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ORIGINAL ARTICLE

EFFECT OF KEGEL EXERCISES IN THE MANAGEMENT OF PAIN AND URIN-ARY INCONTINENCE IN UTERINE PROLAPSE; A QUASI-EXPERIMENTAL STUDY

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ABSTRACT

Uterine Prolapse is a common condition, one in three women is affected worldwide. Kegel exercises plays vital role in reducing symptoms of uterine prolapse. **Objective:** To determine effects of Kegel exercises in management of pain and urinary incontinence in women with Uterine prolapse. **Methods:** A Quasi-experimental study with non-probability convenience sampling was carried out at Dr. Ziauddin Hospital Karachi from June to December 2022. Inclusion criteria was Females with age of 40-60 years; diagnosed 1st and 2nd-degree Uterine Prolapse with complaints of pain and urinary incontinence. The application of the hot pack was done before exercise for 15 minutes. Four Kegel exercises performed in every session of the participants with 10 repetitions, 6 days a week for one month. SPSS 25was used to analyze data. **Results:** A total of 56 participants with mean age 45.21±5.33 years. Before treatment data indicated that there were 13 respondents in the very severe category, 22 in the severe category, 16 in moderate pain, and 5 in mild pain. However, after given exercises post-treatment pain was reduced. No participants were seen in the severe and very severe pain category, while 10 were found with moderate, 34 with mild, and 12 were found with no pain. **Conclusion:** Kegel exercises have a significant effect in relieving pain and decreasing symptoms of urinary incontinence in females with uterine prolapse after one month of intervention

Keywords: Core muscles, Kegel exercises, Pelvic floor muscle training, Pelvic organ prolapse, Strengthening exercises, Stress incontinence, Urinary incontinence.

INTRODUCTION

The bulging of the womb or uterus into or outside the vagina is known as uterine prolapse, this is mainly due to the weakness of muscles and ligaments that covers the uterus. This is one of the types of organs prolapse in which disease-linked protrusion of the bladder, small intestine, and rectum can be observed into the vagina. Throughout the world, its occurrence rate is 2 to 20 % in women. Risk factors for uterine prolapse in women include work related to heavy lifting, delivery of a baby with heavy weight, multiple vaginal pregnancies, and age-related. The prevalence rate of uterine prolapse is also common in many conditions like Obesity, Constipation, COPD (chronic obstructive lung disease), Pelvic inflammatory conditions, etc. uterine prolapse symptoms are related to their degree of prolapse. There may be fewer or no symp-toms associated with many cases of uterine prolapse,

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while, in advance cases of prolapse, the uterus can be noticeable to the women. Pain in the back and with intercourse, urinary incontinence, and urinary urgency, the fullness of the pelvis, the fullness of the vagina, painful defecation, and constipation are the common symptoms of uterine prolapse.

There are many treatment ways for uterine prolapse in which a variety of surgical procedures are available. Previous studies show that by the age of 80, there is a risk of 11.1% surgery related to uterine prolapse. In many women approximately 30% there is a chance of re-surgery due to the reappearance of signs. Post-menopausal women, over age, a number of pregnancies, and high BMI (body mass index) are the main reasons for surgery. There are a number of surgical procedures available like; surgery through the abdomen, and vagina, and with the advancement of technology laparoscopic and open surgical approaches were also discovered. Choice of treatment depends upon the problems related to structural and functional to minimize the death rate and maximize the treatment for prolonged effects. Apical Ligaments like cardinal and uterosacral provide support to the vaginal and uterus. Vaginal hysterectomy and Manchester repair are the two main traditional surgeries to which the uterus can be restored. However, the rate of recurrence of both procedures is very high as Manchester repair surgery has 21% while vaginal hysterectomy has a 43% chance of recurrence.

According to the international continence society, the main reason for uterine prolapse surgery was urinary incontinence in the past decay. However uncomplicated involuntary urination had only been treated with the conservative approach as the first line of treatment. The delay in progression and advancement of symptoms are the main goals of non-surgical treatment. It is reported in the study that there is not only the improvement of the stage of uterine prolapse possible through Kegel exercise but also a possibility of reduction of symptoms related to this disease. These exercises were used to strengthen the pelvic muscle and increase endurance. Pubococcygeus and iliococcygeus are the two pelvic muscles that are responsible for spontaneous contraction during women's sexual stimulation. The current study's aim was to determine the effect of Kegel exercises in the management of pain and urinary incontinence due to uterine prolapse. Rationale of this study was to fulfil the local literature gap regarding uterine prolapse management through physical therapy treatment with Kegel exercises. At National level there were too less literature observed in the topic of gynecology rehabilitation in patients with uterine prolapse and urinary incontinence. So this study will provide baseline data to the community of health sciences.

