

Impact of Lamaze Breathing on Natural Childbirth: Comparison between Primigravid and Multigravid Women

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Abstract

Lamaze technique supports, sustains and safeguards sound, and healthy pregnancy, and safe birthing. The objective of this study was to compare the impact of Lamaze technique on duration of labour and neonatal outcomes among primigravid and multigravida women. A parallel group prospective randomised controlled trial was adapted where eligible primigravid & multigravida women were randomised into intervention and standard care groups at an antenatal outpatient clinic of a secondary healthcare institution. Women in the intervention group were trained on Lamaze breathing techniques at 36 weeks of gestation and were advised to practice these twice daily. Instructions were given to continue during the active phase of the first stage of labour under the supervision of labour room nurses. Compliance was monitored with help of a daily log along with the daily foetal movement count (Sadovsky method, as advised by obstetrician). The mean duration of labour in the intervention group for primigravid women was 5.5127 ± 1.998 hours and that for multigravid women 3.3704 ± 1.584 hours whereas in standard care group it was 7.238 ± 3.678 hours and 4.2899 ± 2.182 hours respectively. The mean duration of labour for women in the intervention group was less compared to standard care group $F(1) = 133.800, p < 0.001$. Two-way ANOVA revealed significant difference in gestational age at birth $[F(1) = 0.020, p = 0.887]$ and mean birth weight $[F(1) = 0.854, p = 0.411]$ between primigravid and multigravid women. The current research concludes that Lamaze techniques when taught during the antenatal period facilitates natural childbirth by shortening the duration of labour and escalates its progress.

Key words: Lamaze breathing, antenatal women, duration and outcome of labour

Breathing is the most fundamental aspect of life which is characterised by autonomic and conscious control. Breathing when practiced regularly increases oxygenation, and helps the mother to relax. It helps women to be more aware, attentive, alert and focussed. The intention of Lamaze organisation is to accelerate women's confidence in making skilled decisions regarding childbirth. The Lamaze technique supports, sustains and safeguards sound and healthy pregnancy, and safe birthing.

Globally every minute, a woman dies in pregnancy or during childbirth (Simwaka, Theobald, Amekudzi, Tolhurst, 2005). Maternal mortality rate of India shows a significant decline from 212 in 2007-2009 to 178 in 2010-2012, and in Karnataka MMR is 144 (<http://www.censusindia.gov.in>). India contributes to 25 percent of debility-adjusted life-years lost due to maternal conditions alone which is a grave condition (Vora et al, 2009). The country's progress towards achieving Goal 5 i.e., to improve the maternal health of Millennium Development Goal (MDG) had been off track. The off track MDG was then extended and recommitted by providing focussed and scaled-up

assistance in line with relevant support programme to meet this immense challenge to sustainable development by 2030; it will monitor decisions to be taken over next 15 years (United Nations, 2015).

The challenge for the next 15 years is at the hands of the health care providers to render timely, anticipatory, rehabilitative, supportive and educative maternity care services to the mothers and allow them to have a safe and a satisfying labour experience with little or no complications. The maternity care services provided by the multidisciplinary team should be culturally congruent-based on the individual needs of the women with an emphasis on co-ordination and integration of services.

Time immemorial, educators have engrossed on pain reduction and relaxation techniques that mitigate stress during the childbirth. An extensive variety of non-pharmacological techniques are readily available to women in labour (Brown et al, 2001). Breathing is one of such non-pharmacological relaxation techniques readily available and can be extensively utilised during childbirth.

Need of the study

Our emotions are conveyed through breathing by

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variations in its regularity, complexity, and position. Difficult breathing builds anxiety and anxiety produces a feeling (Gilbert, 1998). Breathing is a unique phenomenon which is characterised by autonomic and conscious control. Conscious breathing and breathing patterns facilitate women to attain and restore control over labour response. With increasing breathing awareness women are competent to regulate their breathing patterns as labour advances.

Breathing covers all dimensions of wellbeing and is a free tool that advances life at all stages, from birth till death (Koontz, 2000). This is because breathing is the only function that is controlled as well as involuntary. Inhaling more oxygen helps to ward off disease and infections (Grof, 2014).

Breathing helps in relaxation, makes the muscle more flexible and increases stamina. It also improves mental wellbeing, controls emotions, and reduces stress, which in turn helps to centre attention. Finally, it opens the door to spiritual ecstasy (Migdown, 1999). Thus Lamaze breathing opens the doors to expectant mothers to get connected with their unborn baby. Breathing exercises do not require sophisticated gadgets and machinery. It only requires timely information and education and also willingness to practice on the part of expectant mothers (Hubs & Hub, 1993). Therefore, looking at the added benefits, safety and cost-effectiveness of the intervention, and researcher's interest to bring about a stereotype shift from restrictive birthing environment to relaxing birthing experience, the study aimed at finding the effectiveness of one simple non-pharmacological method, i.e., antepartum breathing exercises on the outcome of labour among primigravid and multigravid women.

Objectives

The objective of the study was to compare the impact of Lamaze technique on duration of labour and neonatal outcomes among primigravid and multigravida women.

