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EFFFECTIVENESS OF TANZBERGER EXERCISE VERSUS POSTURAL CORRECTION ON STRESS URINARY INCONTINENCE AND DEPRESSION AMONG POSTMENOPAUSAL WOMEN - A COMPARATIVE STUDY

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ABSTRACT

Stress Urinary Incontinence is a complaint of loss of urine during physical activities. The world now acknowledges stress urinary incontinence as a serious public health issue. Many women around the world are impacted and it has a significant socioeconomic impact. It might also disturb the quality of life and lead to depression. 40 subjects of age above the 45 years old were segregated into two groups on 20 subjects each. Tanzberger exercise was given to Group A for a period of 4 weeks, 3 session for 1week. Postural correction along with kegel exercise was given to group B 3session a week for 4 weeks. Urinary incontinence was measured by ICIQ-UI Short form questionnaire and Depression was measured by Hamilton depression rating scale. On comparing the mean value of Group A and Group B on ICIQ-UI Short form and HDRS shows highly significant improvement in the post test mean but GROUP A shows (2.20)in ICIQ- UI and (8.90) in HDRS lesser mean value is more effective than GROUP B (5.60) in ICIQ-UI and (12.85) in HDSR at P≤ 0.001. Hence the null hypothesis is rejected. The study concludes that both groups had shown improvement in reducing urinary incontinence and depression by strengthening the pelvic floor muscles, but more significant improvement was observed in patient who undermine Tanzberger exercise than Postural correction along with kegel exercise.

KEYWORDS: Stress urinary incontinence, Depression, Tanzberger exercise, Postural correction, Kegel exercise, Post Menopause.

INTRODUCTION

The word menopause refers to the permanent stopping of menstruation, signifying the conclusion of a woman's reproductive years, resulting from the decline in ovarian follicular function, and it is diagnosed retrospectively.[1] This transition is considered to have taken place after a woman has experienced 12 consecutive months without menstruation, for which there is no identified physiological or pathological reason.[2] The term "climacteric" or "perimenopausal phase" has been updated to "menopausal transition," which starts around 4 to 7 years before menopause. During this time, women show endocrinological, biological, and clinical signs of decreasing ovarian function. Most women typically experience menopause between the ages of 45 and 55, which is a natural aspect of biological aging.[3] After entering post menopause, hormone levels will remain low, monthly periods will cease, and pregnancy will no longer be possible as the ovaries will stop releasing eggs.

Urinary Incontinence (UI) refers to a "complaint of involuntary loss of urine".[5] According to reports, between 58% and 84% of older women suffer from the illness, and its frequency rises with age.[6] Due to the many definitions and diagnostic assessment methods used, the reported prevalence of UI differs greatly.[7] In women over 60, the overall prevalence is estimated to be between 38% and 55%.[8] UI is still underdiagnosed and undertreated in spite of its significant frequency. Because of embarrassment or the perception that UI is a natural aspect of aging, up to 50% of women may choose not to disclose incontinence to their healthcare physician. Among the various subtypes of urinary incontinence (UI), Stress Urinary Incontinence (SUI) Involuntary loss of urine accompanied by elevated abdominal pressure, such as during exercise or coughing, is known as stress urinary incontinence (SUI).[5] Loss of anatomic urethral support and a malfunctioning urethral closure mechanism are the primary causes. It is the most prevalent in females, affecting 53% of them. Mixed urine incontinence (MUI), which occurs in many women with

incontinence, is characterized by urgency and stress symptoms that coexist. It impacts 34% of women with UI, A sudden, intense need to urinate that is hard to resist is the hallmark of urge urinary incontinence (UUI).[5] The disorder known as UUI is idiopathic in women who are neurologically intact. while urgency urinary incontinence (UUI) affects 15%.[9]

Stress urinary incontinence (SUI) is marked by urine leakage during physical activities and can be categorized into three levels of severity:
Grade 1- involves urine loss when coughing, sneezing, or laughing;
Grade 2 -includes leakage when rising, walking, or engaging in physical activities;
Grade 3 - occurs with urine loss while lying down.[10,11]

Kelly noted the presence of an open vesical neck in women experiencing SUI.[12] Enhorning introduced the pressure transmission theory, indicating that the abdominal pressure is uniformly exerted on both the bladder and proximal urethra, while observing that this transmission was diminished in women with SUI.[13] Petros and Ulmsten presented a comprehensive theory that describes how reconstructing and restoring urethral support can enhance continence.[14,15] Delancey proposed the "hammock theory," which posits that the levator ani muscle, anterior vaginal wall, pelvic fascia, and pubourethral ligament collectively form a supportive structure that aids in urine control. The pathophysiology of stress urinary incontinence is thought to be primarily caused by changes associated with age, childbirth, obesity, constipation, and other risk factors[16,17] that alter the anatomical factors involved in urinary control, such as the urethra itself, the periurethra, and the pelvic nerve. The risk factors for SUI vary between genders. In women, the principal risk factors include pregnancy, vaginal childbirth, and age, obesity, diabetes.[18] The symptoms of stress urinary incontinence in postmenopausal women may include urine leakage during physical activities while coughing, sneezing , urge to urinate, pelvic discomfort, worsening of symptoms with aging, frequent urination, incomplete emptying of the bladder.[19,20]

METHODOLOGY

This study include 40 subjects with stress urinary incontinence and depression. Informed consent was obtained after explaining the treatment procedure and its expected outcome. ICIQ- UI Questionarie and Hamilton depression rating scale is used to measure pre and post test score the subjects were segregated into two groups (A&B). Each groups consists of 20 samples. Group A was given with Tanzberger exercise for 20 -30 min, 3times per week, for 4 weeks. Group B was given with Postural correction along with Kegle exercise for 3 times per week, for 4 weeks.

