

Effect of Hypopressive Exercises Along with Kegel Exercises on Pelvic Floor Muscle Strength and Quality of Life in Women with Stress Urinary Incontinence

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ABSTRACT

BACKGROUND: Stress urinary incontinence is a common condition among women, characterized by involuntary leakage of urine during activities that increase intra-abdominal pressure, such as coughing, sneezing, lifting. Pelvic floor muscle weakness is a major contributing factor and negatively affects physical activities, emotional well-being, social participation, and overall quality of life. Pelvic floor muscle training, especially Kegel exercises, is widely recommended as a first-line conservative treatment. Hypopressive exercises, which involve specific postures and breathing techniques to reduce intra-abdominal pressure, may further enhance pelvic floor muscle activation in women with stress urinary incontinence.

OBJECTIVE: To determine the effectiveness of hypopressive exercises combined with Kegel exercises on pelvic floor muscle strength and quality of life in women with stress urinary incontinence.

METHODOLOGY: A single-group pre and post experimental study was conducted

among women diagnosed with stress urinary incontinence who met the inclusion criteria. Participants underwent a structured exercise program consisting of hypopressive and Kegel exercises for 12 weeks. Pelvic floor muscle strength and quality of life were assessed before and after the intervention using the Modified Oxford Scale and the Incontinence Quality of Life Questionnaire. The collected data were statistically analyzed to compare pre and post intervention results.

RESULTS: The study showed significant improvement in pelvic floor muscle strength which improved significantly from 1.50 to 3.10 and quality of life scores improved from 31.77 to 36.63 ($p < 0.05$)

CONCLUSION: Hypopressive exercises combined with Kegel exercises are effective in improving pelvic floor muscle strength and quality of life in women with stress urinary incontinence.

Keywords: Stress urinary incontinence, Hypopressive exercise, Kegel exercise, Pelvic floor muscle strength, Quality of life.

INTRODUCTION

Stress urinary incontinence is defined in the International Continence Society as a leakage occurring with physical exercise, coughing, or sneezing. One of the most frequent types of urinary incontinence seen in women has a significant impact on physical, psychological, and social health and wellbeing, which in turn reduces quality of life^[1] Stress urinary incontinence is commonly associated with Urethral hypermobility, and Intrinsic sphincter deficiency^[2] and is linked to a range of other conditions such as pregnancy, vaginal delivery, multiparity, menopause, overweight, chronic cough, and constipation that can compromise the functions of the bladder,^[5,2] causing women to experience leakage during exercise, laughing, coughing, sneezing, lifting, or during physical activity, which can have a negative impact on their lives, daily activities, self-confidence, and emotional well-being.^[1,3]

Stress urinary incontinence can be managed conservatively, medically, and surgically. Conservative physiotherapy management is important, with pelvic floor muscle training being the most effective intervention to enhance the strength of the pelvic floor muscles and, hence, the reduction of leakage of urine among these interventions. The most effective conservative intervention that has been shown to improve the strength of pelvic floor muscles and hence reduce urine leakage is considered to be pelvic floor muscle training.^[4] The strength of the pelvic floor muscles is crucial for urethral support and urinary function. Muscle strength is a contributing factor in the severity of Stress urinary incontinence, and quality of life in women with Stress urinary incontinence is often impacted by physical and emotional factors and loss of social participation.^[3] Pelvic floor muscle strength refers to the ability of the pelvic floor muscles to contract effectively and generate adequate force to support the pelvic organs and maintain urinary continence. Sufficient muscle strength is crucial for proper urethral closure during activities that increase intra-

abdominal pressure, such as coughing, sneezing, or lifting.^[6,7]

Several outcome measures are available to assess pelvic floor muscle strength including the Modified oxford scale, perineometry, electromyography, ultrasound imaging and manometry. In the present study, pelvic floor muscle strength was assessed using the modified oxford scale, which evaluates pelvic floor muscle strength.^[7] Quality of life refers to an individual's overall perception of their physical, psychological, and social well-being, reflecting how a health condition affects daily life and emotional functioning. In women with stress urinary incontinence, reduced Quality of life can manifest as limitations in physical activity, decreased social participation, emotional distress, and lowered self-esteem.^[8,9]

