

A Hospital based Randomized Controlled Trial to Evaluate the Effectiveness of Kegel's Exercise on Postpartum Perineal Laxity

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ABSTRACT

Objectives: The objectives of the study are to: (i) Assess the perineal muscle strength of postnatal mothers after vaginal delivery in the experimental and control groups before and after the intervention. (ii) Evaluate the effectiveness of Kegel's exercise on perineal laxity in the experimental group compared to control group.

Methods: This single blinded randomized controlled trial at a 1000 bedded tertiary care teaching hospital in India, enrolled 290 postnatal mothers between 20 and 40 years who had vaginal delivery with ≤ 2 on modified Oxford grading scale as measured by per vaginal digital examination. The subjects were randomized into experimental and control groups. The experimental group received instructions to perform Kegel's exercises along with routine postnatal care while the control group received advice on routine postnatal care. Two follow-up assessments were done at 6 and 10 weeks. The primary outcome measure was increase in Oxford grading score.

Results: Major findings of the study were:

The mean perineal muscle strength assessment scores noted before the intervention and during first and second postintervention assessments were 1.5 ± 0.52 , 3.58 ± 0.51 and 4.28 ± 0.57 respectively for the experimental group and 1.56 ± 0.55 , 2.41 ± 0.52 and 3 ± 0.51 respectively for the control group. Comparison of these scores between the groups by unpaired t-test yielded p-value of < 0.0001 suggesting high significant difference in favor of the experimental group. However, no additional benefit was observed after Kegel's exercise in the mothers who had episiotomy during vaginal delivery.

Conclusion: The Kegel's exercise is effective to reduce perineal laxity and hence should be included as a part of routine postnatal care.

Keywords: Perineal laxity, Modified Oxford grading score, Kegel's exercise.

INTRODUCTION

Perineum is an often neglected but important area of women's health. Perineal laxity, where the muscles of the perineum become lax and weak is a common problem experienced by women of reproductive age group globally. The symptoms associated with this are urinary and fecal incontinence, and lack of sexual satisfaction affecting quality of life. Advanced cases present as genital prolapse, rectocele and cystocele.¹

About a third of women have urinary incontinence and up to a tenth have fecal incontinence after child birth. Incontinence of urine affects 200 million people worldwide. Up to 30% of women who have had children are affected by some degree of prolapse also 9,10. In India, 12% women are affected by it, while 14.5% suffer from this disorder across Asia. While 5% cases have been reported in women below the age of 30, it increases to about 30% in women in the age group of 30 to 60 years.²

Vaginal delivery has been implicated as a predisposing factor, and this might increase demand for cesarean deliveries to protect pelvic floor function.⁴ Stretching or tearing or shearing away of pelvic floor muscles or the nerves during vaginal

delivery, has been demonstrated by magnetic resonance imaging studies.³ The other predisposing factors of perineal laxity, like early marriage, multiparity, lack of awareness about spacing of births, higher prevalence of unattended deliveries are rampant in India. For these reasons, despite lack of authentic data, the prevalence of pregnancy-associated urinary and fecal incontinence in under-resourced countries, like India, can be assumed to be more than that found in developed countries. With a view to determining possible solutions to this problem, it would be pertinent to test the effect of Kegel's exercise, one of the suggested solutions to perineal laxity in prevailing conditions, like multiparity, early marriage, less spacing between the pregnancies, poor perineal hygiene. This study would attempt to evaluate effectiveness of exercise on postpartum perineal laxity.

