

# POSTPARTUM STRESS;

Effects of pelvic floor muscle training (kegel exercises) in women with postpartum stress urinary incontinence

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**ABSTRACT...** There is no consensus on the amount of exercise necessary to improve pelvic floor muscle (PFM) function. We reviewed the pathophysiology of PFM dysfunction and the evolution of PFM training regimens since Kegel introduced the concept of pelvic floor awareness and the benefits of strength. This paper describes the effect of pelvic floor muscle training (Kegel Exercises) in stress urinary incontinence. The design of PFM training logically requires multiple factors to be considered in each patient. **Objectives:** The objective of the study was to determine the effects of pelvic floor muscle training with postpartum urinary incontinence (1) Improvement in urinary control. (2) Improvement in relieving urinary urgency. (3) Time duration in which patient returns to functional activities. (4) Any complications after exercises. **Study Design:** Quasi Study. **Place and Duration of Study:** the study was carried out in department of physiotherapy Ghurki Trust Teaching Hospital Lahore the duration of study was 12 months from May 2011 to April 2012. **Patients and Methods:** The study was based on 28 patients who were having the complaint of postpartum urinary incontinence. Abdominal and pelvic control was assessed and recorded before commencing the exercises and was also assessed regularly on every follow up. **Results:** Kegel exercises helps to control and eradicate the problem of postpartum stress urinary incontinence. **Conclusions:** Kegel exercises give a good result in postpartum stress urinary incontinence.

**Key words:** Postpartum, Kegel Exercises, pelvic floor.

## Article Citation

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## INTRODUCTION

Arnold Kegel, a gynecologist from the University of Southern California, was the first author to talk about the PFM<sup>1,2</sup> since 1950, PFM exercises have been recommended to compensate for pelvic floor dysfunction, and limit prolapse and urinary incontinence. Kegel also generated interest about the impact of anatomical conditions on pelvic floor function. In 1963, Jones suggested that anatomic characteristics could influence the performance of PFM exercise<sup>3</sup>. With the introduction of biofeedback in 1984, the outcome of PFM training began to be evaluated and provided confirmation of the use of Kegel exercises in changing the PFM function.

The pelvic floor is made up of a group of muscles and connective tissue that extends as a sling across the base of the pelvis; it comprises two layers, the superficial perineal muscles and the deep pelvic diaphragm, and provides support for the pelvic organs, the bladder and elements of the spine. Pelvic floor dysfunction and secondary stress incontinence

negatively affect many women, and as the population ages, more and more women will be affected and the cost of dealing with these issues will also increase<sup>4</sup>. The origins of PFM dysfunction are multifactorial, and are a consequence of human evolution, childbirth, lifestyle and aging. Many other factors also negatively impact the function of the pelvic floor, such as constipation, a sedentary life, the effects of menopause and advancing age. The consequences include stress urinary incontinence (SUI).

This article reviews the pathophysiology of PFM dysfunction in postpartum stress incontinence and PFM training regimens. It also discusses the different protocols designed to strengthen the pelvic floor muscles. We trust this information will help health professionals tailor their programs for their patients and to encourage more research in more scientific approaches to pelvic floor training<sup>5</sup>.

## Pathophysiology of pelvic floor muscle dysfunction

Pelvic floor muscle dysfunction affects muscle fibre

length and contractile force. In women with SUI, Verelst and colleagues found a decrease in active force and stiffness in the pelvic floor. Patients whose muscular contraction occurs below the resting muscular length, as with overactive pelvic floor muscle (OPFM), experience muscular weakness and early time-to-fatigue<sup>6</sup>. In incontinent women, the delay between stimulus and contraction of PFM is prolonged and slow-nerve conduction, suggestive of damage to the pudendal nerve, has been identified<sup>7</sup>.

Muscle fibre distention occurs as a consequence of POP and contributes to such patients achieving poor results with exercise and conservative treatment,<sup>8</sup> the causal mechanism may be that fibre distention prevents the proper filament overlap on initiation of muscle contraction. The relation between POP and PFM strength were studied by DeLancey,<sup>9</sup> who found a 43% incidence of reduced PFM strength and muscular atrophy among the group with POP, compared to controls.

Pelvic floor muscle training (Kegel exercises) is the most commonly used physical therapy treatment for women with stress urinary incontinence. It is sometimes recommended for mixed and less commonly urge urinary incontinence.

The aim of Kegel exercises is to improve muscle tone by strengthening the Pubococcygeus muscles of the pelvic floor. Kegel is a popular prescribed exercise for pregnant women to prepare the pelvic floor for physiological stresses of the later stages of pregnancy and vaginal childbirth. Kegel exercises are said to be good for treating vaginal prolapse and preventing uterine prolapse in women and for treating prostate pain and swelling resulting from benign prostatic hyperplasia (BPH) and prostatitis in men. Kegel exercises may be beneficial in treating urinary incontinence.

