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Effectiveness of Pelvic Floor Muscles Strengthening Exercises & Control Group for Treatment of Symptoms of Peri-Menopausal & Menopausal Women

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Abstract

Introduction: Menopause is defined as a complete year without menstrual bleeding due to a natural decline in reproductive hormones or natural cessation, or stopping, of a woman's menstrual cycle, and marks the end of fertility. It typically occurs between the ages of 45 and 55, but can develop before or after this age range.[1,2]

Menopause is the point when a woman no longer has menstrual periods for at least 12 months. At this stage, the ovaries have stopped releasing eggs and producing most of their estrogen.[3] The decrease in estrogen levels produces a series of symptoms that impair physical, mental, quality of life (QOL), affecting the and sexual health of women.[3,4]

Need of Study: The primary problem in peri-menopausal and menopausal women is perineal laxity, vaginal laxity, urinary incontinence & pain in pelvic region.

Methodology: After random sampling, subjects will be divided into two groups, each group consist of 15 patient of both male and female. Group A received Pelvic Floor Muscles Strengthening Exercises & Trans-cutaneous Electrical Nerve Stimulation (TENS) subjects receive the treatment for 4 days/week for 12 weeks, session of 45-60 minutes Subjects were positioned on a treatment couch in supine position with adequate back support. The position of patient was changed according to the exercise protocol.

Conclusion: This is concluded that PFM Strengthening Training & TENS in Group A (Experimental Group) is more effective than the Home treatment program only PFM Strengthening Training in Group B (Controlled group) to improving PFM strength and relieve the symptoms in Peri-menopause & Menopause Women after 12 weeks (4days/week) of intervention.

Keywords: PSQI; ICIQ; Modified Oxford Grading Scale; Assessment through self report questionnaires.

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INTRODUCTION

Menopause, which signifies the end of fertility, is defined as a full year without menstrual flow as a result of a natural drop in reproductive hormones or the natural cessation, or halting, of a woman's menstrual cycle. It typically occurs between the ages of 45 and 55, but can develop before or after this age range.[1,2]

When a woman has not had her monthly cycle for at least a year, she enters the menopause.

At this stage, the ovaries have stopped releasing eggs and producing most of their estrogen. The decrease in estrogen levels produces a series of symptoms that impair physical, mental, quality of life (QOL), affecting the and sexual health of women (Fig. 1)[3,4]

The shift occurs in three stages, starting with perimenopause, when a woman's body starts to change; Menopause (when you have experienced 12 consecutive months without a menstrual period); and postmenopause (generally 24 to 36 months after your last period, when your symptoms begin to subside). The menopause transition is a natural event that usually takes place between the ages of 45 and 55 (Fig. 2).

Perimenopause or "menopause transition": Peri-menopause is the first stage in this process and can start eight to 10 years before menopause the ovaries gradually produce less estrogen. It usually starts in a woman's 40s, but can start in the 30s as well 1 (Fig. 3).

The perimenopause, also known as the menopausal transition, has two phases: the early transition, during which cycles are largely regular and interrupted infrequently, and the late transition, during which amenorrhea lengthens and last for at least 60 days, up to the first menstrual period. Perimenopausal women not only in association with the menopausal transition but also in relation to aging (Fig. 4).

Menopause is a stage when the menstrual cycle stops for longer than 12 months and there is a drop in the levels of estrogen and progesterone. At this stage, the ovaries have stopped releasing eggs and producing most of their estrogen[1]with women from Western countries having a higher menopausal age compared to women from other parts of the world (Fig. 5).[8]

Postmenopause

Postmenopause is the stage after menopause: This is the name given to the period of time after a woman has not bled for an entire year (the rest of your life after going through menopause). Positive effects have been found, evidence supporting pelvic floor muscles strengthening training as a strategy to improve sexual function and quality of sexual life related to peri-menopausal & menopausal symptoms is limited, For pain management, a therapeutic electrical stimulation of the peripheral nervous system promotes modulation of nociceptive incentives and release of endogenous opioids[6] paced respiration (slow deep breathing) as a first line treatment for hot flashes in peri-menopausal & menopausal women.[10]

