

The effectiveness of pelvic floor exercises on symptoms in females with stress urinary incontinence

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ABSTRACT

The aim of the present investigation is to depict the interventions of pelvic floor exercises in urinary incontinence. The present study deals with the employment of pelvic floor exercises in subjects of varying age group from 30-60 years. Tools employed for the study are B-SAQ validation, the Bladder Control Self-Assessment Questionnaire (B-SAQ) and 1 Hr pad test which was working as outcome measure. The study was designed to investigate the effect of pelvic floor exercises on symptoms and bothersness caused by urinary incontinence and achieving continence level was marked through pad test. Results confirmed that there was a significant improvement in the symptoms scores of experimental group in which pelvic floor muscles were employed in contrast with the control group. Pelvic floor muscles should be done under the supervision of physiotherapist as geriatric population needs some external support in order to complete the pelvic floor exercise protocol.

INTRODUCTION

Urinary incontinence is commonest problem in old age affecting social, psychological and physical daily activities. The most prevalent urinary incontinence amongst females is Stress urinary incontinence especially at the age between 30-60 years. Generally it is believed

these reduced in muscle strength of urethra and muscle around the sphincter is responsible for causing incontinence. The intension of doing pelvic floor exercises is to increase maximal urethral pressure and also increase in reflex contractions sphincteric unit which can sustain the rise in the intraabdominal pressure. Pelvic floor muscle training exercises is the recognized and preferred

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conservative treatment for urinary incontinence, (Sapsford et al. 2001, Ferreira et al. 2004, Sinclair et al. 2011, Kilicin et al. 2016 and Aarathi et al., 2018).

Exercises for pelvic floor were introduced in 1948 by Kegel, till date many randomized controlled studies and systematic reviews have supported the efficacy of these exercises, (Cavkaytar et al. 2014). Many researchers have reported that more than 68.4% of the women suffered from SUI while 41.2% of the women reported with mixed urinary incontinence, both showed improvement after 8 weeks of Kegel's exercises. The incidence of urinary incontinence in female subjects in a Turkish community was determined and stress urinary incontinence was found to be higher i.e. 33.7 % than any other type of incontinences in females of different age groups. This was explained through observational studies, based on questionnaires, where it was found that out of total of 192 subjects having incontinence, 45.5% had stress urinary incontinence (SUI), 19.8 % had urge urinary incontinence and 34.6% had mixed incontinence (Bhanupriya et al. 2015 and Kilicin et al. 2016).

In the previous studies as explained with different outcome measures and exercise protocols including other intervention to enhance the muscle contraction like biofeedback, duration and number of contraction per day can also be a cause for difference in results output. Therefore pelvic floor exercises are accepted as an efficient intervention for SUI, many queries related to protocol adapted are still not yet explained. Other adjunct treatment like interferential therapies did not prove beneficial over pelvic floor exercises in SUI as recently reported by Aarathi et al. 2018).

For application of a competent treatment concern should be not only towards the pathology but also towards the social, socio-economical status and emotional aspect. Earlier surgical intervention was usually considered as foremost choice of treatment, last few years inclination towards conservative treatment has increased. As per the opinion from The International Continence Society, conservative treatment should be the first choice in incontinent patients (Dumoulin et al. 2016).

Researchers also employed different type of exercises protocol for primiparous women and their sexual efficacy by employing 8 weeks of pelvic floor exercises and found improvement in the outcome measure and strength of pelvic floor muscles (Luginbuehl et al. 2015, Malhotra et al 2018). Aforementioned studies employed for Pelvic floor exercises combination with additional treatment but there is limited study on the age group 30 – 60 years of ages. Therefore, there is need to determine that whether the stress urinary incontinence can alone be treated with PFMT on different age groups. The aim of the study is to evaluate the effectiveness of pelvic

floor muscle exercise in female subjects with different age groups having stress urinary incontinence