MATERIALS AND METHODS

This was a Quasi-experimental study with non-probability convenience sampling technique. It was carried out at Department of Physical Therapy Dr. Ziauddin Hospital North Nazimabad, Karachi from June to December 2022. Ethical approval letter was taken from Bahria University health Sciences with identifier # ERC-70/2022 and Dr. Ziauddin Hospital North Nazimabad with identifier #BASAR/No.045544/physio. The sample size of 56 was derived from the online software openepi.com by taking statistical conditions of 95% confidence interval and 7% margin of error. According to the prevalence of uterine prolapse it was 19.1%.

A prior written consent was taken from all the participants according to standard protocol. Intervention advised were Pelvic drill, Pelvic bridging, pelvic rolling and vaginal muscle strengthening. The intensity and duration of pain were evaluated by visual analog score (VAS) and strengthening of pelvic floor muscles was evaluated by MESA urinary incontinence questionnaire, before and after interventions. The hot pack was given before Kegel exercises for 15 minutes. All patients were supervised by specialized physical therapist. Four different Kegel exercises were performed in every session of the participants with 10 repetitions, 6 days a week for one month.

Females of age 40 to 60-years with diagnosed 1st and 2nd degree of uterine prolapse with a normal urine test, multiple pregnancies, and with normal urine detail report (DR) test were included in this study. Females with uterine prolapse of 3rd and 4th degree,

pregnant and during their post-natal period i.e., 6 weeks post-delivery, use of medications or any surgery done related to uterine prolapse, UTI (urinary tract infection), PCOs (Polycystic ovaries), cancer or cyst in ovaries, and other complications of the reproductive system were excluded from the study. Kegel Exercises to treat Symptoms of Uterine Prolapse are as follows,

For Pelvic Drill participants were advised to lie on the couch and flex their knees at 90 degrees. The therapist put the pillow between their knees and stabilize the abdomen. Now perform the contraction of pelvic floor muscles by squeezing the pillow for 10 seconds and then relaxing the muscles after every contraction. This exercise was performed in 3 sets with 10 repetitions. The goal of this exercise was to strengthen pelvic floor muscles. For Pelvic Bridging Physical therapist advised the participants to lie on the couch in a supine position with flexed knees and then tighten the abdominal muscles. Pull their pelvis upward and hold this position for 5 to 10 seconds. This exercise was done by participants in 3 sets with 10 repetitions. This exercise was used to strengthen the muscles of the pelvic floor.

For Pelvic Rolling participants were advised to lie on the couch in a supine position with their knees flexed and told to move their legs on sideways with bended knees. Performed this exercise in 3 sets with 10 repetitions. This exercise was used to strengthen the core muscles of the pelvis. For Vaginal muscle Strengthening exercise to perform on patients with an empty bladder. The therapist advised the participants to contract their pelvic floor muscles for 5 to 10 seconds with thinking of holding urination with the deep muscle of the vagina. After the contraction of the muscle, the therapist advised them to relax their muscle for 5 to 10 seconds. Patient repeated this cycle with 10 repetitions in 3 sets.

Statistical Analysis

Data analysis was done on Statistical Package for Social Sciences (SPSS) version 25.0. Continuous variables were reported as Mean ± Standard deviation. Frequencies and percentages were calculated for qualitative variables. Multiple bar chart was made for comparative Status of Pain among respondents. A Chi-square test was applied to find out the Pre and Post significance effect of Kegel exercises related to MESA Questionnaire. P-value ≤ 0.05 was considered as statistically significant.

RESULTS

A total of 56 participants were recruited for the study, and their pre- and post-pain statuses were assessed using the Visual Analog Scale (VAS). The results revealed that the mean age of the participants was 45.21±5.33 years. Before treatment, there were 13 respondents in the "very severe" category, 22 in the "severe" category, 16 in the "moderate pain" category, and 5 in the "mild pain" category. Following the administration of exercises, post-treatment pain significantly decreased. Notably, there were no respondents in the "severe" and "very severe" categories, while 10 were classified as having "moderate" pain, 34 exhibited "mild" pain, and 12 respondents reported being in the "no pain" category, as illustrated in Figure 1.

