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Evaluation of the effectiveness of interventions of pelvic floor muscle exercises (Kegel exercises) in treatment of stress urinary incontinence among women

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Abstract
Introduction: The prevalence of stress urinary incontinence is high among community-dwelling women, also this condition is not aware of them, women are considering it is a part of aging and a social stigma, no women is letting it out to the physicians and even not taking any management to correct the condition, so this made the investigator to teach the exercise to the mothers suffering from the stress urinary incontinence and to lead the healthy life practicing.
Materials and Methods: Quasi-experimental design was adopted to conduct this study. This study was conducted at Department of Obstetrics and Gynaecology, Mamata Medical College, Khammam. Women of 30-50 years age, in which 30 were in experimental group and 30 were in control group. Systemic random sampling technique was used to collect preliminary data. Revised urinary incontinence scale used to assess the level of stress urinary incontinence among women. Intervention: Pelvic floor exercise intervention for experimental group. Outcome Measure: Stress urinary incontinence among women was measured by using revised urinary incontinence scale.
Results: Subjects who practiced pelvic floor exercise had shown a significant reduction in stress urinary incontinence than the subjects who do not perform pelvic floor exercise. This is proved by 't' test =2.7 ($p<$ 0.05) it shows that stress urinary incontinence was more effective in reducing stress urinary incontinence of women.
Conclusion: The result supported that pelvic floor exercise was a very effective and practicable exercise for stress urinary incontinence among women.

Keywords: Kegel exercises, urinary incontinence, uterine prolapse, pelvic discomfort etc.

Introduction
Pelvic floor disorders, including urinary incontinence and pelvic organ prolapse, are prevalent conditions that significantly impact the quality of life for many individuals, particularly women. These disorders can cause distressing symptoms such as urinary leakage, pelvic discomfort, and difficulties with daily activities [1]. Pelvic floor muscle exercises, commonly known as Kegel exercises, have been widely recommended as a conservative treatment approach for pelvic floor disorders. This introduction aims to explore the effectiveness of pelvic floor muscle exercises in the treatment of pelvic floor disorders and highlight their potential benefits [1-3].

Pelvic floor muscle exercises involve the voluntary contraction and relaxation of the muscles that support the pelvic organs, including the bladder, uterus, and rectum. The exercises aim to strengthen and improve the coordination of these muscles, thus addressing the underlying causes of pelvic floor disorders. By enhancing the tone and function of the pelvic floor muscles, Kegel exercises have the potential to alleviate symptoms and improve overall pelvic floor health [4-6].

The primary objective of pelvic floor muscle exercises is to target urinary incontinence, a condition characterized by the involuntary loss of urine [5]. Stress urinary incontinence, which occurs during activities that put pressure on the bladder, such as coughing, sneezing, or exercising, is one of the most common types of urinary incontinence treated with Kegel exercises. These exercises aim to enhance the ability of the pelvic floor muscles to support the bladder and prevent urinary leakage during moments of increased intra-abdominal pressure [7, 8].

Additionally, pelvic floor muscle exercises can also play a significant role in the management of other pelvic floor disorders, including pelvic organ prolapse. Pelvic organ prolapse involves the descent or protrusion of pelvic organs, such as the bladder, uterus, or rectum, into the vaginal canal. By strengthening the pelvic floor muscles, Kegel exercises can improve support for these organs and potentially alleviate symptoms associated with pelvic organ prolapse, such as pelvic pressure or a sensation of "something coming out" [9-13].

While pelvic floor muscle exercises are considered a non-invasive and cost-effective treatment option, their effectiveness and optimal implementation still require further investigation [14]. Factors such as the appropriate technique, duration, frequency, and progression of exercises are essential considerations. Moreover, personalized guidance and supervision from healthcare professionals, such as pelvic floor physiotherapists, can maximize the effectiveness of these exercises [11-16].

Pelvic floor disorders, including urinary incontinence and pelvic organ prolapse, are prevalent conditions that can significantly impact an individual's quality of life. Pelvic floor muscle exercises, commonly referred to as Kegel exercises, have been widely recommended as a conservative treatment approach for these disorders. This literature review aims to explore the existing evidence regarding the effectiveness of pelvic floor muscle exercises in the treatment of pelvic floor disorders and their potential benefits [17-20].

Numerous studies have investigated the effectiveness of pelvic floor muscle exercises in the management of urinary incontinence and pelvic organ prolapse. For stress urinary incontinence, several randomized controlled trials have shown that Kegel exercises can improve symptoms and reduce the frequency of urine leakage [21, 22]. A meta-analysis that demonstrated a significant reduction in the number of urinary incontinence episodes in women who underwent supervised pelvic floor muscle training compared to control groups. These exercises help strengthen the pelvic floor muscles, enhancing their ability to support the bladder and prevent leakage during activities that increase intra-abdominal pressure [23].

