

RESEARCH ARTICLE

EFFECTIVENESS OF KEGEL'S EXERCISES IN ELDERLY MALE AND FEMALE WITH URINARY INCONTINENCE

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ABSTRACT

Objective: to determine the effectiveness of Kegel exercises in elderly male and female patients with stress urinary incontinence. **Methodology:** A quasi experimental study was conducted at In Department of urology of Shaheed Mohtarma Benazir Bhutto medical university, Chandka medical college Larkana Sindh from January 2017 to June 2019. The non-probability convenient sampling technique was used for sample selection. The n=43 patient with the age above 55 years was included in the study. Patient with neurological, cognitive and male with prostate problem were excluded from the study. Both male and female were received intervention of Kegel exercise (KE) for three months and 3-4 time/day. The urinary distress inventory (UDI) and Incontinence impact questionnaire was used for urinary distress and quality of life. The data was obtained at baseline, at 6th week and after 12th week. The mean±SD, n(%), Mean difference (MD), p-value (p<0.05) and effect size (Cohen's d & partial eta square was used to describe the data. For within group analysis Repeated Measure ANOVA was used and for between the groups analysis independent t-test was used. SPSS ver 21 was used for data analysis. **Results:** The mean age of the study participants was 64.97±9.36 year. Within group analysis showed large significant improvement in both, males and females (p<0.05). However, between group differences showed significant improvement with larger effect size in males as compared to females (p<0.05). **Conclusion:** Kegel exercises are effective therapy for urinary incontinence in both genders. But Kegel exercises are more effective in males for urinary incontinence in improving urinary distress and quality of life.

Keywords: Gender, Geriatric population, Kegel exercises, Urinary incontinence

INTRODUCTION

According to the International Continence Society (ICS), the urinary incontinence is defined as involuntary leakage of urine,¹ and can occurs in all ages because of many different reasons.² Urinary incontinence (UI) is more common in females as compared to males. It is considered as the main cause of UI in males is damage to the incontinence mechanism during radiotherapy or surgery for prostate cancer or enlargement of prostate. However, dysfunction of pelvic floor muscles and bladder during pregnancy or sometimes after menopause is the main reason behind UI in females.³

The UI is classified as stress, urgency, and mixed urinary incontinence. In stress urinary incontinence (SUI), leakage of urine due to increased intra-abdominal pressure such as coughing,² sneezing, physical exertion,³ while sudden desire to void which is difficult to control occurs in urgency urinary incontinence (UUI). But, a combination of both is mixed urinary incontinence (MUI).² The SUI is more common which is 50%, followed by UUI which is 14% and prevalence of MUI is 32%.¹

The prevalence of UI is 2 times more common in older female as compared to males. The UI affected

20-33% of adults and 11-55% elder population.⁴ According to ICS, UI is social and hygienic problem,⁵ which leads to social isolation.⁴ The UI has significantly affect quality of life because of depression, anxiety, psychological distressed, emotionally disturbed and ultimately poor life satisfaction.⁴

Number of treatment regimen such as behavioural therapy, pharmacological and surgical procedures has been used for the management of UI included. Behavioral therapy included schedule toileting, bladder training, fluid manipulation, and pelvic floor muscle exercises.³ Conservative management is considered as the first line of treatment due to less significant side effects and more improvement in symptoms. In previous studies it has been found that pelvic floor exercises is effective in more than 50% of population with UI.⁶

Furthermore, Kegel exercises (first designed by Dr. Kegel, in 1948)⁷ have 30-90% success rates in women with SUI.⁸ The number of contractions and duration of holding time in Kegel exercises, is usually custom made according to the patients' need. Currently, there is no specific protocol for Kegel exercises has been designed, but fundamental rules

include, identification of muscles to slow the urine, contraction of muscle in a correct manner, and repetitions of cycle for several times. Also, fast and slow contractions are important components of exercise.⁷

Though many studies have been conducted to determine with effectiveness of Kegel exercises with this condition however there is limited literature available on the gender base difference in urinary incontinence and quality of life. The objective of the study was to determine the effectiveness of Kegel exercises in elder males and females with urinary

METHODOLOGY

A quasi experimental study was conducted at In Department of urology of Shaheed Mohtarma Benazir Bhutto medical university, Chandka medical college Larkana Sindh from January 2017 to June 2019. The patient with the age above 55 years was included in the study. Patient with neurological, cognitive and male with prostate problem were excluded from the study. The non-probability convenient sampling technique was used for sample selection. A total of n=107 patients were evaluated for inclusion criteria and n=51 patient fulfil the criteria. A total of n=8 participant were declined to participate in the study. So n=43 participant were allocated Male (n=20) and Female (n=23) group. (Figure 1)