MATERIAL AND METHODS

The 42 female subjects between the ages of 30-60 were included in the study and were divided into two groups, Control (Group A) & Experimental (Group B) and. The study was performed at RLJT Hospital & Research Centre, Jhunjhunu. The group allocation was done blinded through randomly and data acquisition, data reduction, data analysis was been blinded, the demographic data of name, age, height weight and BMI were recorded subjects present with stress urinary incontinence based on patients history ,both parous and nulliparous , pre and post menopausal and hemodynamically stable and physically fit for therapeutic exercises these subjects who were included in study, subjects having any history of organ prolapse ,suffering from vaginal or urinary tract infection, tumors or infectious disease or under some kind of medications affecting incontinence were excluded. Total study period was for 8 weeks, readings were taken at baseline, on 4th week and 8th week of the study. Experimental groups were asked to come are to come every weekends and perform the exercise and follow up while control group B were only explained the exercises. Also both groups were asked to follow up on 4th and 8th weeks.

B-SAQ validation, the Bladder Control Self-Assessment Questionnaire (B-SAQ) and 1 Hr pad test was employed as outcome measure, following the method of Sahai et al (2014). The B-SAQ contained 8- questions that assessed the symptoms such as number of times a patient is required to void, difficulty in holding urine, nocturia and urine leaks, for which there were associated scores. Responses to both were scored on a 4-point Likert scale. Total of both the score can give a significant illustration of patients to seek help or medical advice.

1 hour pad test: the test was performed on all the female subjects, where they were given pre-weighed pads and were asked to wear the same, few subjects were requested to wear two pads due to increased symptoms of incontinence. All subjects were asked to drink 500 ml of plain water at room temperature in 15 minutes of span, following which they asked to conduct certain activities like simple walking, climbing up and down a flight of stairs, standing up-down from sitting (10 times), cough vigorously (10 times), on spot jog for 1 minute, pick up objects with bending (5 times) and washing hands in running water (1 minute). All patients were strictly asked not to void their bladder for 1 hour and later the pads were weighed, for which the calculations were done on the basis of pad weight in grams i.e.

1-10 gms signified mild incontinence, 11 to 50 gms signified moderate and more than 50 gms indicated severe incontinence respectively.

Patients were explained about the anatomy and physiology of pelvic floor muscle a group class was conducted for both the groups on another day was an live demonstration video to explain how to perform the exercises in the protocol, also exercises in three different position i.e. Lying, sitting and standing an muscle contraction and stopping while passing the urine For experimental group the patients were explained and asked to perform correct pelvic floor muscle exercise in three different positions: Lying down supine with one pillow below the hips, sitting on chair and standing with legs both slightly kept apart. Patients were asked to perform exercises in lying position for first two weeks 10- 15 repetition. Contracting the muscle with a hold of 2-4 seconds of hold in each contraction without holding breath they were also asked to perform 2-3 sets per , with minimum of 20-30 contractions in a day. At 3rd and 4th week there was an addition of sitting position, number of set remained the same, by increasing the number of repetition to 30-40 in each set and 60-120 contractions over all throughout the day. Remaining 4 weeks, the protocol was added with an additional position of standing and keeping the number of sets as constant, the contraction per set was increased to 50-60 per set and minimal number of contractions per day ranged from 150 to 180. Telephonic and message reminders were sent on phone to encourage the subjects twice a week and queries were noted down and answered either on telephone or during the follow up visits.

RESULTS AND DISCUSSION

The data analysis was done with help of SPSS software version 19 was applied , To isolate the variable that differ from the others Turkey test was applied for multiple comparison analyze the mean and standard deviation within group and ANOVAs test were applied to calculate the difference between groups. Forty subjects were included in the study having a mean age of 46.05 ± 6.04 and were divided in experimental and 41.15 \pm 7.12 in control group. The mean height in respective groups were 162 ± 6.69 cm and 58.55 ± 5.09 cm, mean weight was 64 ± 6.50 and 67.3 ± 5.54 in kg, The mean BMI was also calculated as 25.23 ± 2.44 and 24.63 ± 2.13 respectively for experimental and control group.

Amongst the 42 participant in the study, 2 women could not complete the study there was no significant difference seen in Group A (Control) before treatment and after treatment, but there was a statistical difference seen amongst Group B (Experimental Group) subjects at 4th week and 8th week of treatment.