Several outcome measures are available to assess quality of life in stress urinary incontinence includes, Incontinence quality of life scale, short form 36 health survey, world health organization quality of life, International consultation on incontinence modular questionnaire.^[9] Hypopressive exercises, postural and breathing exercises, promote reflex activation of the pelvic floor and deep abdominal musculature, improving the function of the pelvic floor muscles and reducing urinary leakage.^[10,11] Kegel exercises, which are low-pressure exercises, are very popular exercises for strengthening the pelvic floor muscles and enhancing muscle strength, endurance, and urethral support^[12,13] The combination of hypopressive exercises and Kegel exercises may provide greater benefits in improving pelvic floor muscle strength and quality of life among women with stress urinary incontinence by enhancing pelvic floor muscle activation, bladder control, and functional ability. Therefore, the present study aimed to determine the effectiveness of hypopressive exercises combined with Kegel exercises on pelvic floor muscle strength and quality of life among women with stress urinary incontinence.

AIM OF THE STUDY

The aim of the study is to find out the effect of hypopressive exercise along with kegel exercise on pelvic floor muscle strength and quality of life in women with stress urinary incontinence

OBJECTIVES OF THE STUDY

To find out the effect of hypopressive exercise along with kegel exercise on pelvic floor muscle strength in women with stress urinary incontinence.

To find out the effect of hypopressive exercise along with kegel exercise on quality of life in women with stress urinary incontinence.

To compare the effect of hypopressive exercise along with kegel exercise on pelvic floor muscle strength and quality of life in women with stress urinary incontinence

MATERIALS & METHODS

Study Design

It was a single-group pre-test and post-test experimental design.

Study Setting

The study was carried out at the Department of Obstetrics and Gynecology, Department of Physiotherapy, K.G. Hospital, Coimbatore.

Study Duration

The intervention was conducted for 12 weeks, 3 sessions per week, with each session lasting 45 minutes.

Study Sampling

30 individuals suffering from stress urinary incontinence were selected as per the predetermined inclusion and exclusion criteria.

Inclusion Criteria

Individuals with stress urinary incontinence, Age group 40 - 60 years, Individuals who are willing to participate in the study, Individuals who can comprehend the instructions, Individuals reporting involuntary urine leakage during coughing, sneezing or laughing

Exclusion Criteria

Individuals with neurological disease (stroke, multiple sclerosis, spinal cord injury, Parkinson's disease), Individuals with urinary tract infection at the time of assessment, Individuals who are pregnant, Individuals who have undergone abdominal surgery, Individuals with pelvic organ prolapse grade 3 or 4

Outcome Measures

Modified Oxford scale

Incontinence quality of life questionnaire

Procedure

Thirty women with stress urinary incontinence were recruited according to the inclusion and exclusion criteria. On day 1 pre-test scores assessing pelvic floor muscle strength and quality of life were recorded. Subjects underwent a structured intervention program consisting of Hypopressive exercises (lying, standing, sitting, quadruped) along with Kegel exercises for a duration of 12 weeks conducted 3 times per week with each session lasting 45 minutes. At the end of the 12-week intervention period post-test scores were recorded using the outcome measures to evaluate the effect of the intervention on muscle strength and quality of life.

Statistical Analysis

Statistical analysis was performed using paired t-test to compare pre-test and post-test values. A p-value of <0.05 was considered statistically significant.

RESULT

This single-group experimental study involved thirty women with stress urinary incontinence, aged between 40 and 60 years. All participants completed the twelve-week intervention of hypopressive exercises in conjunction with Kegel exercises, Using the Modified Oxford Scale, pelvic floor muscle strength improved from a mean pre-test score of 1.50 to a mean post-test score of 3.10, a change that was statistically significant ($p < 0.05$). Similarly, quality of

life, measured via the Incontinence Quality of Life Scale, improved from a mean pre-test score of 31.77 to a post-test score of 36.63, also statistically significant ($p < 0.05$). These findings indicate that the combined exercise intervention contributed

to improvements in both pelvic floor muscle strength and quality of life for women with stress urinary incontinence.