MATERIALS AND METHODS

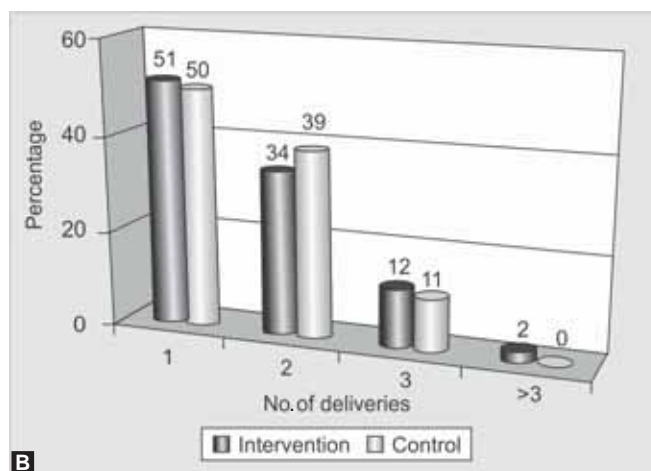
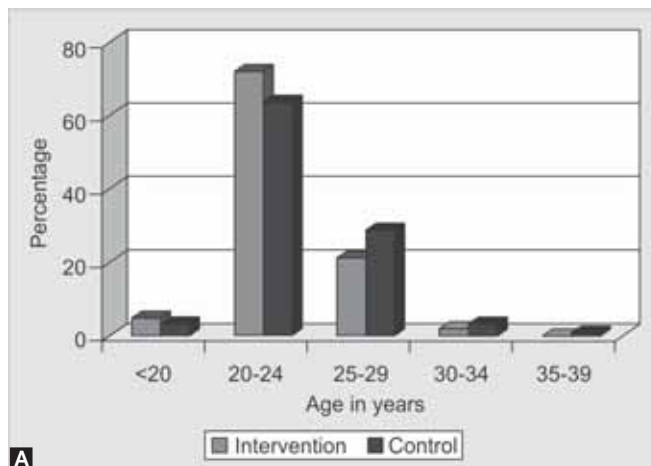
The study was conducted at 1000 bedded tertiary care, KLEs Dr Prabhakar Kore Charitable Hospital, Belgaum. Along with the evaluative approach, single blind randomized control design

was applied in the current study. From the study, universe constituted by postpartum mothers who had delivered vaginally, mothers with score of ≤ 2 on modified Oxford grading scale as assessed by per vaginal digital examination were drawn by consecutive sampling. The sample size of 290 was considered adequate based on the calculations using power analysis (in line with study result of Morkwed et al).⁴ 292 subjects were randomized into control and experimental groups (146 in each group) using block randomization (Table 1). The intervention group received instructions to practice Kegel's exercise in addition to routine postnatal exercises. The control group received instructions regarding routine postnatal exercises excluding Kegel's exercises and routine postnatal care. Exercise diary was issued to each subject of both groups. The post-intervention assessment of the perineal muscle strength was performed after 4 to 6 weeks and again after 10 weeks of the first visit. Adherence to exercise regimen was ensured by telephonic enquiry. Exercise diary was collected from the mothers to analyze compliance.

RESULTS

Majority of the mothers belonged to the age group 20 to 25 years and Hindu by religion (Figs 1A and B). 95% of them were housewives. Most were educated up to secondary level and duration of married life varied between 1 to 3 and 4 to 6 years. 51% had one and 37% had two children respectively. Majority of them had vaginal delivery in the past and 73% of them had either episiotomy or perineal tear during delivery. The comparison of sociodemographic and obstetric variables between groups showed no significant difference. The observed mean exercise compliance for the duration of the study was 3.91 for both groups. A drop out rate of 8.2% in control group was observed during second postintervention assessment.

1. High significant difference was observed between the preintervention and postintervention assessment scores ($p < 0.0001$) on applying paired t-test in both groups, indicating improvement in muscle strength in both groups.
2. However, unpaired t-test between the postintervention scores of both groups revealed high significant difference in favor of experimental group ($p < 0.0001$) indicating muscle strength increase more in the experimental group.
3. Paired t-test showed a significant difference between preintervention scores of mothers with and without episiotomy within the experimental group, the post-intervention scores did not reveal any significant difference.