Sexuality is defined as a state of physical, psychological, social, and emotional well-being that is related to sexual desire. Female sexual dysfunction negatively affects QOL and self-esteem, causing emotional distress and relationship problems.[4,5]

Given that women currently spend a third or more of their lives after menopause, it is essential to pay attention to their health problems and sexual difficulties and establish strategies to prevent a reduction of sexual activity in women. Menopause may be accompanied by symptoms such as dyspareunia, bleeding during intercourse, urinary tract infection, urinary incontinence, and vasomotor symptoms including hot flushes with or without night sweats. After menopause, the decrease of oestrogen can affect the tissues that are responsive to this hormone. The pelvic floor muscles (PFM), the vagina and the urinary tract have oestrogen, androgen and progesterone receptors.[6]

Depressed mood and increased anxiety also increase during the transition (Peri-menopause), with an abrupt rise in prevalence as women approach the later stages of the menopausal transition and have longer bouts of amenorrhea. These common symptoms often interact with one another such that depressed women tend to experience worse hot flashes along with worse sleep. As women enter the latter stages of the transition, vaginal dryness and dyspareunia also become more likely, affecting about 1/3 of the population. Unlike hot flashes, mood issues, and sleep, vaginal symptoms will not go away without treatment. Clinical approaches to these problems often involve hormone therapy, which can be safely given to most perimenopausal women on a short-term basis. Therapeutic strategies that are non-hormonal and behavioral can also be deployed.[7]

Menopause initiates a host of physiologic changes that include endocrinological alterations and atrophy of tissues lining the vagina and in the urinary tract. Decreased estrogen levels in post-menopausal women may cause increase in oral symptoms including dry mouth, burning sensation of the mouth and taste alterations.[9]

Many women continue to experience peri-menopausal symptoms during their postmenopausal years. Often, these symptoms are milder than they were, but can still be a bother. They are the result of low estrogen levels and include:

For pain management, a therapeutic electrical stimulation of the peripheral nervous system promotes modulation of nociceptive incentives and release of endogenous opioids. Perimenopausal

Postmenopausal, some women may experience unpleasant symptoms such as hot flushes, urogenital pain, headache and pains in the musculoskeletal system. That happens due to the decreased ovarian hormone secretion and changes in the autonomic system. According to reviewed studies, the use of transcutaneous electrical nerve stimulation (TENS), by directly stimulating the central nervous system, has presented results of manipulation of the autonomic system, being observed change in heart rate and cognitive improvement in dementia. Given this possibility, the present study aims to investigate whether the use of Transcutaneous Electrical Nerve Stimulation in low frequency can generate autonomic and psychophysical changes in healthy peri-menopausal and postmenopausal women.[6]

OBJECTIVES

Aim of Study

To Study the effectiveness of Pelvic Floor Muscles Strengthening Exercises &control group for treatment of symptoms in Peri-Menopausal & menopausal women.

Objectives of Study

Primary

To find the effect of PFM Strengthening exercises &control group in vaginal laxity & Perineal laxity symptoms in peri-menopausal and menopausal women.

Secondary

- To improve PFM strength
- To prevents pelvic organs Prolapse
- To helps maintain continence (both urinary and fecal)
- To relieve symptoms like Hot flashes, pain in pelvic region, back pain.