DEMOGRAPHIC DATA

TABLE-I AGE GROUP CLASSIFICATION

AGE GROUP	PARTICIPANTS	PERCENTAGE
41-45	7	23.3%
46-50	8	27%
51-55	6	20%
56-60	9	30%
Total	30	100%

DEMOGRAPHIC DATA

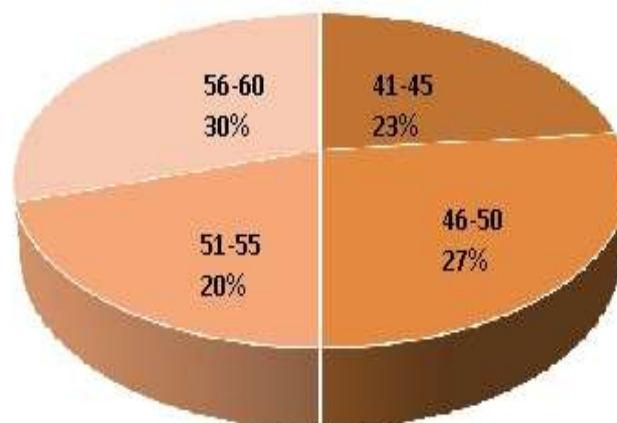
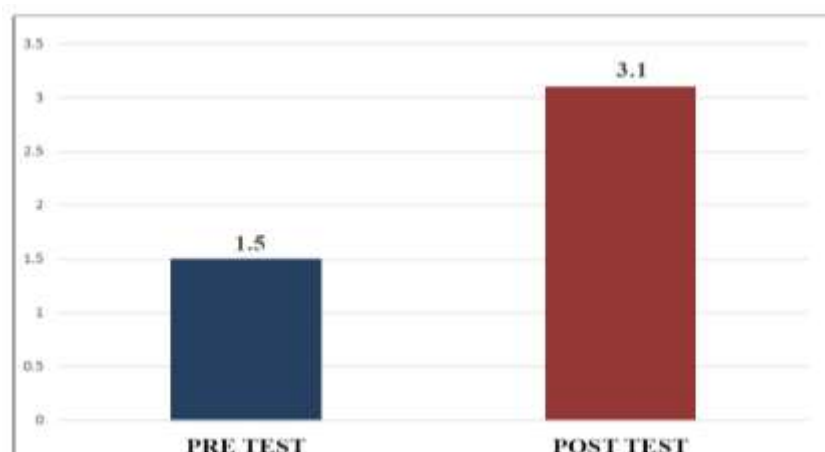


FIGURE-I AGE GROUP CLASSIFICATION

TABLE – II MODIFIED OXFORD SCALE PRE-TEST AND POST-TEST

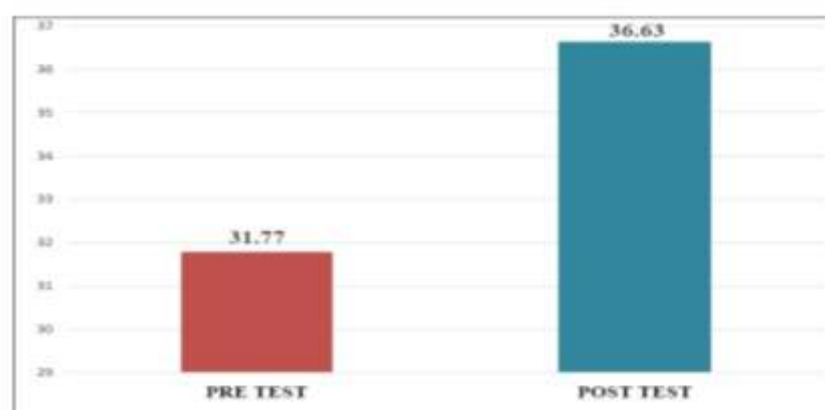
S.N	Modified oxford scale	MEAN	MEAN DIFFERENCE	STANDARD DEVIATION	't' VALUE
1	Pre test	1.50	1.63	0.51	17.58
2	Post test	3.10		0.71	