Figs 1A and B: Distribution of subjects based on age groups and number of deliveries

DISCUSSION

The pelvic floor muscles have an ability of natural rehabilitation after delivery. The observed high significant difference between the pre-intervention and postintervention assessment scores ($p < 0.0001$) on applying paired t-test could be attributed to this natural rehabilitation ability of pelvic floor muscles. The observed high significant difference in favor of experimental group on applying unpaired t-test between the postintervention scores of both groups suggests enhanced positive effect on increase in perineal muscle tone. Previous studies (Hahn et al, Isherwood and Rane, Devreese et al⁵⁻⁷) have also reported significant difference in pelvic floor muscle strength in favor of the experimental group. However, few of the other studies⁸ have shown lack of statistically significant difference in muscle

Table 1 Mean modified Oxford scores and results of unpaired t-test for both the groups

	Preintervention		Postintervention			
	n	Mean \pm SD	1st (at 4-6 weeks)		2nd (at 10 weeks)	
Experimental group	146	1.55 \pm 0.53	n	Mean \pm SD	n	Mean + SD
Control group	146	1.56 \pm 0.55	146	3.56 \pm 0.51	146	4.28 \pm 0.57
Unpaired t-test		0.6420 (290 df)	146	2.41 \pm 0.52	137	3 \pm 0.51
p-value		$p > 0.0001$		$p < 0.0001$		$p < 0.0001$

Table 2		Mean assessment scores of pretest, first post-test and second post-test assessment and the unpaired t-test value for experimental group with and without episiotomy					
<i>Episiotomy</i>		<i>Preintervention</i>		<i>1st postintervention assessment</i>		<i>2nd postintervention assessment</i>	
	<i>n</i>	<i>Mean ± SD</i>	<i>n</i>	<i>Mean ± SD</i>	<i>n</i>	<i>Mean ± SD</i>	
With episiotomy	102	1.70 ± 0.46	102	3.58 ± 0.50	99	4.29 ± 0.56	
Without episiotomy	44	1.05 ± 0.43	44	3.59 ± 0.54	41	4.27 ± 0.59	
Unpaired t-value		7.97 (df 144)		0.1355 (df 144)		0.2466 (df 138)	
p-value		p < 0.0001		0.8924 (p > 0.0001)		0.8056 (p > 0.0001)	

Table 3		Mean assessment scores of pretest, first and second post-test assessment and the unpaired t-value for control group					
		<i>Pretest</i>		<i>1st post assessment</i>		<i>2nd post assessment</i>	
	<i>n</i>	<i>Mean ± SD</i>	<i>n</i>	<i>Mean ± SD</i>	<i>n</i>	<i>Mean ± SD</i>	
With episiotomy	106	0.95 ± 0.39	103	2.46 ± 0.5	101	3.05 ± 0.52	
Without episiotomy	40	1.76 ± 0.43	40	2.3 ± 0.56	39	2.82 ± 0.51	
Unpaired t-value		10.5291 (df = 144)		1.6172 (df = 141)		2.3619 (df = 138)	
p-value		p < 0.0001		0.1081 (p > 0.0001)		0.0196 (p > 0.0001)	

strength after pelvic floor muscle training. The findings of study conducted by Sonia Varghese et al at Mangalore, India also are in concurrence with findings of this current study.⁹ This study conducted in the Indian context after matching all sociodemographic and obstetric variables in postnatal mothers provides strong scientific evidence regarding positive effect of Kegel's exercise on perineal laxity.

As a secondary objective, an attempt was also made to compare the effect of Kegel's exercise in mothers with and without episiotomy within the experimental group. The observed mean Oxford score of pretest assessment was more in the episiotomy group and paired t-test showed significant difference. But, the post-test assessment values exhibit a similar finding in both the groups. This indicates that episiotomy does not lead to any change in effect of Kegel's exercise on perineal muscle tone (Tables 2 and 3). However, this study cannot provide conclusive evidence in this regard. A multicentric longer duration study is suggested to be carried out to confirm the same.

CONCLUSION

The principal finding of the study suggests Kegel's exercise has positive effect on the perineal laxity with the exercise compliance of 3 to 5 per day (30 to 50 contractions as fast and slow holding exercises) and can be used as an effective tool against perineal laxity. It can form an integral part of routine postnatal care in view of the prevalence of perineal laxity in India, thus providing significant public health benefit.

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