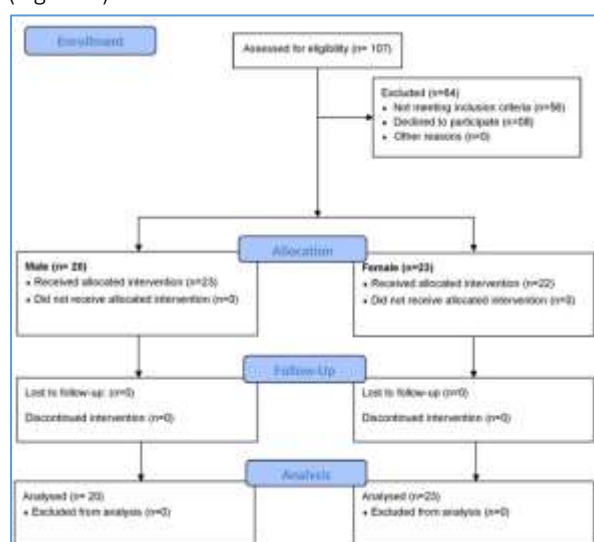


Figure 1: CONSORT diagram

Both male and female were received intervention of Kegel exercise (KE) for three months and 3-4 time/day. The procedure of Kegel exercises were explained and guided to the participant and initial

three days participants were asked to visit the hospital, to check the proper application of KEs.

The age, BMI was taken as demographic data. The urinary distress inventory (UDI) and Incontinence impact questionnaire was used for urinary distress and quality of life. The data was obtained at baseline, at 6th week and after 12th week. The mean±SD, n(%), Mean difference (MD), p-value ($p < 0.05$) and effect size (Cohen's d & partial eta square) was used to describe the data. As the data met the assumption of parametric tests, so for within group analysis Repeated Measure ANOVA was used and for between the groups analysis independent t-test was used. SPSS ver 21 was used for data analysis.

RESULT

The mean age of the n=43 study participants was 64.97 ± 9.36 year. A total of n=23 participants were female and remaining n=20 were male. The average BMI of the participant was 26.11 ± 3.86 . The frequency distribution of BMI according to gender can be seen Figure 2.

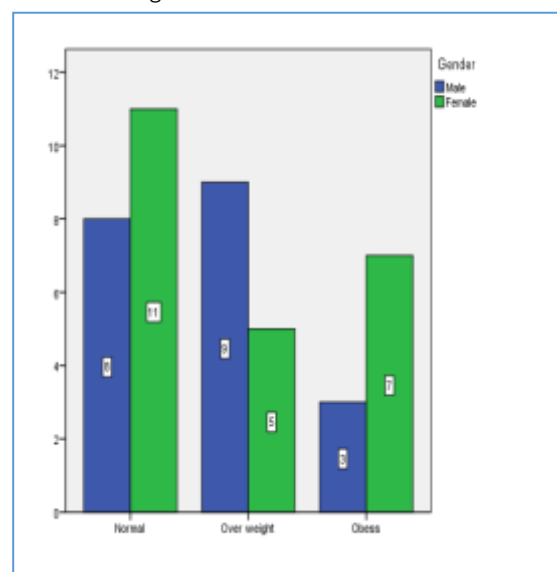


Figure 2: Gender based distribution

Within group analysis of Incontinence impact questionnaire showed significant improvement from 0 to 12th week in male ($\eta^2 = .781$, MD=15.55, $p < 0.05$) with large effect size as well as in female group ($\eta^2 = .808$, MD=-22.13, $p < 0.05$) and the total score urinary distress also showed significant improvement from 0 to 12th week in male ($\eta^2 = .759$, MD=-16.66, $p < 0.05$) and female group with large effect size. (Table 1)

While comparing groups, Incontinence impact questionnaire and urinary distress was significantly improved at 6th and 12th week of intervention in

male group as compared to female group with large effect size ($p < 0.05$). (Table 2)

Table 1: Within group changes (IIQ & UDI)

		Male (n=20)		MD/ F(df)	d/ ηp^2	p-value	Female (n=23)		MD/ F(df)	d/ ηp^2	p-value
		Mean	SD				Mean	SD			
IIQ-SF (total)	Pre	55.15	16.55	11.55	1.20 ^a	0.000***	69.48	12.40	4.50	0.64 ^a	0.006**
	6th week	43.60	17.63	15.55	2.07 ^b	0.000***	64.97	17.63	22.13	2.31 ^b	0.000***
	12th week	28.05	19.19	2,38(57.67)	0.78 ^c	0.000***	42.83	19.01	2,44(92.29)	0.80 ^c	0.000***
UDI (total)	Pre	45.83	6.75	4.79	0.64 ^a	0.010**	47.46	6.61	1.63	0.54 ^a	0.016**
	6th week	41.04	6.92	16.66	1.60 ^b	0.000***	45.83	7.64	7.42	0.82 ^b	0.001**
	12th week	24.37	7.06	2,38(59.69)	0.75 ^c	0.000***	38.40	9.31	2,44(17.82)	0.44 ^c	0.000***