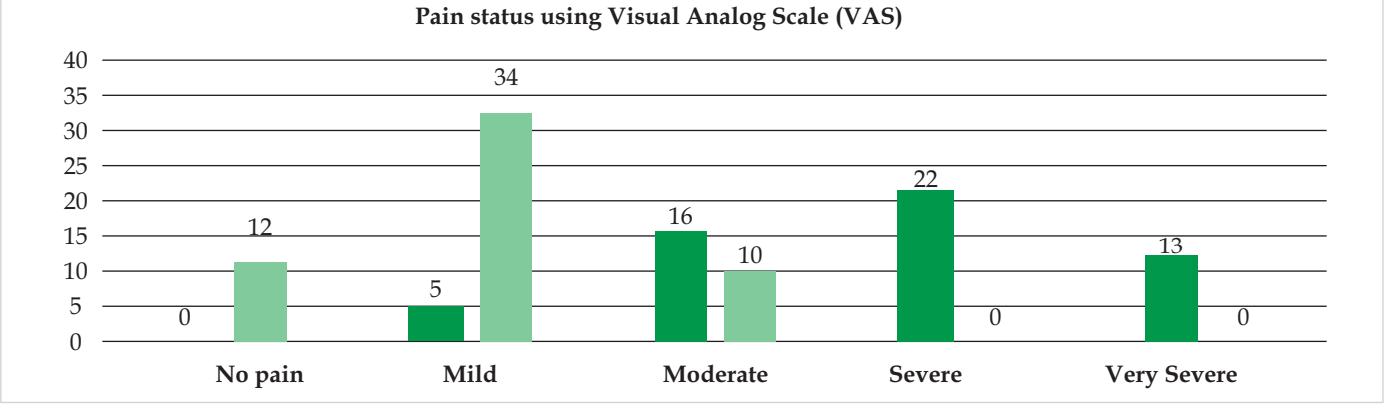

Figure 1. Comparative Status of Pain among respondents

The responses to specific activities showed statistically significant shifts, as presented in Table 1. The frequency of urine loss when coughing gently decreased from 55.4% pre-intervention to 64.3% post-intervention (p = 0.00). Similarly, coughing hard resulted in a decrease from 58.9% to 35.7% (p = 0.00), sneezing from 44.6% to 46.4% (p = 0.00), lifting from 46.4% to 50.0% (p = 0.00), bending from 51.8% to 33.9% (p = 0.00), laughing from 26.8% to 46.4% (p = 0.00), walking briskly/jogging from 39.3% to 10.7% (p = 0.00), and straining when constipated from 57.1% to 53.6% (p = 0.01).

Table 1. Pre & Post comparison of first eight questions of MESA Questionnaire

MESA urinary incontinence questions	Responses	Pre (n=56)		Post (n=56)		p - value
		Frequency	%	Frequency	%	
Does coughing gently cause you to lose urine	Rarely	7	12.5	12	21.4	0.00
	Sometimes	31	55.4	36	64.3	
	Often	18	32.1	8	14.3	
Does coughing hard cause you to lose urine	Rarely	8	14.3	20	35.7	0.00
	Sometimes	33	58.9	33	58.9	
	Often	15	26.8	3	5.4	
Does sneezing cause you to lose urine	Rarely	18	32.1	26	46.4	0.00
	Sometimes	25	44.6	27	48.2	
	Often	13	23.2	3	5.4	
Does lifting cause you to lose urine	Rarely	17	30.4	23	41.1	0.00
	Sometimes	26	46.4	28	50.0	
	Often	13	23.2	5	8.9	
Does bending cause you to lose urine	Rarely	14	25.0	30	53.6	0.00
	Sometimes	29	51.8	19	33.9	
	Often	13	23.2	7	12.5	
Does laughing cause you to lose urine	Never	2	3.6	26	46.4	0.00
	Rarely	15	26.8	26	46.4	
	Sometimes	28	50.0	4	7.1	
	Often	11	19.6	0	0.0	
Does walking briskly/ jogging cause you to lose urine	Never	2	3.6	27	48.2	0.00
	Rarely	14	25.0	23	41.1	
	Sometimes	22	39.3	6	10.7	
	Often	18	32.1	0	0.0	
Does straining when constipated cause you to lose urine	Rarely	14	25.0	30	53.6	0.01
	Sometimes	32	57.1	19	33.9	
	Often	10	17.9	7	12.5	

The remaining sections of the MESA questionnaire were detailed in Table 2. The transition from sitting to standing demonstrated a significant decline in the "Often" category, decreasing from 26.8% to 1.8% (p = 0.01). Similarly, instances where participants unexpectedly lost urine beyond their control saw a marked reduction in the "Often" category, dropping from 19.6% to 14.3% (p = 0.00). Additionally, experiencing urine loss when unable to find a toilet exhibited a substantial decrease in the "Often" category, falling from 25.0% to 1.8% (p = 0.00). Other activities such as the sensation of a very full bladder, washing hands, exposure to cold weather, and consumption of cold beverages also demonstrated significant improvements in post-intervention frequencies. These findings collectively indicate a positive impact of the intervention in alleviating urinary incontinence across various scenarios.