METHODS

After giving their written consent, 30 menopausal and perimenopausal women with menopausal and perimenopausal symptoms agreed to receive treatment for 12 weeks (4 days per week for 12 weeks). 15 patients were included in group first and 15 in group second. This study was an experimental design involving the comparative analysis of two group treated with Pelvic Floor Muscles Strengthening Exercises & control groupand assessed by dependent variables namely PSQI, ICIQ and modified Oxford Grade Scale. This study was conducted in Gynae & Obs physiotherapy department, SMIH Hospital, Patel Nagar, Dehradun during year 2021. The duration of study was of 12 weeks (4 days/week for 12 weeks) Sample selection Inclusion criteria: Subjects With Menopause, Peri-Menopause And Post-Menopause Women, Age: 40-60 years, Urinary Incontinence, Vaginal Laxity, Perineal Laxity, Clinical & biochemical symptoms, Hot flashes, Exclusion Criteria: Heart palpitation, Pain in pelvic region, Back pain, Sleeping disturbances. Outcome Measures: PSQI (Scale of Pittsburgh and sleep quality index for using of TENS in menopausal, peri-menopausal post-menopausal women), ICIQ (International consultation on Incontinence Questionnaire for - VS, UI), Modified Oxford Grading Scale (for pelvic floor muscles strengthening) and Assessment through self report questionnaires (for paced breathing exercises). Materials used Couch, Data collection sheet and Recording consent form.

Procedure

The subjects will be informed regarding the purpose and procedure of the study.

After random sampling, subjects will be divided into two groups. Each group consist of 15 patient of both male and female.

In Group A subjects will perform. Group A will be Experimental group, which receive Pelvic Floor Muscles Strengthening Exercises & control group subjects receive the treatment for 4 days/week for 12 weeks, session of 45-60 minutes Subjects were positioned on a treatment couch in supine position with adequate back support. Or the position of patient was changed according to the exercise protocol.

1. PFM strengthening exercises

Kegels

Begin by emptying bladder

Position: Patient lies in a crooked line on a couch

Patient tighten or squeeze the pelvic floor muscles, lift the sphincter & hold for a count of a 10, and for a count of 10 patient completely relax the muscles, patient does 10-20 repetitions.

People prefer to do the exercises while lying down or sitting in a chair.

Benefits: After 4 to 6 weeks, patients notice some improvement. It takes 3 months to see a major change.

Squat

Bridge

Split tabletop

Bird Dog

RESULTS

The data analysis results for the three outcome measures PSQI, ICIQ-IU, and PFM strength between group A and group B as well as within group A and group B are covered in this chapter. The scores were analyzed and interpreted to determine whether "PFM strengthening training, TENS and Paced breathing helps in improving symptoms in Peri-menopause and Menopause".

Paired t – test was used to analyze and compare scores between group A and Group B. Significant level of .05 was used for data analysis.

Analyzing PSQI revealed significant difference in group A post treatment, Mean and Standard error of mean when compared with group A pre treatment, Mean and standard error of mean.

Analyzing PSQI revealed slight significant difference in group B post treatment, Mean and Standard error of mean when compared with group B pre treatment, Mean and standard error of mean.

Analyzing PSQI in both group A & B, there was significant difference in both groups but group A shows slightly more significance in result.

Analyzing post data of PSQI of both group A & B, group A Mean and SEM, group B Mean & SEM, there was significant difference in group A, i.e. group A showed more improvement when treated with PFM strengthening training, TENS and Paced breathing.

Analyzing ICIQ-UI revealed significant difference in group A post treatment, Mean and Standard error of mean when compared with group A pre treatment, Mean and standard error of mean.

Analyzing ICIQ-UI revealed significant difference in group B post treatment, Mean and Standard error of mean when compared with group B pre treatment, Mean and standard error of mean.

Analyzing ICIQ-UI in both group A & B, there was significant difference in both groups and group A shows slightly more significance in result.

Analyzing Modified Oxford Grade Scale in both group A & B, there was significant difference in both groups and group A shows slightly more significance in result.

Analyzing post data of both group A & B, group A Mean & SEM, group B Mean & SEM there was significant improvement in group A, i.e. group A showed more improvement when treated with PFM strengthening training, TENS and Paced breathing.