As shown in figure I, the pad test demonstrates the significant improvement at 4th and 8th week for patient who was engaged in exercises and with regular follow-ups Group B, there was an improvement seen in the pad test performed for women in control group (Group A) but was not statistically significant.

Explaining through figure 1 & table 2 there was no significant difference found in between baseline data and 4th week and at end of 8th week in Group A (Control group), similarly when compared within intergroups as explained through table 3, there was a significant dif-

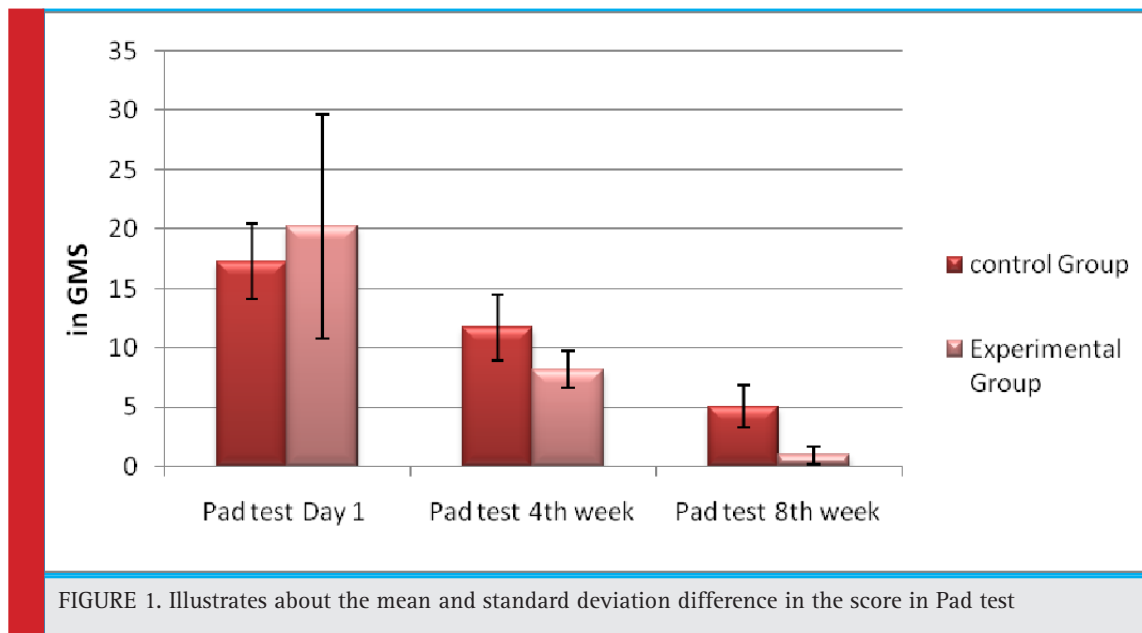


Table 1. Illustrates the mean and standard deviations in demographic data.		
Characteristics	Group A	Group B
Age (Mean ± SD)	41.15±7.12	46.05±6.04
Height (In cm) (Mean ± SD)	158.55±5.09	162±6.69
Weight(In kg) (Mean ± SD)	67.3±5.54	64±6.50
BMI (Mean ± SD)	24.63±2.13	25.23±2.44

ference seen in pad test results for experimental groups, bringing the P at significant value of <0.001.

Explaining through figure 2 the result signifies that symptoms score of B-SAQ were significantly improved from day 1 4th week and at 8th for group B week but there no significant improvement in the scores for control group, figure 3 explains about the bothers score in B-SAQ in shows neither the experimental group nor the control group brings a significant change.

