

**EFFECTIVENESS OF HYPOPRESSIVE EXERCISE VERSUS POSTURAL
CORRECTION ON STRESS URINARY INCONTINENCE AND DEPRESSION AMONG
POST MENOPAUSAL WOMEN****Mahisree Bharathi U. V. (Ph.D)^{*1}, K. Liza Kulsum², Dr. Sandhiya M., Ph.D³, Dr. P. Senthil Selvam, Ph.D⁴**^{1,3}Assistant Professor, School of Physiotherapy, VISTAS, Chennai, India.²MPT, School of Physiotherapy, VISTAS, Chennai, India.⁴HOD and Professor, School of Physiotherapy, VISTAS, Chennai, India.***Corresponding Author: Mahisree Bharathi U. V. (Ph.D)**

Assistant Professor, School of Physiotherapy, VISTAS, Chennai, India.

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ABSTRACT

Stress urinary incontinence (SUI) is most prevalent gynaecological urinary disease among post menopause woman. It has negative impact on various areas of the woman's life, including physical, psychological, sexual, social and occupational aspects. Many non- pharmacological methods are accessible for the management of SUI, both hypopressive exercises and postural corrective options for non-invasive and cost-effective modalities of management that can be employed to prevent the occurrence of stress urinary incontinence and to decrease its severity. In this comparative study 40 subjects were selected and divided into 2 groups with 20 on each. As group A was given with Hypopressive training and group B was given with postural correction. The intervention was given 30 minutes per day for alternate days for 8 weeks. Stress Urinary Incontinence was measured by ICIQ-SF and Depression was measured using Depression Hamilton Depression Rating Scale (HDRS). On comparing Mean Values of Hamilton Depression Rating Scale and ICIQ-SF Questionnaire scores Between pre-test and post-test within the Group-A and Group-B shows highly significant difference at $p \leq 0.001$. Hence the null hypothesis is rejected. The study concludes that both group A hypopressive exercises and group B Postural correction had shown improvement in ICIQ-SF and Hamilton depression rating scale among post-menopausal women, but more significant improvement was observed in patients who underwent hypopressive exercises than Postural correction. This will give adequate support to the patient to get recovery from the condition.

KEYWORDS: Stress urinary incontinence, Post-menopause, ICIQ SF, HAM-D Scale Hypopressive exercises, Postural Correction.**INTRODUCTION**

Menopause, a normal physiological event, signifies the cessation of a woman's childbearing period, typically occurring between the ages of 45 and 55. During this transition, women undergo various hormonal changes, particularly a significant decline in oestrogen levels^[1] Menopause and aging are strongly associated with the emergence or worsening of lower urinary tract dysfunction The lower urinary tract shares embryological origins with the female reproductive system and it is thus sensitive to the effects of steroid hormones.^[2]

Urinary incontinence (UI) is defined as a "complaint of involuntary loss of urine".^[1] The prevalence of the condition increases with age, and it is reported to affect 58%–84% of elderly women stress urinary incontinence (SUI) - according to some authors, it is the most common UI and represents 50% to 88% of all types of urinary incontinence. It is characterized leakage of urine, which is caused by an increase in abdominal pressure. Situations that pose to this condition are primarily sneezing, bending, and lifting weights. SUI arises in weakening of the pelvic floor muscles and failure of complex Musculo-ligamentous Fascio cutaneous tissues.

Hypopressive exercises encompass a collection of exercises and breathing techniques involving the reduction of pressure within the abdominal, thoracic, and pelvic cavities. The exercise are often employed to achieve a more aesthetically appealing and toned abdomen, as well as to fortify the pelvic floor muscles. Following childbirth, these exercises have gained significant popularity due to their effectiveness in strengthening and tightening the abdominal muscles, alleviating stress and anxiety, expediting postpartum recovery, mitigating back pain, preventing urinary and fecal incontinence, enhancing body posture, rectifying genital prolapse, and improving bowel function.

The exercises have been widely used in the treatment of pelvic floor dysfunctions, where had similar or inferior outcomes in pelvic organ prolapse, and were more efficient than no exercise to improve postpartum quality of life. Recently, hypopressive exercises started to spread among healthy women seeking physical conditioning, facing the possibility of deep abdominal muscular strengthening, reducing waist circumference, improving postural alignment and lower limb flexibility, as disclosed by the creators of the method.

