

Effectiveness Of Tele-Rehabilitation In Stress Incontinence In Postpartum Females- A Randomised Control Trial

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Abstract-

Introduction: Stress Urinary incontinence is considered as the most common and distressing health problem among women especially in postpartum period, associated with a profound negative impact on their quality of life.

Methods: A randomized controlled trial study was conducted with 110 women participants with urinary incontinence in their postpartum period (6months-1year) between 20 and 50 years of age. Telerehabilitation was given to the participants who were given a group of exercises which includes Kegel's exercises, progressive core muscle exercises breathing exercises and relaxation for 30 minutes every day for 3 months. Pre and post rehabilitation outcome measures were assessed using Questionnaire for Urinary Incontinence Diagnosis (QUID) and oxford grading scale evaluate the effectiveness of tele rehabilitation.

Result: Improvement was noted with a significant decrease in urinary incontinence episodes and increase in pelvic floor muscle strength to a large extent after a 3-month period of tele rehabilitation. The p value was <0.001 between the pretest QUID mean score of 8.18 ± 2.151 and post test mean score of 4.12 ± 2.049 . The pretest mean score was 1.87 ± 0.814 and post test scores was 3.59 ± 0.494 in which a significant improvement was noted.

Conclusion: Telerehabilitation was found to be effective in reducing the urinary incontinence in postpartum females.

INTRODUCTION:

Pelvic floor muscle (PFM) dysfunction commonly manifests as urinary incontinence (UI) and often unreported problem for women with the prevalence ranging from 25% to 45% globally.^{1,2,3} Pelvic floor muscles (PFMs) provide support to the various pelvic organs. Their contraction is associated with tightening of sphincter and opening of vagina, anus, and urethra. Relaxation of these muscles causes passage of urine. PFM weakness is associated with reduced support to these organs causing incontinence.¹⁹ The conservative management of Stress Urinary incontinence involves various interventions such as Pelvic Floor Muscle Training (PFMT), bladder retraining lifestyle interventions.^{4,5} Pelvic floor dysfunction including urinary and anal incontinence, is a common Postpartum complaint and likely to reduce quality of life. Recent trends suggest that gynaecological rehabilitation helps in relieving symptoms of Stress Urinary incontinence.^{6,7}

Digital technologies such as the World Wide Web; eHealth; and mHealth including SMS text messaging and various applications provide an avenue for women with urinary incontinence to seek guidance with PFMT and potentially improve their symptoms and quality of life⁸⁻¹¹. Use of digital technology for management of womens' health related issues like urinary incontinence in postpartum and in elderly needs to be studied as there is dearth of literature in this area¹²⁻¹⁸. With the available background and introduction this study was planned with the following objectives.

OBJECTIVES:

- Aim- To evaluate Effectiveness of Telerehabilitation in Stress Incontinence in postpartum females.
- Primary objective - To evaluate the effect of telerehabilitation on frequency and degree of Stress Incontinence in postpartum females using Questionnaire for Urinary Incontinence Diagnosis (QUID) pre and post treatment.
- Secondary objective- To evaluate the effect of telerehabilitation on pelvic floor strengthening in postpartum females using Oxford Grading scale pre and post treatment.

METHODOLOGY:

Study Centre: Narayana Hrudayalaya Institute of Physiotherapy, Tele rehabilitation was given through laptop to the patient by the principal investigator in Room No.8 in the college campus.

Study subjects: Postpartum females up to 1 Year of delivery (20-50 Years of age)

Study Period: 3 months
 Study design: Prospective cohort study
 Sample size: 110 participants
 Sampling technique: Simple random sampling