GRAPH – II MODIFIED OXFORD SCALE PRE-TEST AND POST-TEST

TABLE – III INCONTINENCE QUALITY OF LIFE QUESTIONNAIRE PRE-TEST AND POST-TEST

S.N	INCONTINENCE QUALITY OF LIFE QUESTIONNAIRE	MEAN	MEAN DIFFERENCE	STANDARD DEVIATION	't' VALUE
1	Pre test	31.77	4.87	1.76	24.10
2	Post test	36.63		2.08	



GRAPH – III INCONTINENCE QUALITY OF LIFE QUESTIONNAIRE PRE-TEST AND POST-TEST

DISCUSSION

The aim of the current study was to investigate the effects of hypopressive exercises along with Kegel exercises on pelvic floor muscle strength and quality of life in women with stress urinary incontinence. A sample of 30 women with stress urinary incontinence, aged between 40 and 60 years, was included. Women who fulfilled the inclusion criteria were conveniently allocated to a single group. Outcome measures were assessed at

baseline using the Modified Oxford Scale and the Incontinence Quality of Life Questionnaire. They were treated with a 12-week course of hypopressive exercises and Kegel exercises for 45 minutes followed by post-intervention assessments using the same outcome measures. The results showed a marked increase in pelvic floor muscle strength and quality of life, indicating that a combination of exercises has a positive impact on stress urinary incontinence.

Stress urinary incontinence involves the involuntary loss of urine during activities that exert pressure on the abdomen, such as sneezing, coughing, laughing, lifting, and other activities.⁽¹⁾ It is frequently caused by weakness of the pelvic floor muscles, decreased neuromuscular control, and decreased urethral and bladder neck support.⁽²⁾ Childbirth, aging, hormonal fluctuations, and elevated body mass index contribute to pelvic floor dysfunction, impaired continence control, and reduced quality of life. Stress urinary incontinence in women can cause physical, psychological, social, and functional impairment, including pain, embarrassment, fear, and anxiety, and a reduction in quality of life.⁽³⁾

Hypopressive exercises build on the foundation of traditional pelvic floor muscle exercises, with a focus on posture, breathing, and reducing intra-abdominal pressure. This type of exercise involves controlled breathing and postural activation to produce reflexive activation of the pelvic floor and deep abdominal muscles while avoiding an increase in intra-abdominal pressure. Elevated intra-abdominal pressure can weaken the pelvic floor in women with stress urinary incontinence. The use of hypopressive exercises corrects pressure distribution, improves stability of the trunk, and allows reflex pelvic floor activation during daily activities, leading to improved muscle coordination and stamina.^(10,11)

The use of both hypopressive and Kegel exercises probably has a combined effect because it targets both voluntary and reflexive aspects of the pelvic floor. Kegel exercises enhance voluntary control and muscle strength⁽¹²⁾ while hypopressive exercises promote better postural control, breathing, and involuntary muscle activation. This combination enhances learning and transfer of skills to daily life, improving continence.⁽¹¹⁾

The improvements in quality of life seen in this study also suggest the success of the intervention. Urinary incontinence has a profound impact on mood, self-worth, and social and physical activity. The decrease in

urinary leakage after the exercise intervention may have improved women's self-esteem, decrease their fear of leaking urine, and improve their participation in social and physical activities. Our results are in line with other studies that demonstrate that pelvic floor muscle training significantly improves quality of life in physical, social, and psychological areas.^(14,15)

The current study shows that combining hypopressive and Kegel exercises effectively strengthens pelvic floor muscles and improves the quality of life for women with stress urinary incontinence. These improvements likely result from increased pelvic floor muscle strength, better muscle coordination, control of intra-abdominal pressure, and enhanced postural control. This combination of exercises provides a safe, non-drug approach to treating women with stress urinary incontinence.

CONCLUSION

The present study demonstrated that hypopressive exercises combined with Kegel exercises significantly improved pelvic floor muscle strength and quality of life in women with stress urinary incontinence. The combined exercise program may be considered an effective conservative physiotherapy intervention for stress urinary incontinence.

Declaration by Authors

Ethical Approval: Ethical approval was obtained from the institutional Ethics committee of KG college of physiotherapy, Coimbatore

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Conflict of Interest: The authors declare no conflict of interest

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