Table 1: Comparison of duration of labour among primigravid and multigravid women in the intervention and the Standard Care Group using two-way ANOVA (N=515)

Variables	Primigravida		Multigravida		df	Mean Square	F	p value
	Int (n=138) mean $\pm$ SD	Std care (n=123) mean $\pm$ SD	Int (n=129) mean $\pm$ SD	Std care (n=125) Mean $\pm$ SD				
Duration of Labour (in hours)	5.5127 $\pm$ 1.998	7.238 $\pm$ 3.678	3.3704 $\pm$ 10.584	4.2899 $\pm$ 20.182	1	807.575	133.8	<0.001

Table 2: Comparison of gestational age at birth and mean birth weight of neonates among primigravid and multigravid women (N=515)

Variables	Primigravida		Multigravida		df	Mean Square	F	p value
	Int (n=138) mean $\pm$ SD	Std care (n=123) mean $\pm$ SD	Int (n=129) mean $\pm$ SD	Std care (n=125) mean $\pm$ SD				
Gestational age at birth (in weeks)	39.23 $\pm$ 0.732	39.17 $\pm$ 0.74	39.05 $\pm$ 0.8	39.15 $\pm$ 0.76	1	2774.567	0.020	0.887
Mean birth weight (in kg)	3.020 $\pm$ 0.3691	3.1043 $\pm$ 0.3533	2.987 $\pm$ 0.3680	3.157 $\pm$ 0.4005	1	0.854	0.677	0.411

N=total number of samples, Int=intervention group, Std care=Standard care group, SD=standard deviation, df=degree of freedom, F=statistics to test the equality of mean.

Methodology

A parallel group prospective randomised controlled trial was adapted where eligible primigravid and multigravida women were randomised into intervention and standard care groups at an antenatal outpatient clinic of a secondary healthcare institution. Ethical clearance was obtained from the Institutional Ethics Committee of Kasturba Hospital, Manipal. Women after 36 weeks of gestation were eligible to participate in the trial. They were provided with a subject information sheet. The women who were willing, interested, and eligible to participate, were included.

Women in the intervention group were trained on Lamaze breathing techniques at 36 weeks of gestation through an educational video and were advised to practice them twice daily. Instructions were given to continue during the active phase of the first stage of labour under the supervision of labour room nurses. Compliance during antenatal period was monitored with help of a daily log along with the daily foetal movement count (Sadovsky method), as advised by obstetrician).

Women in the standard care group received health talk on antepartum care and services according to local health care provision. All the four groups were monitored during the active phase of labour by the observers in the labour room.

Results

The intervention and the standard care groups of

primigravid and multigravida women were homogenous in their baseline characteristics at the time of recruitment to the study. Majority of the primigravid and multigravida women from both the intervention groups were Hindu, lived in joint family. Fourteen (10%) of women in the intervention group and 21 (15%) from standard care group had medical disorders in present pregnancy like hypothyroidism (n=7), GDM (n=12), anaemia (n=5), hypertension (11). Few multigravida women (13%) in the intervention group had medical disorders on present pregnancy like hypothyroidism, GDM anaemia.

Two-way ANOVA was applied to test the hypothesis whether there will be any significant difference in the duration of labor (in hours) among the primigravid and multigravida women. The test compares the interaction of Lamaze breathing between the two independent variables on the dependent variable. The basis to compute ANOVA was assumption that observations were random samples from normal distributions, the groups were homogenous, and observations were independent of each other.

The mean duration of labour in the intervention group for primigravid women was 5.5127 ± 1.998 hours and that for multigravid women was 3.3704 ± 1.584 hours whereas in standard care group it was 7.238 ± 3.678 hours and 4.2899 ± 2.182 hours. The mean duration of labour for women in the intervention group was less compared to standard care group [$F(1)=133.800$, $p<0.001$].

Two-way ANOVA revealed significant difference in gestational age at birth [$F(1)=0.020$, $p=0.887$] and mean birth weight [$F(1)=0.854$, $p=0.411$] between primigravid and multigravid women.

Discussion

The mean duration of labour was significantly less in the intervention group which was supported by a study of Chuntharapat et al (2008) which reports that practicing yoga lessens the length of first stage of labour and the total time of labour.

Another study also supports this finding and states that pre-natal yoga exhibits higher outcome and self-efficacy expectancies during the active stage of labour ($p=0.002$) and the second stage of labour ($p<0.001$).

Results of the present study reveal that babies weighing ≥ 2500 gm were more in the intervention group after adjusting for parity. This finding was supported by Narendran et al (2005) who reports that the number of babies with birth weight 2500 gm was significantly higher among women who practised yoga during pregnancy ($p=0.01$). Similarly, Sirohi et al (2014) also reported that weight of 85 percent of the newborns born to women who practiced antenatal exercises ranged from

2500-3500 gm ($\lambda^2=4.023$, $p=0.045$).

Recommendations

The study can be conducted to evaluate the effectiveness of breathing exercises on pregnancy anxiety and negative mood in the second trimester. A future study can be conducted to evaluate the efficacy of maternal breathing exercises on the foetal stress levels during pregnancy and early postpartum period.

Conclusion

Lamaze techniques, when taught during the antenatal period facilitate natural childbirth by shortening the duration of labour and escalates progress of labour. Therefore, this becomes an ideal time to instruct mother on normal physiological process of pregnancy and childbirth that helps her to be prepared. Evidence is present that antepartum breathing exercises is suitable in pregnancy and has a optimistic outcome. More and more standardised programmes along with obstetricians should be conducted, which build up evidence-based evaluations in a research environment.

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