INCLUSION CRITERIA

- Menopause women.
- Suffering from stress urinary incontinence.
- Age more than 40 years.
- ICIQ-UI SHORT FORM-slight to moderate
- HAMILTON DEPRESSION RATING SCALE-low to moderate
- Included willing subjects

EXCULSION CRITERIA

- Non Willing subjects
- Women with history of neurogenic
- Women on hormone replacement therapy
- Diabetic neuropathies
- Congenital urological disesase
- Tumors of the bladder
- Women with prolapse

GROUP – A: [TANZBERGER EXERCISE]

German physical therapist, Renate Tanzberger, guided the participant to sit on a Swiss Ball with the hip and knee bent at 90 degrees, ensuring the feet were properly positioned on the floor. The participants received a thorough explanation regarding the pelvic floor muscles (PFM). Landmarks were demonstrated by having them sit on a stable surface (chair) and encouraging them to sense the contraction and relaxation of the gluteal, anal, and vaginal muscles.

- **Exercise 1** - Rolling the Ball Forward: The participant was instructed to roll the ball forward towards the knee while keeping the feet grounded and maintaining an upright lumbar spine. During the roll, the contraction of the PFM was to occur, and relaxation should take place while rolling the ball back.

- **Exercise 2** - Back-to-Back Sitting: The participant and the therapist were positioned on the Swiss Ball with their backs facing each other. The participant was instructed to pull the ball towards their knees, which were to remain stationary, while the therapist resisted this movement by pulling the ball in the opposite direction. Throughout this exercise, participants were encouraged to breathe normally and were advised against holding their breath. This activity promotes isometric contraction of the pelvic floor muscles.

Rolling the ball forward

Back to back sitting

GROUP B: [POSTURAL CORRECTION]

In Standing position

Each woman was asked to stand in front of mirror while the therapist stood beside her and instruction

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

In 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.

Postural correction in sitting

Postural correction in standing

All postural correction exercises (in sitting and standing positions) were performed 3 times per week for 4 weeks. All women of group (B) were advised to do postural correction exercises as a home program.

Each participant was instructed to engage the anterior fibers of the pelvic floor muscle (pubo- vaginalis) by performing three sets of eight contractions, holding for 10 seconds and relaxing for 10 seconds, with a 2-minute rest period between sets. Following this 2-minute break, the participant was directed to contract the posterior fibers of the pelvic floor muscle (pubo- rectalis) through 3 sets of 8 contractions, holding for 30 seconds and relaxing for 10 seconds, with a 2-minute rest in between. The instructions for these exercises were provided as follows: “To locate the anterior pelvic floor muscles, visualize trying to halt urination midstream, while for the posterior pelvic floor muscles, focus on the sensation of squeezing the anus.”

Following a rest period, participants were instructed to engage both the posterior and anterior fibers of their pelvic floor muscles (specifically the pubo-vaginalis and pubo-rectalis) by performing 3 sets of 8 contractions (holding each contraction for 30 seconds and relaxing for 10 seconds), with 2 minutes of rest between each set. The entire session lasted for 45 minutes and was conducted three times a week for a duration of 4 weeks for individuals in both group B.

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 26.0. 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.

Table 1: Comparison Of Iciq Ui Sf Questionnaire Score Between Group – A And Group – B In Pre Test And Post Test.

ICIQ	GROUP A		GROUP B		t-TEST	SIGNIFICANCE
	MEAN	SD	MEAN	SD		
PRE TEST	6.95	2.94	7.65	2.258	0.799	.429*
POST TEST	2.20	1.28	5.60	2.03	6.319	.000**

