregnant women to condition her body for labour and to learn to breathe and relax in labour, as this helps to have safe and natural child birth. Childbirth is a difficult process and exercise during pregnancy will help increase flexibility, endurance, and muscle control which are necessary for labour and delivery, thereby helpful in easier labour.

The pelvic floor exercises are most important exercises in pregnancy. Back and pelvic pain is found to be reduced by encouraging good posture and pelvic tilting (Bullock-Saxton, 1998). Exercising pelvic floor muscles will help to support the weight of the baby and the womb and control need to urinate (Mittelmark et al, 2001)

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Objectives

The study sought to:

- ♦ Compare post-test knowledge of primigravid mothers among control and experimental group on antenatal exercises.
- ♦ Determine the effectiveness of the antenatal exercises during labour process among control and experimental group of primigravid mothers.
- ♦ Associate the knowledge and outcome of labour process with selected demographic variables in experimental group of primigravid mothers.

Review of Literature

Literature was reviewed related to,

- Exercise and Health
- Effect of Antenatal exercises on maternal and foetal outcome
- Effectiveness of video-assisted teaching module.

Karkada et al (2010) conducted a study on the effectiveness of Childbirth class terms of behavioural responses to labour pain and outcome of labour. An evaluative approach using a quasi experimental non-equivalent group post lost only design was used. The test group consisted of 60 healthy primigravidas. The mean behavioural response scores in experimental group (31.882) were higher than that of the control group (18.82); t value (11.858) was significant at $p < 0.05$ level. The 't' value computed for duration of labour of the experimental and control group was not significant (t-1.566). An association was found between nature of delivery,

and childbirth class as well as antenatal outcome and childbirth classes (X^2 - 4.356, $p < 0.05$), X^2 - 4.320, $p < 0.05$).

A study conducted by Selvanayaki (2009) on effectiveness of video assisted teaching method (VATM) on antenatal exercises in labour process among primi mothers in selected hospitals at Salem has adopted quasi experimental post-test control group design with sample of 200 (100 in each group) by using purposive sampling technique with observational tools. The study showed that video assisted teaching method was effective in reducing the pain level (t -3.73) and with shorter duration of labour (t -2.71), which was significant at 0.05 level for those women who exercised than those who did not exercise.

Methodology

A quantitative approach, quasi-experimental post-test with a control group design was used. The study was conducted in Seethalakshmi Corporation Maternity Centre for experimental group and CTM Centre for control group. Three hundred primigravid mothers, 150 in each experimental and control group were selected by Power analysis method. The investigator adopted simple random sampling technique to select the samples.

Inclusion Criteria

Primigravid mother from 24th week of pregnancy with normal pregnancy, that is those with low risk pregnancy status certified by the medical officer were included in the study.

Exclusion Criteria

Primi mothers with complications of pregnancy and those who were not willing to participate in the study were excluded.

Instruments Used

- Antenatal Exercise booklet and CD.
- A background variable proforma.
- A questionnaire to assess knowledge on Antenatal exercises.
- Observation tools used for labour process included: Observation record on progress of labour (Partograph), Intrapartum variable proforma, Numerical Pain scale, Primigravid's behavioural responses during labour, neonatal variable proforma (Apgar score & presence of birth injuries).

Data Collection Method

The data were collected from March 2009 to April 2010. The primigravid mothers were selected and consent was taken. The medical officer assigned the low risk primigravid mothers who are willing to participate in the study. The staff of corporation maternity health centres were requested to call the investigator and trained observer, when each of the selected primigravid mothers of experimental and control group were admitted in the labour room. The investigator and trained observers collected data after implementing video-assisted teaching on selected antenatal exercises. After teaching for 35-45 minutes through the video CD and booklet as a reference were given to all primigravid mothers included in the study. A record of diary was given to them for monitoring the performance of exercises and their performance of exercises was monitored at the time of their antenatal check up visit in the health centre. Their knowledge was assessed after 2 weeks of implementation of video-assisted teaching module. Labour outcome was measured at the time of their delivery.

Results

Table 1 shows the area of knowledge in both groups. In experimental group the scores were: antenatal exercise 3.91 ± 0.69 , daily activities 3.59 ± 0.49 , breathing exercises 2.99 ± 0.08 , abdominal exercise 2.95 ± 0.21 , pelvic floor exercises 3.97 ± 0.181 , foot & leg exercise 4.86 ± 0.35 , relaxation 2.79 ± 0.41). In control group the scores were, antenatal exercises 0.39 ± 0.53 , daily activities 0.49 ± 0.67 , breathing exercises 0.61 ± 0.53 , abdominal exercises 0.55 ± 0.56 , pelvic floor exercises 0.92 ± 0.62 , foot and leg exercise 1.16 ± 0.69 , relaxation 1.07 ± 0.77 . Table 1 reveals statistically significant difference between the experimental and control group scores in all the dimension of knowledge in antenatal exercises among primigravid mothers (t - 173.04, $p < 0.000$ level). Every individual has ability and potential to learn, so the experimental group of primigravid mothers has utilised the opportunity given to them through video-assisted teaching programme which enhanced their knowledge.