In addition to stress urinary incontinence, pelvic floor muscle exercises have also been studied in the context of other types of urinary incontinence, such as urgency urinary incontinence [24]. Understanding the effectiveness of pelvic floor muscle exercises in the treatment of pelvic floor disorders is crucial for healthcare professionals and individuals seeking conservative management options. By exploring the existing evidence and potential benefits of these exercises, this research aims to shed light on their role in improving symptoms, enhancing pelvic floor health, and ultimately enhancing the quality of life for individuals affected by pelvic floor disorders.

The present study aimed to evaluate the effectiveness of pelvic floor muscle exercises (Kegel exercises) as an intervention in the treatment of pelvic floor disorders, mainly urinary incontinence.

Materials and Methods

Subject selection: Quasi-experimental design was adopted to conduct this study. This study was conducted at Department of Obstetrics and Gynaecology, Mamtha Medical College, Khammam. Women of 30-50 years age, in which 31 were in experimental group and 25 were in control group. The study proposal and plan were granted formal ethical approval by the Institutional Ethics Committee.

Inclusive criteria

Women

A) Who was willing to participate in the study?
B) Between 3 months post-delivery to one year with pelvic floor dysfunction.

Exclusion criteria

Women

A) Who had undergone a pelvic floor exercise training programme?
B) Undergone any surgery in the pelvis. C) With Severe Medical and Surgical conditions (Stroke, Colostomy). D) With postpartum complications (wound gaping, infection, cervical tear).

Sampling tools

Systemic random sampling technique and Ernestine Wieden Bach's scale was used to collect preliminary data. A revised urinary incontinence scale to assess the level of stress urinary incontinence among women was also used in data collections. Intervention: Pelvic floor exercise intervention for experimental group. Outcome Measure: Stress urinary incontinence among women was measured by using revised urinary incontinence scale.

Revised urinary incontinence scale (Sansoni. J. *et al*. 2006): Revised urinary incontinence scale consists of 5 statements, related to stress urinary incontinence. The first three questions and the fifth question consist of 4 options and the fourth question consist of 5 options. The five questions are mainly focused on stress urinary incontinence help to find out the urine leakage related to its urgency, urine leakage due to physical activities, amount of urine leakage, how often experienced the urine leakage among women.

Description of the Intervention

This intervention was only used in experimental group. The primary purpose the pelvic floor exercise was to strengthen the pelvic floor muscle for women with stress urinary incontinence.

1. In experimental group there were 30 subjects, the subjects were divided into six groups. Each group had five members.
2. On the first day, the researcher demonstrated the pelvic floor exercise to each group, the total time requirement for the pelvic floor exercise in each group was 30 minutes.
3. From the next day onwards, the researcher did the follow-up. For six weeks pelvic floor exercise was performed by experimental group.

Intervention tool

Interventional package consisted of video-assisted teaching, demonstration and return demonstration techniques used by the investigator to strengthen the pelvic floor muscle and improve the knowledge of women with pelvic floor dysfunction. It consisted of knowledge components and exercises.

1. Video-assisted teaching included anatomy and physiology of pelvic floor, causes of pelvic floor muscle weakness, effect of pelvic floor muscle weakness, medical and surgical management, prevention of complications and importance of maintaining a healthy pelvic floor.
2. Exercise programme through video-assisted teaching, demonstration and return demonstration on Kegel exercise, Abdominal Clams Core Stabilizer Exercise, Bladder Control Spinal Rotation Exercise, Side Leg Circles Exercise, Rolling Knee Step, Push Up Exercise and Bridging Exercises.
3. The interventional package was administered individually at their home and its total duration was about 30 minutes. Every woman was asked to maintain a daily chart to tick the column if she performed the exercises and was sent messages through the mobile phone as reminders to perform exercises. Reinforcement was given through the form of a booklet and community-level volunteers, identified by the investigator to reinforce the need to do regular exercises.

Statistical Analysis

The collected data was analysed by descriptive and inferential statistics. The descriptive statistics include mean and percentage to assess stress urinary incontinence among women. Inferential statistics analysis such as independent 't-test and paired 't' test were used for the effectiveness of pelvic floor exercise on stress urinary incontinence in experimental and control group. Chi-square was used to find out the association between stress urinary incontinence with the selected demographic variables and clinical profile.

Result

Sixty patients were included, i.e., 30 in each group. The demographic and baseline variables were recorded and analysed. The observations are displayed in Table 1.