COMPARISON OF ICIQ-UI QUESTIONNAIRE SCORE BETWEEN GROUP – A AND GROUP – B IN PRE TEST AND POST TEST

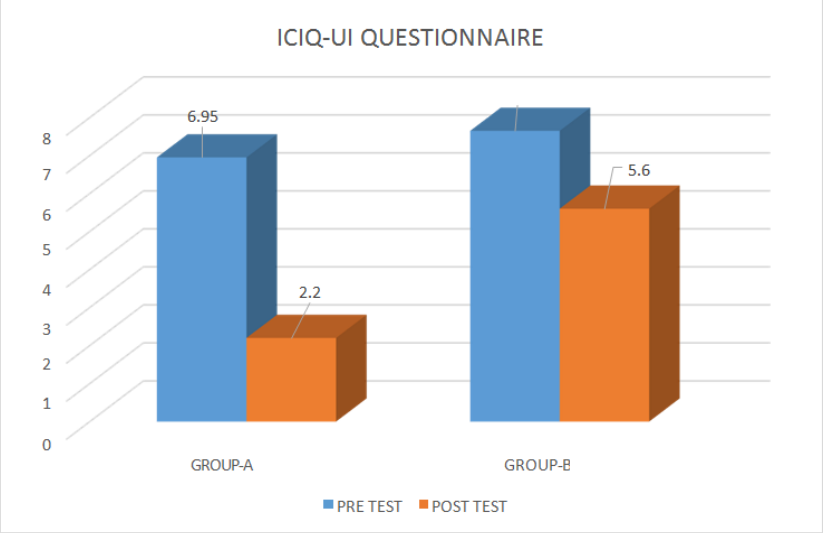
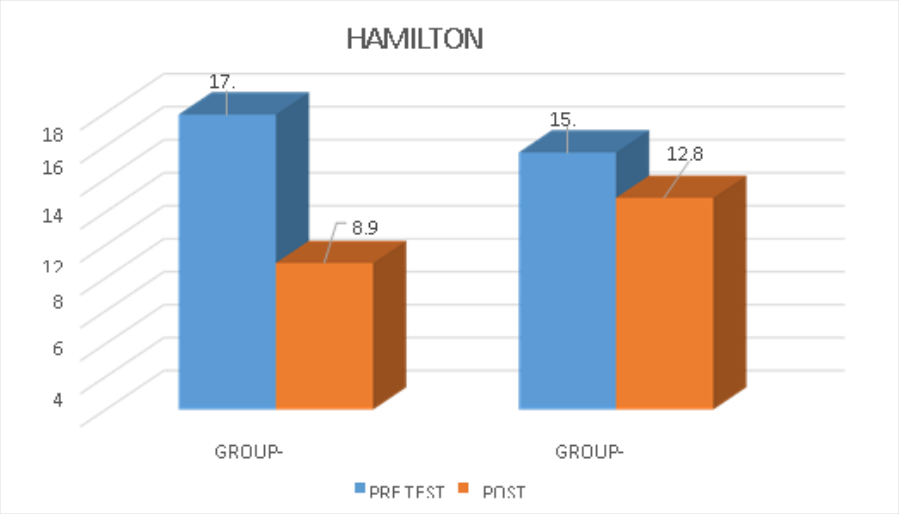


Table 2: Comparison Of Hamilton Scale Score Between Group – A and Group – B In Pre Test and Post Test.

HAMILTON SCALE	GROUP A		GROUP B		t-TEST	SIGNIFICANCE
	MEAN	SD	MEAN	SD		
PRE TEST	17.90	4.14	15.60	5.17	1.552	.129*
POST TEST	8.90	4.74	12.85	5.47	2.439	.000**

COMPARISON OF HAMILTON SCALE SCORE BETWEEN GROUP – A AND GROUP – B IN PRE TEST AND POST TEST



RESULTS

In Table 1, On comparing mean values of GROUP-A and GROUP-B on ICIQ-UI Questionnaire shows highly significant improvement in the posttest mean but GROUP- A shows (2.20) lesser mean value is more effective than GROUP-B (5.60) at P≤0.001, Hence the null hypothesis is rejected**.**

In Table 2, On comparing mean values of GROUP-A and GROUP-B on HAMILTON Scale score shows highly significant improvement in the posttest mean but GROUP-A shows (8.90) lesser mean value is more effective than GROUP-B (12.85) at P≤0.001, Hence the null hypothesis is rejected.

DISCUSSION

The 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 estrogen 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.

Strengthening is the main goal of Tanzberger exercise. The muscles of the core, which include the lower back and abdominal muscles. This can lessen the chance of urine leakage by enhancing the pelvic organs' general stability and support. A Swiss ball is used in Tanzberger exercises to help strengthen the weak pelvic floor muscles. Exercises are beneficial because they strengthen the back, abdominal, and pulmonary diaphragm muscles, which restores the pelvic floor. Additionally, each movement enhances the pelvic floor's sensory awareness. The slow- and fast-twitch muscles that make up the pelvic floor are multidirectional. While the slow twitch fibers running in the anterior-posterior direction are activated and strengthened by the exercise "Rolling the ball forward," the fibers running in all directions are strengthened.

The stress urine incontinence is more common in postmenopausal women. According to the ICIQ-UI questionnaire and the HDRS across groups within groups, the statistical p-value is [0.001] and the t test is [8.129]. The study found that skin irritants, family history, lifestyle choices, fear of leakage, emotional distress, embarrassment, and a lower quality of life, as well as limitations in daily activities that may limit social interaction and basic tasks, all contributed to the severity of stress urinary incontinence in postmenopausal women.

CONCLUSION

The study concludes that both group A tanzberger and group B Postural correction along with kegel 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 undermine tanzberger than Postural correction along with kegel exercise.

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