Intra-abdominal pressure (IAP), important for the stability of the low back and pelvic organs Abdominal muscle weakness Changes the pelvic position and leads to a hyper lordosis and low back pain and studies have shown that these dysfunctions are connected to changes in the PFM activity.^[9] GPR works to normalize the respiratory function and diaphragm, improve the abdominal muscle activity and fix spine misalignments and imbalances, which will result in an improvement in the PFM activity and help the continence process. GPR uses postures that stretch the muscle chains, positioning the patient in a way that all the muscles are tensioned at the same time, avoiding any retraction and compensation that might be in the muscle chain. By doing so, it is possible to correct all the imbalances and reorganize the posture and its correct equilibrium. GPR employs postures that elongate the muscle chains, positioning the patient so that all muscles are engaged simultaneously, thereby preventing any retraction and compensatory actions that may exist within the muscular chain. Through this approach, it becomes feasible to address all imbalances and realign posture to achieve proper equilibrium. As a result, the functionality of the affected organs may be restored. There is a hypothesis that GPR might have an impact on the symptoms of stress urinary incontinence.^[40]

METHODOLOG

40 subjects were selected based on inclusion and exclusion criteria and were divided into 2 groups. Group A consist of 20 subjects and group B consist of 20 subjects. The treatment was given 30 minutes per day for alternate days for 8 weeks.

INCLUSION CRITERIA

- Post Menopause women aged above 50 years
- Have been diagnosed with stress urinary incontinence
- ICIQ UI questionnaire (mild to moderate)
- Hamilton Depression Rating Scale: low to moderate
- Incontinence for at least 2 months
- No abdominal or pelvic surgery during last 6 months

EXCLUSION CRITERIA

- Acute and recent pathological conditions
- Non willing subjects
- Presence of genital prolapse, urinary tract infection
- Free from any neurological problems, diabetes mellitus.

GROUP A

The program involved progressive AHT postures incorporating different arm positions, diaphragmatic breathing and postural adjustments (axial elongation, ribcage expansion). Each session began with postures in standing position, followed by kneeling positions, quadruped, sitting, and lying positions. Once completed, the exercises were repeated in reverse order starting in supine position and finishing in standing position. For the study, all postures were repeated three times and apnea was maintained an average of 30s.

1. Inquire the woman to gently shut her eyes and direct her attention towards a specific point situated ahead of her, purging her mind of any thoughts, and concentrating solely on her respiration for the duration of the exercise.
 - When inhaling, one should do so in a regular manner and when exhaling, one should release all the air until the abdomen autonomously begins to contract.
 - Reduce the size of the abdomen by engaging the abdominal muscles in a contraction, which causes them to draw inward toward the spinal column.
 - Maintain this contraction for an initial duration ranging from 5 to 10 seconds and, with the passage of time, progressively extend the period of contraction. Retain this position for as extensive a duration as feasible, refraining from inhaling.
2. Take a deep inhalation, allowing lungs to be filled with the vitalizing air, and proceed to wholly unwind, thus resuming your customary respiration pattern.
 - Initiate this sequence in a lying position and then progress to sitting and after that leaning forward and finally kneeling on the floor.
 - In a lying position, reclining on the ventral side of the body, with lower limbs flexed and upper limbs aligned parallel to the torso, adhere to the aforementioned guidelines. Commence by executing three iterations of this physical exercise.



FIG. 1: Hypopressive exercise in lying.



FIG. 2: Hypopressive Exercise in Sitting.

- In a sitting position, assume a seated position in a chair with the soles of the feet planted firmly on the floor, or alternatively, adopt a seated position on the floor with the knees flexed for novice individuals, and with the legs extended for those with greater expertise. Exhale all of the air from the lungs entirely and subsequently contract the abdominal area inward to its fullest extent, exhaling for as much time as one is capable of.
- In a standing position, incline the body anteriorly while mildly flexing the knees. Inhale deeply and subsequently, expel the exhalation while inwardly contracting the abdominal region, as well as the

muscles encompassing the pelvic floor, sustaining the breath for the maximum duration achievable.