Analyzing Modified Oxford Grade Scale in both group A & B, there was significant difference in both groups and group A shows slightly more significance in result.

Analyzing post data of both group A & B, group A Mean & SEM, group B Mean & SEM there was significant improvement in group A, i.e. group A showed more improvement when treated with PFM strengthening training, TENS and Paced breathing.

Analyzing Modified Oxford Grade Scale in both group A & B, there was significant difference in both groups and group A shows slightly more significance in result.

Analyzing post data of both group A & B, group A Mean & SEM, group B Mean & SEM there was significant improvement in group A, i.e. group B (Controlled GROUP) which followed home treatment program, Only PFM Exercise.

Therefore, results suggest that Significant difference and more improvement will show in Group A than Group B after twelve weeks of treatment with PFM Strengthening training, paced breathing and TENS in Group A patient, and home program in Group B patient followed PFM Strengthening training.

MENOPAUSE

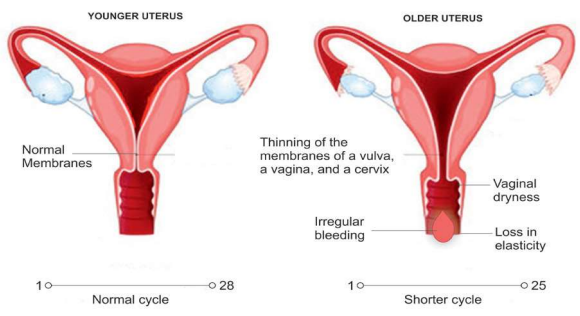


Fig. 1: Menopause normal cycle and shorter cycle

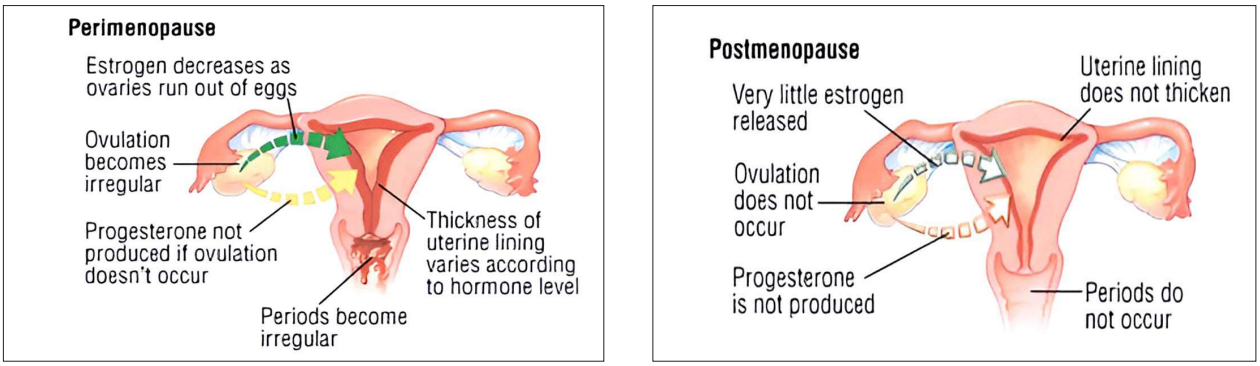


Fig. 2: Perimenopause and postmenopause cycle

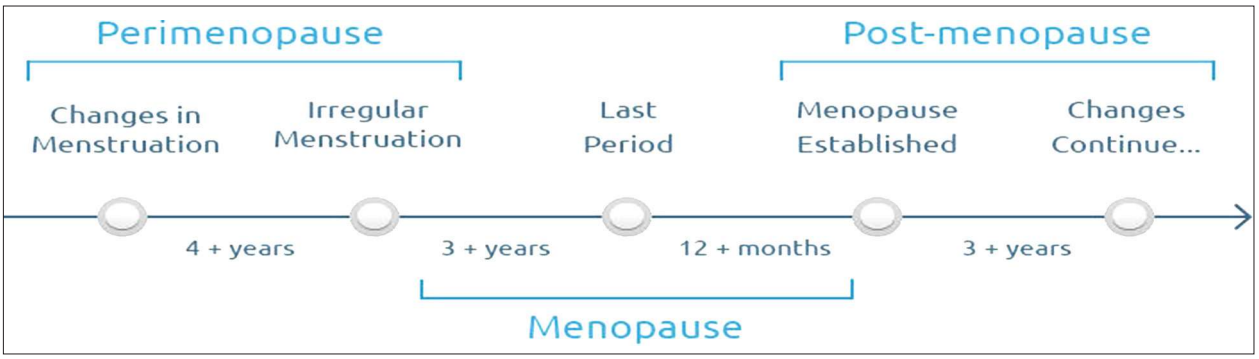


Fig. 3: Perimenopause and postmenopause changes

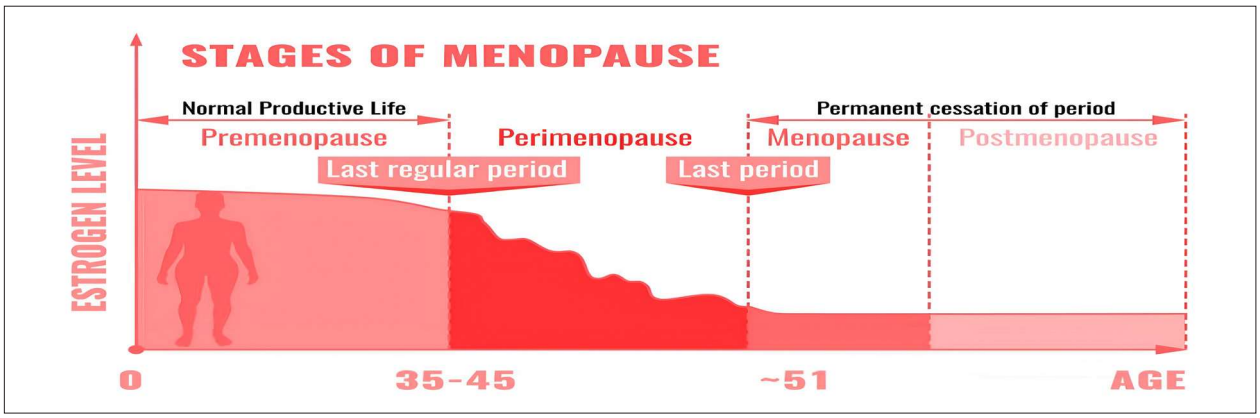


Fig. 4: Stages of Menopause

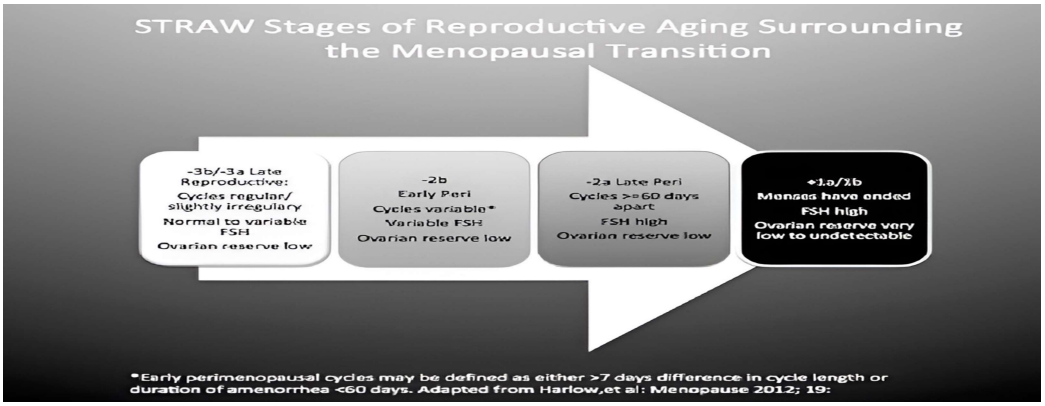
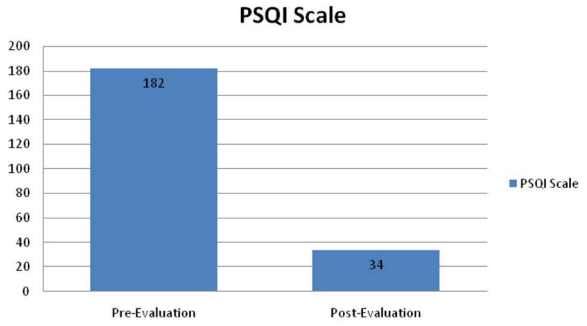