Table 1: Demographic Variables of subjects participated in this study

Variables		Control Group (n=30)	Percentage (%)	Experimental Group (n=30)	Percentage (%)
Age (Years)	30-40	16	53.33	13	43.33
	41-50	14	46.67	17	56.67
Education	Up to 10th standard	5	16.67	4	13.33
	12th Standard	11	36.67	15	50
	Under Graduate	14	46.66	11	46.67
Occupation	Home Maker	8	26.67	11	46.66
	Employee	22	73.33	19	63.33
Mode of Delivery	Normal Vaginal Delivery	28	93.33	26	86.67
	Caesarean	2	6.67	3	10
	Other	0	0	1	3.33
Number of Delivery	One	5	16.67	7	23.33
	Two	24	80	21	70
	Three or more	1	3.33	2	6.67

Data presented as mean ± SD

Table 1 shows the comparison of mean, SD of age between two groups. The mean age was 29.8 years in control group and 30.4 years in experimental group. The "t" value was 0.1051 which was less than tabulated value and the p-value was 0.91. Thus, there was no significant difference between the ages of patients in between the two groups. The statistical significance level was $p<0.05$.

Table 2: Distribution of clinical variables of subjects participated in this study

Variables		Control Group (n=30)	Percentage (%)	Experimental Group (n=30)	Percentage (%)
Body Mass Index (BMI, kg/m^2)	< 18.5	2	6.67	1	3.33
	18.5 – 24.99	21	70	20	66.67
	≥ 25	7	23.33	9	30
Duration of Urinary Incontinence	< 6 Months	8	26.67	12	40
	7 – 12 Months	16	53.33	9	30
	13 – 24 Months	4	13.33	6	20
	>25 Months	2	6.67	3	10

Data presented as mean ± SD

Table 2 shows the comparison of mean, SD of distribution in clinical variables between two groups. The mean BMI was 22.4 kg/m^2 in control group and 24.1 kg/m^{2}in experimental group. The "t" value was 0.0426 which was less than tabulated value and the p-value was 0.87. Thus, there was no significant difference between the ages of patients in between the two group. The statistical significance level was $p<0.05$.

Table 3: The revised urinary incontinence mean score of pre-test and post-test in control group

Revised Urinary Incontinence Scale		Control Group (n=30)	Percentage (%)
Pre-Test	Up to 7	5	16.67
	8-10	19	63.33
	11 and above	6	20
Post-Test	Up to 7	5	16.67
	8-10	20	66.66
	11 and above	5	16.67

Data presented as mean ± SD

Table 3 shows the pre-test and post-test of the subjects in control group. In pre-test 5 (16.67%) respondents were scored up to 7, 19 (63.33%) respondents were scored between 8 and 10, 6 (20%) scored between 11 and above. In the post-test of the subjects in control group 5 (16.67%) respondents were scored up to 7, 20 (66.66%) respondents were scored between 8 and 10, 5 (16.67%) respondents were scored between 11 and above. This data shows that in a control group, there is no reduction of stress urinary incontinence due no pelvic floor exercise provided according to the mean score value. The "t" value was 0.0627 which was less than tabulated value and the p-value was 0.79. Thus, there was no significant difference between the ages of patients in between the two groups. The statistical significance level was $p<0.05$.

Table 4: The revised urinary incontinence mean score of pre-test and post-test in experimental group

Revised Urinary Incontinence Scale		Control Group (n=30)	Percentage (%)
Pre-Test	Up to 7	7	23.33
	8- 10	15	50
	11 and above	8	26.67
Post-Test	Up to 7	21	70
	8-10	8	26.67
	11 and above	1	3.33

Data presented as mean ± SD

Table 4 shows the pre-test and post-test of the subjects in experimental group. In pre-test 7(23.33%) respondents were scored up to 7, 15 (50%) respondents were scored between 8 and 10, 8 (26.67%) were scored between 11 and above. In the post-test of the subjects in control group 21 (70%) respondents were scored up to 7, 8 (26.67%) respondents were scored between 8 and 10, 1(3.33%) respondent was scored between 11 and above. This data shows that in experimental group, there significant reduction of stress urinary incontinence due to pelvic floor exercise was provided according to the mean score value. The "t" value was 0.0851 which was less than tabulated value and the p-value was 0.69. Thus, there was no significant difference between the ages of patients in between the two groups. The statistical significance level was $p<0.05$.

Discussion

The evaluation of interventions for pelvic floor disorders, specifically focusing on pelvic floor muscle exercises (Kegel exercises), provides valuable insights into their effectiveness and clinical utility. This discussion aims to explore the findings and implications of studies evaluating the effectiveness of pelvic floor muscle exercises in the treatment of pelvic floor disorders, including urinary incontinence and pelvic organ prolapse.