- Kneeling on the floor in the quadruped position, with the hands and knees positioned on the floor, one should exhale completely, retract the abdominal region as much as possible, and maintain this breath-holding maneuver for the maximum duration achievable. Women performed hypopressive exercises for a duration ranging from 20 minutes to 1 hour, with a frequency of 3 to 5 times per week, over a period of 8 weeks.



FIG. 3: Hypopressive exercise in kneeling.



Fig. 4: Hypopressive exercises in standing.

GROUP B

- From standing position
- Each woman was asked to stand in front of a mirror while the therapist stood beside her and instructed the following
 - Stand with your back straight and your shoulders back.
 - Keep your chin tucked in
 - Take deep inspiration from your nose, open out your ribs through costal breathing.
 - Lightly draw in your abdominal muscles.
 - Keep your knees straight.
 - Let your arms hang naturally down the sides of the body.
 - Stand with your feet slightly apart (shoulder-width).

- This set was repeated 10 times

From sitting position

- Each woman was advised to sit well back in firm chair,
- support her lower back with a small pillow with legs and hips relaxed and her legs apart of the hip length
- Pull her head straight up
- Shoulders are pulled outwards and downwards
- Open out her ribs through costal breathing exercise.
- Pull her abdominals towards the spine. ('abdominal bracing').
- She was advised not to sit for more than 30 minutes whenever possible.
- Avoid sitting on low stool or chair.



Fig. 5: Postural correction standing and sitting position.

All postural correction exercises (in sitting and standing positions) were performed 3 times per week for 8 weeks. All women of group (B) were advised to do postural correction exercises as a home programme.

KEGEL EXERCISE

- Lying flat on the floor with knee bent
- Draw pelvic floor muscle up and in
- Hold for 3-5 sec



Fig. 6: Kegels Exercise.

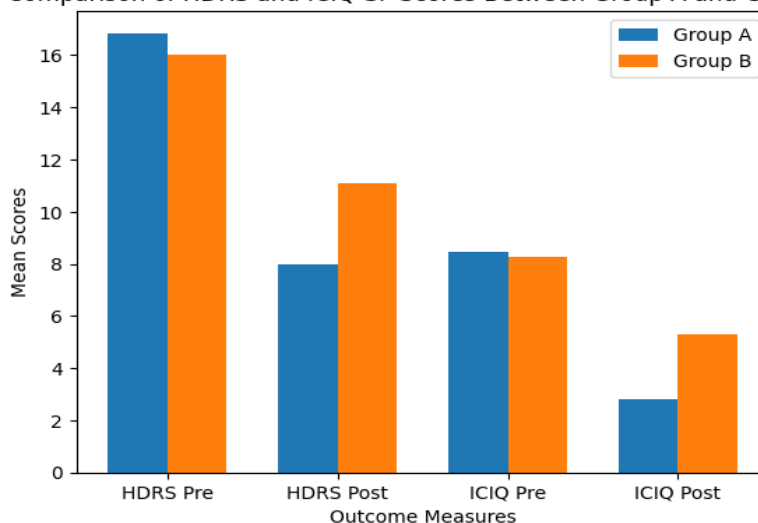
DATA ANALYSIS

The collected data were tabulated and analyzed using both descriptive and inferential statistics. All the parameters were assessed using statistical package for

social science (SPSS) version 28.0. Paired t-test was adopted to find the statistical difference within the groups & Independent t-test was adopted to find the statistical difference between the groups.

Outcome Measure	Test Phase	Group A Mean \pm SD	Group B Mean \pm SD	t-value	p-value
HDRS	Pre-test	16.85 \pm 4.09	16.00 \pm 3.76	0.683	0.499*
	Post-test	8.00 \pm 3.16	11.10 \pm 3.49	2.942	0.000**
ICIQ-SF	Pre-test	8.45 \pm 2.94	8.25 \pm 2.17	0.244	0.808*
	Post-test	2.80 \pm 1.60	5.30 \pm 1.80	4.617	0.000**

Comparison of HDRS and ICIQ-SF Scores Between Group A and Group B



When comparing the mean values, Group A demonstrated a greater reduction in both HDRS (Mean = 8.00) and ICIQ-SF scores (Mean = 2.80) compared to Group B (HDRS Mean = 11.10; ICIQ-SF Mean = 5.30).