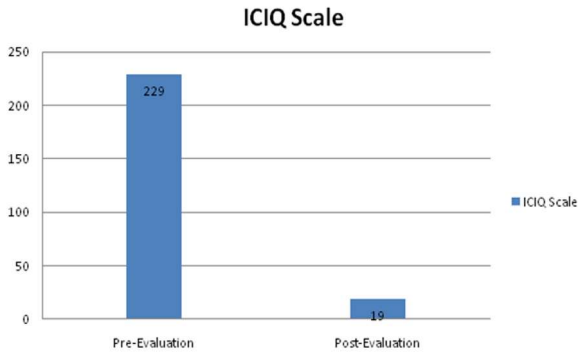
Fig. 5: Straw stages of reproductive aging surrounding the Menopausal transition

Outcome Measures	Group A	Group B
	Pre/Post Evaluation	Pre/Post Evaluation
PSQI	(MEAN ± SEM) 2.20* 12.1/2.2	MEAN ± SEM) 2.50* 12.5/5.6
ICIQ-UI	MEAN ± SEM) 1.99** 15.2/1.2	MEAN ± SEM) 3.29** 14.8/5.3



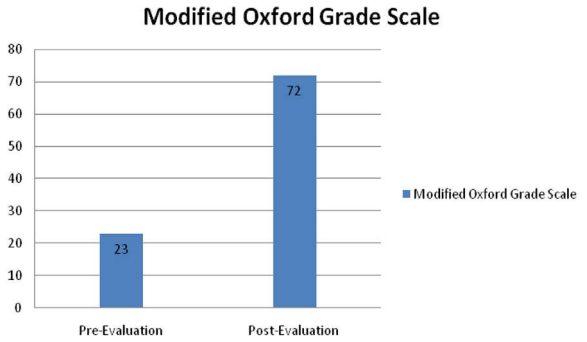
Graph 1: Comparison and significant differences between Group A & Group B

	Group A	
	Pre-Evaluation	Post-Evaluation
ICQI Scale	229	19



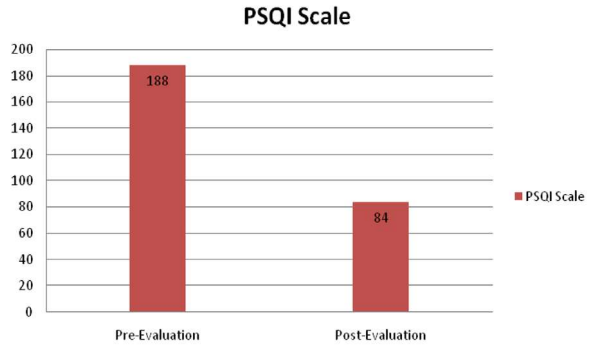
Graph 2: Comparison of ICIQ Pre and Post Treatment Data of Group A (Mean & SD)