The effectiveness of pelvic floor muscle exercises, or Kegel exercises, in the management of urinary incontinence, has been well-documented. Studies have consistently demonstrated that these exercises can lead to improvements in symptoms and a reduction in urinary leakage episodes [5-9]. The strengthening and coordination of the pelvic floor muscles through regular exercise contribute to increased support for the bladder and improved control over urinary function. This is particularly relevant for stress urinary incontinence, where increased intra-abdominal pressure leads to involuntary urine leakage. The ability of pelvic floor muscle exercises to address the underlying causes of stress urinary incontinence contributes to their effectiveness in reducing symptoms and enhancing bladder control.

In addition to stress urinary incontinence, pelvic floor muscle exercises have also shown potential benefits in managing other types of urinary incontinence, such as urgency urinary incontinence [9-13]. The exercises aim to enhance the strength and coordination of the pelvic floor muscles, which can help individuals gain better control over urgency episodes and reduce the frequency and severity of urinary leakage. However, further research is needed to establish the optimal protocols, frequency, and duration of exercises specifically tailored to different types of urinary incontinence.

The evidence regarding the effectiveness of pelvic floor muscle exercises in pelvic organ prolapse is more limited. While some studies have shown potential benefits in improving symptoms and reducing the severity of prolapse, the data are not as robust as those for urinary incontinence [14-18]. Further research is necessary to better understand the role of pelvic floor muscle exercises in the management of pelvic organ prolapse, including the types and stages of prolapse that are most responsive to exercise interventions.

The success of pelvic floor muscle exercises is highly dependent on proper implementation, technique, and adherence. Personalized guidance from healthcare professionals, such as pelvic floor physiotherapists, is crucial to ensure correct muscle activation, progression of exercises, and patient education. Incorporating biofeedback techniques and providing educational resources have been shown to enhance the effectiveness of pelvic floor muscle exercises [19-22].

Long-term adherence to pelvic floor muscle exercises is essential for sustaining the benefits achieved through these interventions. Factors such as motivation, support, and continued guidance from healthcare professionals can influence compliance and engagement with the exercise regimen [23-26]. Future research should explore strategies to enhance long-term adherence and develop innovative approaches, such as mobile applications or telehealth interventions, to facilitate the practice of pelvic floor muscle exercises beyond clinical settings.

While pelvic floor muscle exercises are generally considered safe and cost-effective, it is important to acknowledge that they may not be suitable for all individuals. Factors such as comorbidities, physical limitations, and cognitive abilities should be considered when recommending and implementing these exercises. A comprehensive assessment by healthcare professionals is necessary to determine the appropriateness and feasibility of pelvic floor muscle exercises for each individual.

In conclusion, the effectiveness of pelvic floor muscle exercises, or Kegel exercises, in the treatment of pelvic floor disorders, particularly urinary incontinence, has been supported by the available evidence. These exercises offer a conservative and non-invasive treatment option that can lead to symptom improvement, enhanced bladder control, and improved quality of life.

However, further research is needed to refine the protocols, explore their effectiveness in managing pelvic organ prolapse, and develop strategies to optimize long-term adherence. By integrating pelvic floor muscle exercises into clinical practice and promoting patient engagement, healthcare professionals can effectively manage and improve outcomes for individuals affected by pelvic floor disorders.

Conclusions

The evaluation of the effectiveness of pelvic floor muscle exercises (Kegel exercises) in the treatment of urinary incontinence and pelvic organ prolapse, provides important insights into their clinical utility and benefits. The pelvic floor muscle exercises, or Kegel exercises, are an effective intervention for the treatment of pelvic floor disorders, particularly urinary incontinence.

These exercises offer a conservative, non-invasive, and cost-effective approach to improve symptoms, enhance bladder control, and improve the quality of life for affected individuals. Further research is needed to refine protocols, explore their effectiveness in managing pelvic organ prolapse, and develop strategies to optimize long-term adherence.

By integrating pelvic floor muscle exercises into clinical practice and promoting patient engagement, healthcare professionals can effectively manage and improve outcomes for individuals affected by pelvic floor disorders.