Table 2 shows that there was a statistically significant difference found between experimental and control group in duration of labour (t = 15.23), nature of delivery (t = 4.55), behavioural manifestation (t = 5.13), pain (t = 5.97), asphyxia (t = 20.06), birth injuries caput (t = 4.76) at $p < 0.001$ level. No significant association was found in birth injuries cephal (t =1.99). The overall statistical signifi-

Table 1: Comparison of Mean, SD of post-test knowledge on antenatal exercises between primigravid mothers of experimental group & control group (n=300)

Areas of knowledge	Experimental group (n=150)		Control group (n=150)		‘t’ value	p-value
	Mean	SD	Mean	SD		
Antenatal exercises	3.95	0.69	0.39	0.53	53.64***	0.000
Daily activities	3.59	0.49	0.67	0.67	45.26***	0.000
Breathing exercises	2.99	0.08	0.61	0.53	54.05***	0.000
Abdominal exercises	2.95	0.21	0.55	0.56	49.76***	0.000
Pelvic floor exercises	3.97	0.18	0.92	0.62	59.46***	0.000
Food and leg exercises	4.86	0.35	1.16	0.69	62.83***	0.000
Relaxation	2.79	0.41	1.07	0.77	24.64***	0.000
Overall	25.11	0.92	5.37	1.21	173.04***	0.000

(df = 149, Table value = 3.29, $p < 0.001$, highly significant)

Table 2: Comparison of Mean, SD on post test antenatal exercises among labour process between experimental group & control group (n=169)

Area of labour process	Experimental group (n=95)		Control group (n=74)		‘t’ value	p-value
	Mean	SD	Mean	SD		
Duration of labour	2.84	0.39	1.42	0.79	15.23***	0.000
Nature of delivery	2.56	0.61	2.14	0.58	4.55***	0.000
Behavioural responses	1.92	0.28	1.61	0.49	5.13***	0.000
Pain	2.35	0.73	1.702	0.66	5.97***	0.000
Presence of asphyxia	3	0	2.19	0.39	20.06***	0.000
Birth Injuries – Caput Sucedaneum	1.8	0.43	1.46	0.5	4.76***	0.000
Cephalhematoma	2	0	1.96	0.196	1.99	0.048
Overall	16.42	1.698	12.45	2.51	12.23***	0.000

(df = 167, Table value = 3.29, $p < 0.001$, highly significant)

cant difference was found between experimental and control group scores in the area of labour process among primigravid mothers $t = 12.23$, $p < 0.001$ level. The regular practice of antenatal exercises along with knowledge has enhanced the labour process with good labour outcome which is very simple intervention done by the researcher that can be emphasised by the nurses in their clinical practice.

Association between the outcome of knowledge with selected demographic variables of primigravid outcomes reveal a significant association between knowledge and resident ($X^2 = 9.54$, $p < 0.001$). The health seeking behaviour pattern of women is influenced by the area where they are residing and the distance to the health facility might have influenced this finding.

With regard to outcome of labour process with selected demographic variables in experimental group a significant association was found between the type of family and labour process ($X^2 = 7.236$ at

$p < 0.05$ level). This implies that family is an institution which has got a great influence in health care decision for its members. Such findings of the present study might be due to appropriate decision making to undergo antenatal exercises for the sample which in turn has brought good labour process among primigravid mothers.

Discussion

Post-test knowledge among experimental and control group

After the video-assisted teaching module with booklet on antenatal exercises, in experimental group all the primigravid mothers had adequate knowledge and none of the primigravid mothers in control group had adequate knowledge on antenatal exercise.

The overall mean knowledge score for control group was 5.37 ± 1.21 whereas in experimental group it was 25.11 ± 0.92 . There was a significant statistical difference found between control and experimental group in all the areas of knowledge on antenatal exercise among primigravid mothers ($t = 173.04$, $p < 0.001$ level).

Present study findings were also supported by a study done by Amutha (2003) which showed that the structured teaching programme on antenatal exercise was effective in increasing knowledge of antenatal exercises ($t = 11.94$, $p < 0.05$) and there was significant difference in mean post test skill score between experimental and control group ($t = 4.28$, $p < 0.05$).

Every individual has ability and potential to learn, so the experimental group of primigravid mothers have utilised the opportunity given to them through video-assisted teaching programme which enhanced their knowledge.

Outcome of Labour process

- Comparison of antenatal exercises on labour process shows that 10 (14%) had poor outcome, 46 (62%) had fair outcome and 18 (24%) had good outcome in control group whereas in experimental group 16 (17%) had fair outcome and 79 (83%) had good outcome.
- The overall mean value for control and experimental group was 12.45 ± 2.51 , 16.42 ± 1.698 respectively and the obtained ‘t’ value is 12.33

at $p < 0.001$ level, so there was a significant difference in the outcome of labour process among control & experimental group.

- The findings were supported by a study done by Selvanayagi (2009) which showed that video-assisted teaching module was effective in reducing the pain level ($t=3.73$) and with shorter duration of labour ($t=2.71$) which was significant at 0.05 level for those women who exercised than those who did not exercise.
- The regular practice of antenatal exercises along with knowledge has enhanced the labour process with good labour outcome which is very simple intervention done by the researcher that can be adopted by the nurses in their clinical practice.

Recommendations

- A comparative study can be done on antenatal exercises in both primigravid and multigravid women given at different trimesters.
- An interventional study on antenatal exercises and its effectiveness on knowledge, attitude and practice of women in experimental and control groups can be done.
- An evaluative study of relaxation and breathing exercises related to pain, anxiety and fear in labour may be undertaken.
- A comparative study may be conducted between urban and rural mothers on antenatal exercises.

Conclusion

Systematic antenatal exercises (daily activities, breathing exercises, abdominal and pelvic floor exercises, foot & leg exercises, relaxation technique) are effective during labour process in preventing the complications in mother and baby. The exercises also reduce women's fear, tension and pain, so that they are able to participate positively towards the labour process. The practice of these exercises do not require any equipment or machinery or extra expenses except the willingness of the primigravid mothers to learn and practice during pregnancy, labour and post-natal period. It can be implemented in antenatal care units to enhance safe childbirth.

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