	Group A	
	Pre-Evaluation	Post-Evaluation
Modified Oxford Grade Scale	23	72



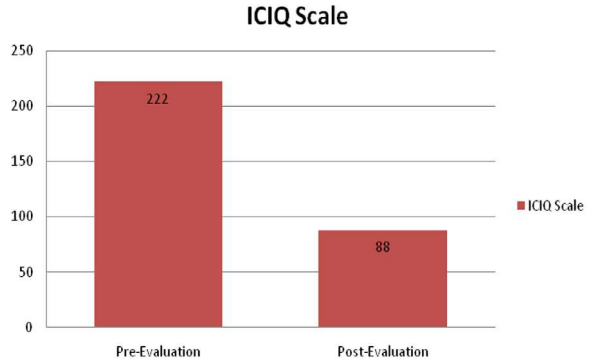
Graph 3: Comparison of Modified Oxford Grade Scale Pre and Post Treatment Data of Group A (Mean & SD)

	Group B	
	Pre-Evaluation	Post-Evaluation
PSQI Scale	188	84



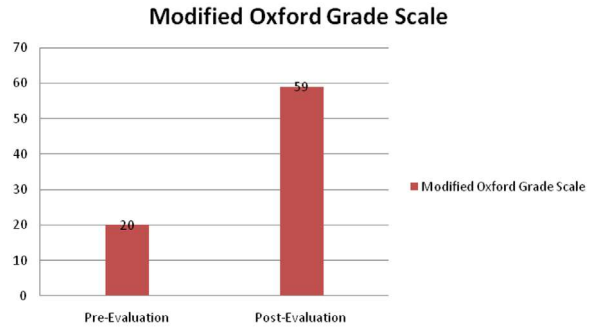
Graph 4: Comparison of PSQI Pre and Post Treatment Data of Group B (Mean & SD)

	Group B	
	Pre-Evaluation	Post-Evaluation
ICIQ Scale	222	80



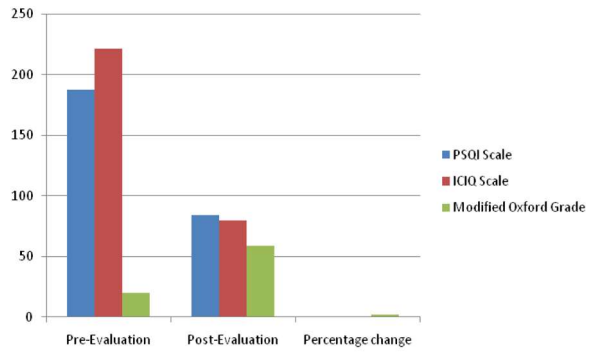
Graph 5: Comparison of ICIQ Pre and Post Treatment data of Group B (Mean & SD)

	Group B	
	Pre-Evaluation	Post-Evaluation
Modified Oxford Grade Scale	20	59



Graph 6: Comparison of Modified Oxford Grade Scale Pre and Post Treatment data of Group A (Mean & SD)

Group B			
	Pre-Evaluation	Post-Evaluation	Percentage Change
PSQI Scale	188	84	55.32%
ICIQ Scale	222	80	63.96%
Modified Oxford Grade Scale	20	59	195.00%