The pelvic floor muscles constitute the core muscles of the pelvis; the study was designed to investigate the effect of pelvic floor exercises on symptoms and bother-

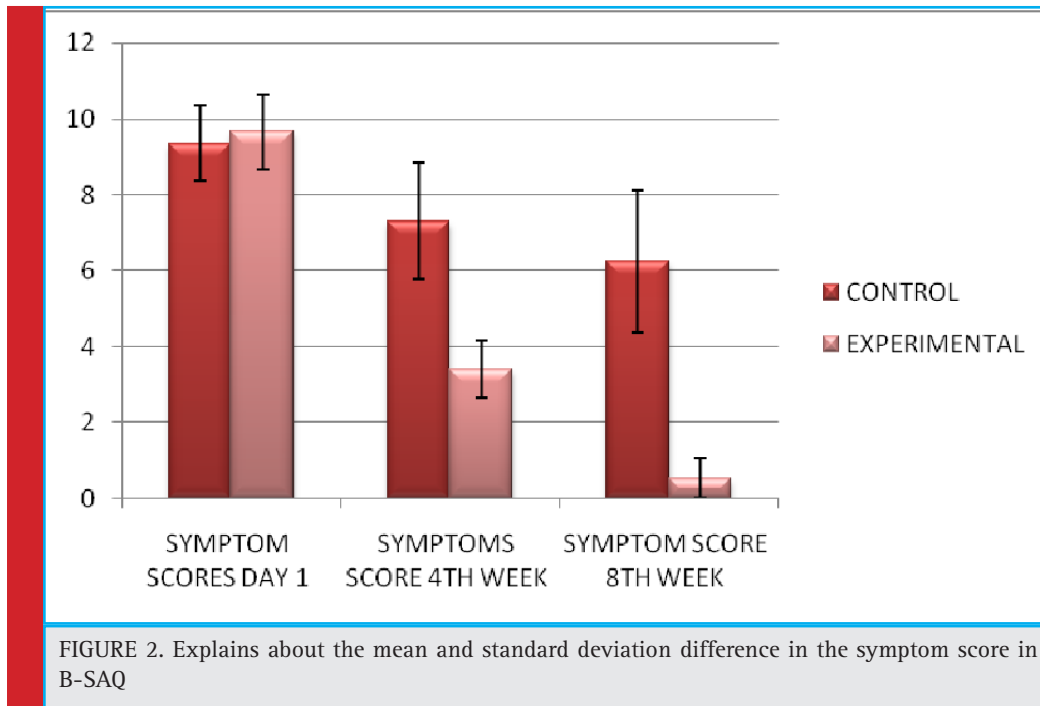
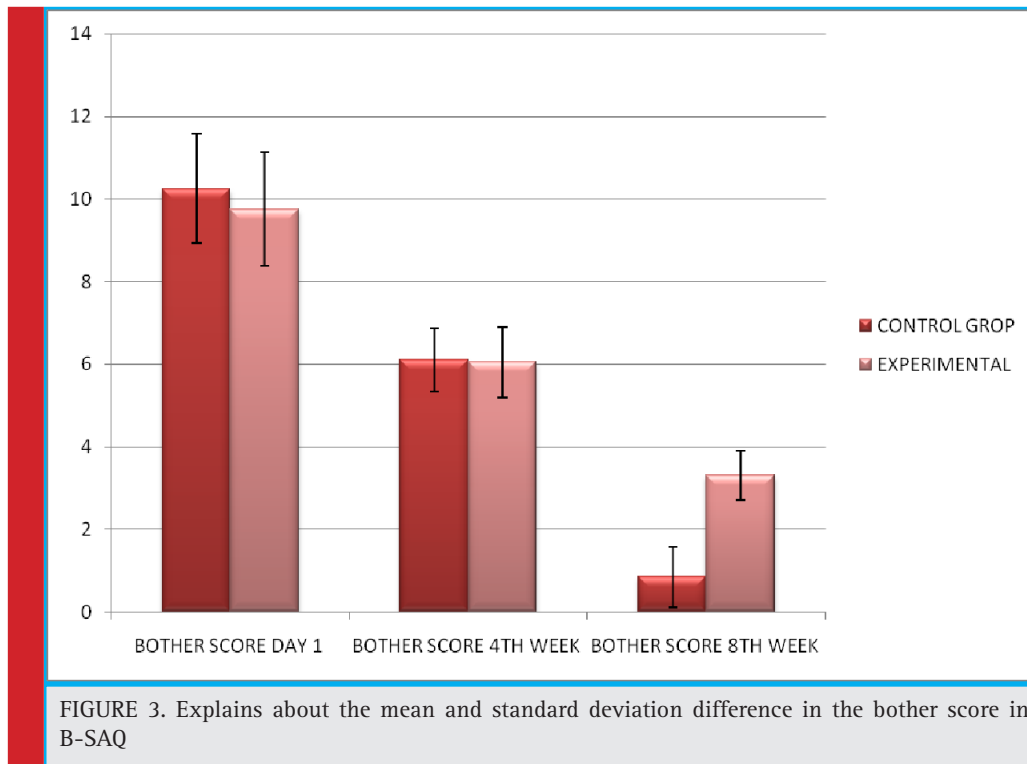