Pelvic floor dysfunction may include any of a group of

clinical conditions that includes urinary incontinence, fecal incontinence, pelvic organ prolapse, sensory and emptying abnormalities of the lower urinary tract, defecatory dysfunction, sexual dysfunction and several chronic pain syndromes, including vulvodynia

Postpartum pelvic floor dysfunction only affects women who have given birth, though pregnancy rather than birth or birth method is thought to be the cause.

Levator ani muscle the pubovisceral muscle and the ileococcygeal muscle. The layer formed by the muscle and its fascial layers (superior and inferior) is referred to as the "pelvic diaphragm".

Postnatal urinary incontinence has been linked with injury to the connective tissue support, vascular damage to the pelvic structures, damage to the pelvic nerves, and muscles and injury to the urinary tract. With or without the presence of urinary incontinence symptoms, childbirth-related damage to the continence mechanism must be taken seriously and special attention should be paid to postnatal women, as they are a high-risk sub group for urinary incontinence. First is to teach women to pre contract the PFM before and during efforts when intra-abdominal pressure increases. This is thought to stabilize the bladder neck during increased abdominal pressure such as coughing, which prevents urinary leakage through a muscle timing process.

The second goal is to improve PFM strength in order to build up long-lasting structural support of the pelvis by elevating the levator plate to a higher location in the pelvis and by enhancing hypertrophy and stiffness of the PFM and connective tissues.

The types of exercise, frequency and intensity, and the duration of the training period in addition to adherence to the training protocol are of primary importance.

### Principles of effective muscle training

To achieve effective function, patients should ensure that their pelvic muscles have strength (maximal force production), endurance and coordination. Also, the speed of contraction and metabolic efficiency of the muscle fiber will influence muscular performance<sup>10</sup>. To improve general muscle strength and power, sedentary, sick or elderly individuals are recommended to perform 1 to 2 sets of 8 to 12 preset exercise repetitions, with 8 to 10 exercises per session, at a frequency of 2 to 3 times per week<sup>11</sup>.

To be effective, PFMT depends on dosage. Intensity of and adherence to the training program in addition to supervision by a trained healthcare professional is of primary importance.

It is necessary to overload the PFM muscle for a training program to be effective; however, fatigue may be the reason pelvic floor muscles fail and urinary incontinence happens. Consequently, fatigue during a rehabilitation program is probably contraindicated<sup>12</sup>.

The principle of specificity requires that the muscle must be trained with physical activity that replicates as closely as possible the functional movement required. For the pelvic floor, the Kegel exercise meets the specificity requirement and is the only considered to improve PFM fibre function<sup>1,13</sup>.

Supervised intensive PFMT (Kegel Exercises) in treatment of urinary incontinence immediately after delivery is more effective than standard postnatal care and no treatment. PFMT (Kegel Exercises) in the treatment of persistent urinary incontinence 3 months or more after delivery is more effective

## MATERIAL AND METHODS

### Objectives

The objective of the study was to determine the effects of pelvic floor muscle training with postpartum urinary incontinence and to also see the

1. Improvement in urinary control.
2. Improvement in relieving urinary urgency.
3. Time duration in which patient returns to functional activities.
4. Any complications after exercises.

### Hypothesis

The study was design to check the hypothesis that the postpartum stress urinary incontinence is relieved by performing the Kegel Exercises (Pelvic Floor Muscle Training).

### Setting

Department of Physiotherapy Ghurki Trust Teaching Hospital Lahore.

### Duration

12 months from May 2011 to April 2012.

### Study Design

Quasi Study

### Sample

Twenty eight cases of postpartum stress urinary incontinence.

### Sampling Technique

Purposive non-probability sampling

### Parameters to be used in study

- 1) Strength of abdominal muscles.
- 2) Patient's response of urinary incontinence.

### Sample Selection

### Inclusive Criteria

All patients with Postpartum Stress incontinence.

### Exclusive criteria

All urinary incontinence or urgency related to other problems like old age, after hysterectomy etc.

**Data Collection Procedure**

All patients with postpartum stress urinary incontinence were referred from Gynae OPD. After taking the history the abdominal and control was assessed. The patient was asked about the type of incontinence. A uniform sample questionnaire was filled before starting the exercise program to assess urinary control. This was part of subjective evaluation of all participants.

**Data Analysis**

The collected data was transferred and analyzed using SPSS version 11. The analyzed variables included demographic information, improvement in abdominal strength and pelvic control as told by the patient. The variables were analyzed using simple descriptive statistics using mean and standard deviations.

The pre exercise findings of urinary control were compared with the post exercise findings and frequency of distribution table was made. Wilcoxon Signed Ranks was applied to find the effectiveness of Kegel Exercise. The P-value was 0.000, which is less than 0.05.

**RESULTS**

The study comprised 28 patients in duration of 12 months (May 2011 to April 2012). The patients with urine urgency were 14(50%), with burning were 8(28.6%), with retention were 3(10.7%) and 3(10.7%) were missing in follow ups.

The patient is also assessed on the basis of number of deliveries as well. Patients with having 1<sup>st</sup> pregnancy are only 3(10.7%). With 2<sup>nd</sup> pregnancy are 10(35.7%), with 3<sup>rd</sup> delivery are 7(25%), with 4th delivery are 4 (14.3%) and with 5 or more is only 1(3.6%) patient.