Graph 7: Pre and Post Evaluation

DISCUSSION

In this study, efforts were made to see the effectiveness of PFM Strengthening training, paced breathing and TENS in Experimental Group A patient, and home program in Group B patient followed PFM Strengthening training as a treatment for improving symptoms in Peri-menopausal & menopausal patient. A total of 30 patients with symptoms of Peri-Menopause & Menopause were included in the study. The intervention was gave for a period of 12 weeks (4 days/week). The present study was done in the Physiotherapy department of Shri Mahant Indresh Hospital. Patients diagnosed to have symptoms of peri-menopause & menopause were randomly allocated in both the groups. This study shows significant comparative effectiveness between Group A & Group B. Group A receiving PFM Strengthening training, TENS & Paced breathing and Group B following Home Treatment Program with only PFM Strengthening Exercises. In the present study the aim to find the efficacy of which mode of treatment was better in the two group using three different evaluating outcome measures such PSQI, ICIQ & Modified Oxford Grade Scale. The major findings of this study were that of PFM Strengthening training, paced breathing and TENS in Experimental Group A patient. Improve score of PFM strength, and Urinary incontinence by PFM Training measured by Modified Oxford Grade Scale. Improve score in sleep quality, pelvic pain, back pain, hot flash by TENS and Paced Breathing measured by PSQI Scale. Improve score in incontinence by PFM Training measured by ICIQ-UI. This study consisted of a total 15 subjects in each group with 15 women patients in group A, and the other group had 15 women patients Prevalence of menopausal symptoms was found to be 87.7%. Majority of the study subjects had anxiety (80%), followed by physical and mental exhaustion (71.5%), sleep problem (61.2%), irritability (60.7%), Joint and muscular discomfort (56%) and heart problems (54%). The "t" test and One-way ANOVA was done to find out the significant of the data between two groups. Overall 30 Peri-menopausal & Menopausal women, 15 women receive of PFM Strengthening training, paced breathing and TENS and 15 women Home Treatment Program with only PFM Strengthening Exercises. Who were selected based on the selection criteria. The results demonstrated that the patients treated with the intervention were highly significant in improving PFM strength, preventing pelvic organs Prolapse, helps in maintain continence (both urinary and fecal) and relieving symptoms like Hot flashes, pain in pelvic region, back pain. Based in this data we accept the experimental hypothesis and reject null Hypothesis. The study undertaken included women patients who had symptoms of perimenopause & menopause. In our study the mean flow of group A and group B varied between 2.2 (PSQI), 1.2 (ICIQ-UI), 4.8 (Oxford grade scale) and 5.6 (PSQI), 5.3 (ICIQ-UI), 3.7 (Oxford grade scale) I/s respectively. We have shown that PFM Strengthening training, paced breathing and TENS result in significant increase in Pelvic Floor muscles function & improve PFM strength, prevents pelvic organs Prolapse, helps in maintain continence (both urinary and fecal) and relieve symptoms like Hot flashes, pain in pelvic region, back pain, significant reduce in vaginal an perineal laxity by improving PFM strength in peri-menopausal women. Improvement occurs in both groups (these results may be due to treatment protocol which we have taken in this study). The drawback of this study is that only PFM training in Group B (in controlled group) performed at home.

Limitation of Study

The study is conducted for a short duration.

Proper follow up is not done with the patients due to COVID-19 Pandemic.

Total size of population group studied was small.

In this study, the effects of hormone therapy and sleeping pills are not considered while including

women in the study.

Future Research

Further study can be done to check the combined effects of PFM strengthening, TENS and Paced breathing.

The duration of study can be increased.

Sample size will be taken larger.

Proper follow up was done with patients. The exact mechanism behind the significant increase in Pelvic Floor muscles function & improve PFM strength, prevents pelvic organs Prolapse, helps in maintain continence (both urinary and fecal) and relieve symptoms like Hot flashes, pain in pelvic region, back pain, significant reduce in vaginal and perineal laxity by improving PFM strength in peri-menopausal women & Using of TENS can be studied in more detailed.

CONCLUSION

This study provided evidence to support the use of PFM Strengthening Training, control group to improve PFM strength, decrease Vaginal & Perineal Laxity, to prevents pelvic organs Prolapse to helps maintain continence (both urinary and fecal) and to relieve symptoms like Hot flashes, pain in pelvic region, back pain in Peri-Menopausal & Menopausal Women. In conclusion, the treatment program PFM Strengthening Training in Group A (Experimental Group) is more effective than the Home treatment program only PFM Strengthening Training in Group B (Controlled group) to improving PFM strength and relieve the symptoms in Peri-menopause & Menopause Women after 12 weeks (4 days/week) of intervention.

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