DISCUSSION

The purpose of the study is the Effects of hypopressive exercise and postural correction exercise in reducing stress urinary incontinence and depression among postmenopausal women. This study state that Postmenopausal women's urinary incontinence is a stigmatizing illness that makes it challenging to gather reliable epidemiological data. This condition is linked to low rates of health care seeking, possibly as a result of stigma. Despite this, research indicates that about 45% of women who have gone through menopause lose some urine. It is widely acknowledged in the literature that UI have a detrimental effect on people's quality of life, with consequences for the psychological, social, physical, and economic domains as well as for relationships in both the personal and professional spheres. It may even be the cause of social isolation, low self-esteem, susceptibility to stress, and depression. The purpose of the current study was to ascertain how postmenopausal women's self-esteem and quality of life were affected by urine incontinence.

According to the current study, half of menopausal women were 40 years old when SUI first appeared. This finding is consistent, who found that women over 35 had 2.36 times the risk of developing SUI compared to women under 35. Hannestad *et al.* (2000), who categorized women with SUI by decade of age, discovered that the peak with Hijaz *et al.* (2011) prevalence of SUI (60%) occurred in women aged 40 to 49 in the Norwegian EPINCONT. The majority of

research indicates that the prevalence of urinary incontinence rises with age, and multivariate analysis has demonstrated that the menopause plays a major role in its onset, particularly stress urinary incontinence linked to the effects of oestrogen depletion, parity, and gravida on detrusor contraction strength. Several reproductive traits among the study participants contributed to the onset of SUI in addition to the known negative effects of menopause as an aging process in developing UI. For example, high gravidity and parity among over two-thirds of the study participants were linked to decreased PFM strength, which causes SUI by increasing pressure on the PFM and bladder, which results in greater urethral mobility. Exercise is crucial for women of all ages, but it can be especially helpful for menopausal women who suffer from stress urinary incontinence as they age. Being physically active also helps maintain a healthy weight and relieves pressure on the pelvic floor muscle and bladder, which can help with the symptoms of stress urinary incontinence.

The pre-intervention demographic data for the ICIQ-UI questionnaire and Hamilton depression scale were scored and recorded. Group A received the hypopressive Exercises while Group B received Postural correction along with kegel exercise. The ICIQ-UI questionnaire and HDRS post-intervention variables were then graded and recorded 8 weeks.

The key element of hypopressive exercises is the expiratory apnea (breath-hold at the end of expiration)

with thoracic expansion and abdominal vacuum through an inspiratory effort with the closed glottis, executed in different body positions. During this maneuvers, the abdominal transverse, internal oblique, and pelvic floor muscles have great synergism (Ithamar et al., 2018), which could be beneficial in the treatment of some pelvic floor and postural pathologies, as well as in the improvement of physical fitness in healthy subject. Hypopressive exercises work by reducing intra-abdominal pressure and activating the deep core muscles, especially the transverse abdominis and pelvic floor muscles. This indirect activation improves muscle tone and reflex control of the pelvic floor, which is essential in preventing urine leakage during activities like coughing or sneezing. The results of this study align with previous research indicating that hypopressive techniques enhance pelvic floor strength without increasing downward pressure on pelvic organs. On the other hand, global postural correction focuses on improving body alignment, muscle balance, and posture. Poor posture can increase intra-abdominal pressure and negatively affect pelvic floor function. By correcting postural deviations, GPC helps in distributing forces evenly across the body, thereby reducing stress on the pelvic floor. Participants who underwent GPC also showed improvement, but the effect was slightly less pronounced compared to hypopressive exercises. However, the findings suggest that both interventions produced significant improvement in reducing urinary leakage and enhancing pelvic floor function, but hypopressive exercises showed comparatively better outcomes in clinical practice.

CONCLUSION

The study concludes that both group A hypopressive exercises and group B Postural correction exercise had shown improvement in ICIQ-UI and Hamilton depression rating scale among post-menopausal women, but more significant improvement was observed in patients who underwent hypopressive than Postural correction exercise.

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