References

1. Hunskaar S, Arnold EP, Burgio KE, Diokno AC, Herzog AR, Mallett VT. Epidemiology and natural history of urinary incontinence. International urogynecology Journal. 2000 Sep;11:301-319.
2. Temml C, Haidinger G, Schmidbauer J. Urinary incontinence in both sexes: prevalence rates and impact on quality of life and sexual life. Neurourol Urodyn 2001;19:259-271.
3. Mantle J. Physiotherapy for incontinence. In: Cardoza L, Staskin D, editors. Textbook of female urology and urogynaecology. London: Isis Medical Media Ltd; 2001. p. 351-358.
4. National Institute for Health Clinical Excellence. Urinary

incontinence: The management of urinary incontinence in women. Clinical guideline 40. London: NICE; 2006.
5. Haslem J. Therapeutic management of incontinence and pelvic pain. 2nd ed. London: Springer; 2007.
6. Kegel AH. Progressive resistance exercise in the functional restoration of the perineal muscles. Am J Obstet Gynaecol. 1948;56:238-249.
7. Haylen, *et al*. An International Urogynecological Association (IUGA)/International Continence Society (ICS) joint report on the terminology for female pelvic floor dysfunction. Int Urogynecol J. 2010;2:15–26.
8. Vijayalakshmi R, Kanchana S., Pilot Study on the Effectiveness of Interventional Package on Pelvic Floor Muscle Strength and Knowledge among Women with Pelvic Floor Dysfunction at Selected Settings, Thiruvallur Dist, ICCRJNR. 2016 Jul-Dec;1(2):86-94
9. Marques A, Stothers L, Macnab A. The status of pelvic floor muscle training for women. Can Uro Assoc J. 2010;4(6):419-424.
10. Sampselle CM, Miller JM, Mims BL, *et al*. Effect of pelvic muscle exercise on transient incontinence during pregnancy and after birth. Obstet Gynecol. 1998;91:406-412.
11. Hull M, Corton MM. Evaluation of the levator ani and pelvic wall muscles in levator ani syndrome. Urol Nurs. 2009;29:225-231.
12. Fultz N, Girts T, Kinchen K, Nygaard I, Pohl G, Sternfeld B. Prevalence, management and impact of urinary incontinence in the workplace. Occup Med (Lond). 2005;55(7):552–7.
13. Price N, Dawood R, Jackson SR. Pelvic floor exercise for urinary incontinence: A systematic literature review. Maturitas. 2010;67(4):309-15.
14. Newman DK, Wein AJ. Office-based behavioral therapy for management of incontinence and other pelvic disorders. Urol Clin North Am. 2013;40(4):613–35.
15. Bo K, Morkved S, Frawley H, Sherburn M. Evidence for benefit of Transversus Abdominis training alone or in combination with pelvic floor muscle training to treat female urinary incontinence: A systematic review. Neurourol Urodyn. 2009;28(5):368-73.
16. Quartly E, Hallam T, Kilbreath S, Refshauge K. Strength and endurance of the pelvic floor muscles in continent women: An observational study. Physiotherapy. 2010;96(4):311–316.
17. Barton A, Serrao C, Thompson J, Brifa K. Transabdominal ultrasound to assess pelvic floor muscle performance during abdominal curl in exercising women. Int. Urogynecol J. 2015;26(12):1789–1795.
18. Bump RC, Hurt WG, Fantl JA, Wyman JF. Assessment of Kegel pelvic muscle exercise performance after brief verbal instruction. Am J Obstet Gynecol. 1991;165(2):322-327.
19. Morkved S, Bo K, Fjortoft T. Effect of adding biofeedback to pelvic floor muscle training to treat urodynamic stress incontinence. Obstet Gynecol. 2002;100(4):730-739.
20. Price N, *et al*. Pelvic floor exercise for urinary incontinence: A systematic literature review. Maturitas. 2010.
21. Ishiko O, Hirai K, Sumi T, Tatsuta I, Ogita S. Hormone replacement therapy plus pelvic floor exercise for post-menopausal stress incontinence: A randomised controlled trial. J Reprod Med. 2001;46(3):213-220.
22. Cammu H, Van Nylen M, Amy JJ. A 10-year follow-up after Kegel's pelvic floor muscle exercises for genuine stress incontinence. Br J Urol Int. 2001;85(6):655–658.
23. Godec C, Cass AS, Ayala GF. Bladder inhibition with functional electrical stimulation. Urology 1975;6(6):663-6.
24. de Groat WC. A neurologic basis for the overactive bladder. Urology. 1997;50(6):36–52.
25. Reilly ET, Freeman RM, Waterfield MR, Waterfield AE, Steggles P, Pedlar F. Prevention of postpartum stress incontinence in primigravidae with increased bladder neck mobility: A randomised controlled trial of antenatal pelvic floor exercises. BJOG. 2002;109(1):68-76.
26. King JK, Freeman RM. Is antenatal bladder neck mobility a risk factor for post-partum stress incontinence? BJOG. 1998;105:1300-1307.