^aPre ver. 6th week, ^b6th week ver 12th week, ^cPre to 12th weeks
Significance Level: $p < 0.05$ *, $p < 0.01$ ** , $p < 0.001$ ***.
Cohen's d (d), partial eta squared (ηp^2) for effect size

Table 2: Between Group analysis (UDI & IIQ-SF)

		Male (n=20)		Female (n=23)		MD	p-value	d
		Mean	SD	Mean	SD			
IIQ-SF (total)	pre	55.15	16.55	69.48	12.40	-14.32	0.002**	-0.89
	6 week	43.60	17.63	64.97	17.63	-21.36	0.000***	-1.04
	12 week	28.05	19.19	42.83	19.01	-14.78	0.015*	-0.72
UDI (total)	pre	45.83	6.75	47.46	6.61	-1.63	0.430	-0.24
	6 week	41.04	6.92	45.83	7.64	-4.79	0.038*	-0.62
	12 week	24.37	7.06	38.40	9.31	-14.03	0.000***	-1.29

Significance Level: $p < 0.05$ *, $p < 0.01$ ** , $p < 0.001$ ***.
Cohen's d (d) for effect size

DISCUSSION

The aim of the study was to determine the effectiveness of Kegel exercises on urinary incontinence in males and females. However, the results of study showed significant improvement in both genders presented with urinary incontinence.

According to the results of the study, both male and female showed significant improvement in disease-specific quality of life and urinary distress on Incontinence Impact Questionnaire and Urogenital Distress Inventory respectively. In previous studies, it has been found that Kegel exercises is an effective therapy which improves quality of life, incontinence, and thus self-esteem in elder male and female population.⁹ In many previous studies effectiveness of Kegel exercises in women has been discussed but according to the results of current study, it is equally effective for male population.¹⁰

According to National Institute of Health, over-activity or weak bladder and pelvic floor muscles, nerve damage that control bladder such as Parkinson's disease, diabetes, multiple sclerosis, and blockage from enlarged prostate especially in men causes UI.¹¹ Kegel exercises strengthens the pelvic floor muscles that cause urinary incontinence.¹² Also, a study conducted by Park SW, in which significant improvement was observed in

incontinence, quality of life, and physical function after Kegel exercise in patients after radical prostatectomy.¹³ The possible reasons of improvement in UI after Kegel exercise is repetitive selective volunteer contraction and relaxation of pelvic floor muscles, which strengthens the muscles of pelvic floor and thus voluntary control. Both, improved strength and voluntary control supports the urethral closure mechanism. Also, repetitions enhance re-education which improves tone of pelvic floor muscle and automatic contraction of pelvic floor muscles to guard stress event is developed. Thus, incontinence is improved in stressful conditions.¹⁴ Thus, improving activities of daily living.¹³

On the other hand, a study conducted on female diabetic patients, incontinence was significantly improved after Kegel exercises.¹⁵ Furthermore, in previous studies it has been discussed that prevalence of UI is more in females than males which is distressing and upsetting condition for females. Quality of life and activities of daily living is highly compromised.¹⁶ Studies have been conducted to determine the effectiveness of Kegel exercises and significant results were reported in reducing incontinence and improved quality of life,^{9, 17} similar to the results of current study.

Furthermore, a study conducted on pelvic floor exercises in females with UI reported the voluntary contraction of pelvic floor muscle causes inward movement and squeeze of pelvic floor muscle which results the stabilization, urethral closure and downward movement resistance. With that contraction of gluteal, hid adductor and abdominal also occurs. However, these muscles are not in anatomical position to support the prevention of urethral and balder neck descent. Therefore, strengthening of pelvic floor muscle may build up the structural support of pelvis. Due to which levator plate may elevated to a higher location in pelvis by increasing stiffness and hypertrophy of pelvic floor muscles and connective tissue. It would improve automatic motor unit firing and prevent descent when abdominal pressure is increased. Therefore, leakage of urine is prevented during physical activities.¹⁸

Moreover, between group differences showed significant improvement in males with larger effect size as compared to females. Also, frequency of training and intensity of contraction is important aspects of strength training. The proper strength training alters the pelvic floor muscle morphology and positon, which improves the activity of muscle during increased abdominal pressure.¹⁸ However, in this study females of rural area were included and were bit negligible towards exercise protocol due to house chores as discussed in previous study,¹⁹ which might contribute to improvement with smaller effect size.

CONCLUSION

Kegel exercises are effective therapy for urinary incontinence in both genders. But Kegel exercises are more effective in males for urinary incontinence in improving urinary distress and quality of life. A multi-centre study with large sample and socio cultural gender based differences related to Pakistan must be incorporated in future study that may confound the result of study.

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