Regarding the abdominal control patients, with good abdominal control were 1(3.6%) with satisfactory control were 10(35.7%), with poor control were 14(50%).

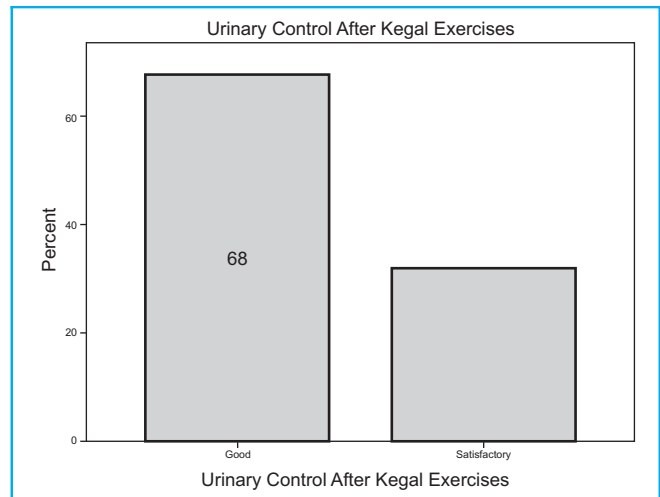
Taking consideration of the pelvic control patients with satisfactory control are 8(28.6%), with poor control were 17(60.7%), and 3(10.7%), are in the missing system.

Urinary control after implicating Kegel exercises was asked from the patient and it was seen that 17(60.7%) of the patients were having good urinary control after exercises and 8(28.6%) were having the satisfactory urinary control after commencing the exercises.

Wilcoxon Signed Ranks Was applied to find the effectiveness of Kegel exercise. The P-value was 0.000, which is less than 0.05.

Urinary Control After Kegel Exercises					
		Frequency	%age	Valid %	Cumulative %age
Valid	Good	17	60.7	68.0	68.0
	Satisfactory	8	28.6	32.0	100.0
	Total	25	89.3	100.0	
Missing	System	3	10.7		
Total		28	100.0		
Pelvic Control					
		Frequency	%age	Valid %	Cumulative Percent
Valid	Satisfactory	8	28.6	32.0	32.0
	Poor	17	60.7	68.0	100.0
	Total	25	89.3	100.0	
Missing	System	3	10.7		
Total		28	100.0		

Abdominal Control					
		Frequency	%age	Valid %	Cumulative Percent
Valid	Good	1	3.6	4.0	4.0
	Satisfactory	10	35.7	40.0	44.0
	Poor	14	50.0	56.0	100.0
	Total	25	89.3	100.0	
Missing	System	3	10.7		
Total		28	100.0		
No. of Delivery					
		Frequency	%age	Valid Percent	Cumulative Percent
Valid	1	3	10.7	12.0	12.0
	2	10	35.7	40.0	52.0
	3	7	25.0	28.0	80.0
	4	4	14.3	16.0	96.0
	5 or more	1	3.6	4.0	100.0
	Total	25	89.3	100.0	
Missing	System	3	10.7		
Total		28	100.0		



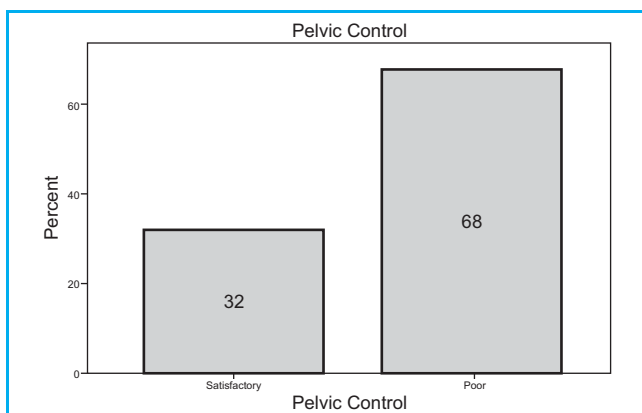
**DISCUSSION**

The patients with stress urinary incontinence are divided according to their symptoms. Some may have retention, some may have burning and some may be having urine retention. Patients having poor abdominal control and multiple deliveries are more prone to stress incontinence. Review reveals that success rate of Kegal exercises in stress urinary incontinence. 68% of the patients are having good response in urinary control while 32% are having satisfactory.

To improve general muscle strength and power, sedentary, sick or elderly individuals are recommended to perform 1 to 2 sets of 8 to 12 preset exercise repetitions, with 8 to 10 exercises per session, at a frequency of 2 to 3 times per week<sup>11</sup>.

Patients with poor abdominal control and having multiple deliveries are prone to the urinary incontinence. Less pelvic control is also another contributing factor putting patient in postpartum stress urinary incontinence.

The results indicate the successful result of the Kegal Exercises in stress urinary incontinence to relieve the symptoms. So the doctor should introduce these exercises in routine follow up so as for the betterment of the patient.



## CONCLUSIONS

Kegel exercises work best to relieve the symptoms in patients with stress urinary incontinence.

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