Table 2. As explained in the above table comparison illustrates the pad test day 1 proved to be statistically significant for 4th week and 8th week			
	Statistics	Control group	Experimental group
Day 1	Median (Q1,Q3)	17(15, 18)	19(13, 23)
4 th week	Median (Q1,Q3)	11(9,13)	8(7,9) α,@
8 th week	Median (Q1,Q3)	5(3,27)	1(0,1.75) α,β,#

Q1: first quartile, Q3: third quartile
 α. Statistically significant (p <0.001) reductions at 4th week and 8th week compared to Day 1 in patients with Experimental group
 β. Statistically significant (p <0.001) reduction from week 4th to 8th week in patients with Experimental group
 @. Statistically significant (p <0.001) differences in mean pad test scores between Control group & Experimental group regimes at 4th week
 #. Statistically significant (p <0.001) differences in mean pad test scores between conventional and advance physiotherapy regimes at 8th week



ness caused by urinary incontinence and achieving continence level were marked through pad test. There was a significant improvement in the symptoms scores of experimental group in contrast with the control group. The bother score when compared in both the groups at baseline and 4th week there was no statistical significant difference seen. The present study showed a significant decrease in symptoms and levels of incontinence, also there was an improvement reduction in frequency, urgency and nocturia in experimental group when compared to the control group in a 12 weeks protocol. Supervised protocol for pelvic floor exercises proved to be a most effective method for improvement in the symptoms in urinary incontinence. In a study by Sharon et al. (2010), it has been explained that this severity impacted the quality of life it was found that 30 % of female subjects and 18% of male subjects were reported with micturition dribbling and severity from

mild to moderate, also female were more affected than men associated with other variable representing increase in the micturition dribble .this study showed that the increase in symptoms were disturbing quality of life. A significant improvement was seen in quality of life and self esteem frequency of urination and amount of urine, (Johromi et al. 2014).

In a study performed by Ali et al. (2011) the effect of Kegels exercises on women aged between 25-54 years suffering from urinary incontinence was carried out, it was found that the average score before administering the exercises was 53.15 and after the treatment there was a significant improvement to 73.82, bringing the significant level to $p=0.0001$. A study performed by another researcher on 30 patients affected with urinary incontinence in Imam Reza and Gharazi hospital at Sirjan city Iran with a aim to investigate the effect of kegels exercises on incontinent female subject for 3 month showed

Table 3. Illustrates the mean and standard deviation questionnaire at different time interval for both control and experimental group

Source of Variation	DF	SS	MS	F	P
Between Subjects	19	59.500	3.132		
Between Treatments	5	1254.367	250.873	230.716	<0.001
Residual	95	103.300	1.087		
Total	119	1417.167	11.909		

a significant improvement in reduction frequency of urination and was lessened by 30 % concluded that kegels exercises can become a suitable method to treat urinary incontinence, (Baba et al. 2006). Through the present study we explain that it is better to do pelvic floor exercises under supervision of a physiotherapist, learning of the correct technique of exercises to strengthen the muscle for required results, 2 months of exercises protocol results in the improving the strength and symptoms.

Limitation of the study : Considering small sample size difficult to draw and firm conclusion Explaining and recognizing the correct pelvic floor muscle and skilled exercises learned by patient as treatment can result in positive effect but if not can result in negative effect increasing frequency of urination and dribbling.

CONCLUSION

Pelvic floor muscle exercises can be considered as an empowerment methods for improvement in the symptoms and bother score also improving on pelvic floor muscle strength. So it is recommended that these types of exercising protocol can be utilized in improving the strength and quality of life in patient suffering from incontinence

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