Table 2. Pre & Post comparison of rest of questions of MESA Questionnaire

MESA urinary incontinence questions	Responses	Pre (n=56)		Post (n=56)		p - value
		Frequency	%	Frequency	%	
Does getting up from a sitting to standing position cause you to lose urine	Rarely	20	35.7	36	64.3	0.01
	Sometimes	21	37.5	19	33.9	
	Often	15	26.8	1	1.8	
Some people receive very little warning and suddenly find that they are losing, urine beyond their control	Rarely	17	30.4	30	53.6	0.00
	Sometimes	28	50.0	18	32.1	
	Often	11	19.6	8	14.3	
If you cannot find a toilet or find a toilet is occupied and you have to urge to urinate, how often do you end up losing urine and wetting yourself	Rarely	14	25.0	22	39.3	0.00
	Sometimes	28	50.0	33	58.9	
	Often	14	25.0	1	1.8	
Do you lose urine when you suddenly have the feeling that your bladder is very full	Rarely	13	23.2	25	44.6	0.00
	Sometimes	28	50.0	28	50.0	
	Often	15	26.8	3	5.4	
Does washing your hands cause you to lose urine	Rarely	12	21.4	27	48.2	0.00
	Sometimes	30	53.6	27	48.2	
	Often	14	25.0	2	3.6	
Does cold weather cause you to lose urine	Rarely	17	30.4	33	58.9	0.00
	Sometimes	26	46.4	15	26.8	
	Often	13	23.2	8	14.3	
Does drinking cold beverages cause you to lose urine	Rarely	12	21.4	30	53.6	0.00
	Sometimes	28	50.0	20	35.7	
	Often	16	28.6	6	10.7	

DISCUSSION

As Kegel exercises are used for the strengthening of pelvic muscles there seems a significant difference between the pre and post exercises pain and muscle strength status of the patients. The results showed that the pelvic pain intensity is reduced and shifted to a lesser level after the application of Kegel

exercises. The international continence society explained that the main reason for uterine prolapse surgery was urinary incontinence in the past decay. However, uncomplicated involuntary urination had only been treated with the conservative approach as the first line of treatment. The present study showed an improvement in pain intensity and getting rid of urinary incontinence severity as well.

A study conducted in 2018 selected two groups of participants having pelvic pain to assess VAS. One group received exercise and the other is the control group. The group receiving physiotherapy showed improvement in pelvic pain and strength by using Kegel exercises with some strengthening exercises. Another study conducted in 2021 reported similar results as compare to the current study the pain evaluated by VAS in which pre-treatment evaluations shows more serve and severe category of pain in females while after the treatment the pain is decreased to mild and moderate level. The support system comprises of pelvic floor muscles, the vaginal wall, the arcus tendinous fascia pelvis, and the pelvic fascia are included in the support system. Kegel exercises improve the contraction and relaxation of these muscles In the present study support system of the patients was disturbed due to urethral prolapse, however, patients still showed beneficial effects after following the exercise program.

The study conducted in 2021 calculated that about 30% of women could not contract the pelvic floor muscles correctly. Females are recommended to do the correct exercise at the right time so that the impact of Kegel exercises can be gained. In this study urinary incontinence is recovered in some females while few are in recovering status because a of supervised controlled exercise program under the supervision of a clinical therapist. In a study conducted in 2020 concluded that females who use practice Kegel exercises help themselves to prevent future complications like fecal and urinary incontinence during pregnancy and postpartum. Like this study, the effects of Kegel exercises cannot be underestimated in healthy women facing aging effects or incontinence problems as in our study.

On the other hand, the other benefits of Kegel exercises were highlighted in a literature in 2019 that normal females experienced remarkable improvement in sexual arousal after doing a week of Kegel. Another literature stated that Pelvic floor muscles and healthy sexual life showed positive graph by the practicing Kegel exercises in different studies the Sexual function was assessed using PISQ-12 and by responses to questions regarding sexual activity at pre-treatment and post-treatment along with the Medical Epidemiologic and Social Aspects of Aging (MESA) as we used in our current study.

The current study found that in women's having urinary incontinence the muscle tone, maximal strength, rapidity of contraction, and endurance of the pelvic floor declined. In the present study, the urinary incontinence triggered by lifting: in pretreatment population was reported by 13 women, while after the treatment 5 women said that they experience incontinence "often". Kegel exercises can also be used to guide women to perform the exercises correctly. Another study conducted in 2022 stated that exercise would be beneficial for all women especially having cystocele, rectocele, and urinary stress incontinence.Overall in this present study, the assessment of pain through a validated scale shows a remarkable decrease from pre-treatment level of incontinence to post-treatment level of incontinence of women. The strength of pelvic floor muscles is toned up by using a set program of exercises in uterine prolapse patients suffering from incontinence.

CONCLUSION

The study demonstrates a favorable impact of Kegel exercises on the management of pain and urinary incontinence in uterine prolapse. The significant reductions in both symptoms indicate the potential effectiveness of Kegel exercises as a therapeutic intervention for individuals with uterine prolapse.

DECLARATION

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