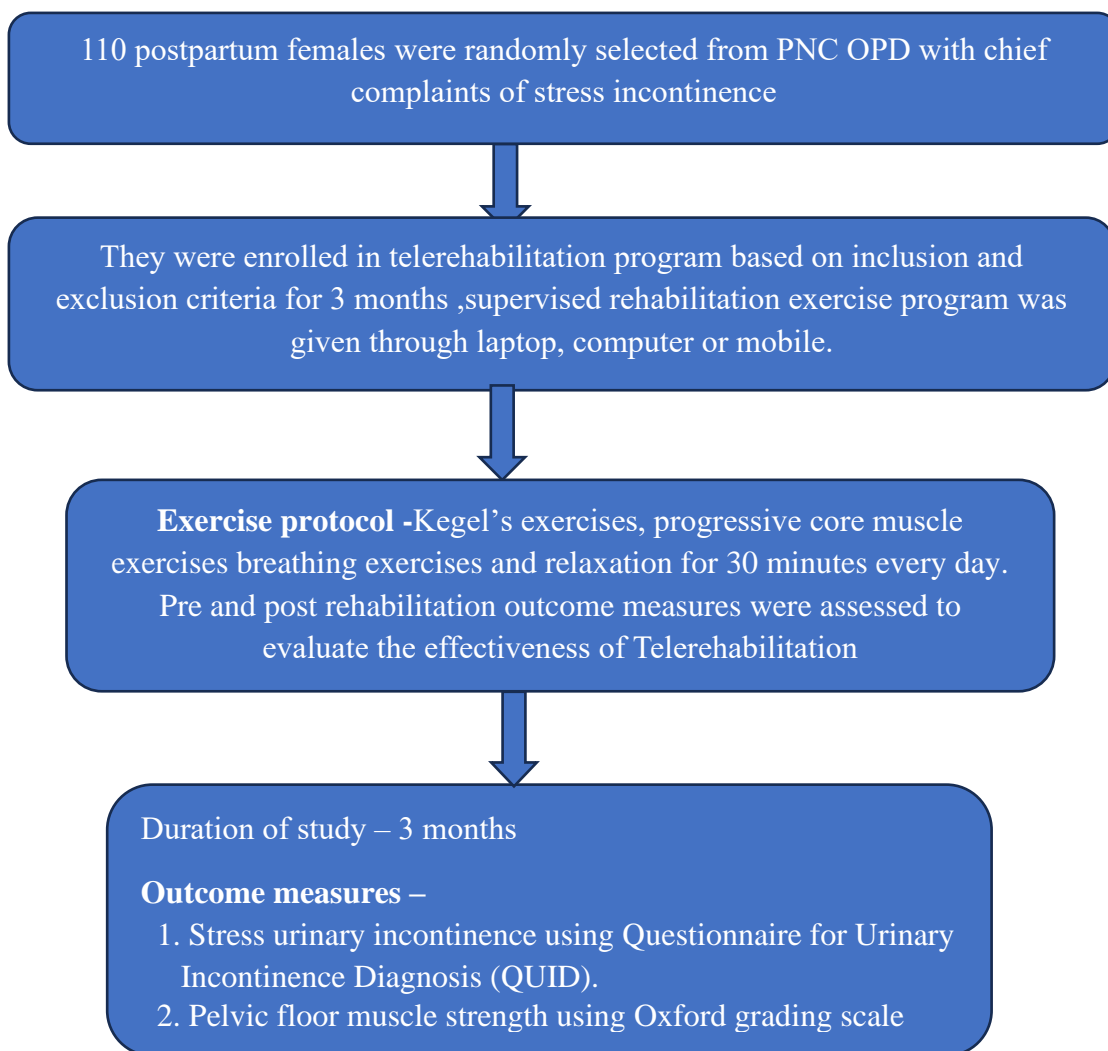
Inclusion criteria:

- 1) Postpartum females up to 1 Year of delivery
- 2) Age between 20-50 Years of age
- 3) Women with the knowledge of usage of electronic devices like laptop or mobiles.

Exclusion criteria:

- 1) Postpartum females unwilling to participate.
- 2) Women with a diagnosis or under treatment with active pelvic neoplasia, active urinary tract infection, neurogenic dysfunction of lower urinary tract
- 3) Women with any form of neurological or psychiatric pathologies that could prevent the realization of the therapeutic program

Outline :



Exercise protocol:

At the beginning of the first month, participants were assessed for stress urinary incontinence and who met the inclusion criteria were included in the study. The participants were given 2 instructional sessions.

The study group were imparted a 3-month telerehabilitation program through video-telerehabilitation sessions which included a 2-weekly monitored video-telerehabilitation sessions and the women were instructed to perform the exercises daily.

The instructions were provided to participants about Kegel, progressive core muscle and breathing exercise throughout three months.

The first instructional session included information about urinary incontinence causes and risk factors, possible ways of management, the knowledge about pelvic floor muscles and their functions, definition of Kegel exercise and its benefits on improving the strength and elasticity of pelvic floor muscles and reducing symptoms of stress urinary incontinence.

The 2nd session included instructions about applying Kegel exercises by instructing the participants to try to stop the urine flow in the middle of urination, and while performing it they must experience a feeling of squeezing and lifting in the same time.

Participants were then instructed to take normal breath during the exercises (Breathing normally), not trying to move legs, buttock, or abdominal muscles during the exercises, also the participants were instructed to relax for a period equal to the period.

The instructions were provided to the participants were clear and specific, asking them to contract the muscle while she must try to stop the urine follow and count for 3 (3 seconds) and relax for another 3 seconds, contracting and relaxing 5 times (each exercise group consisted of 5 contractions and relaxations, the duration of each contraction and relaxation was 3 seconds) and this was repeated in the exercise group 5 times per day (25contractions per day) during the first month, these contractions increased gradually every month.

The participants were instructed to increase the duration of holding to 6 seconds and increase the number of contractions and relaxations to 10 times (each exercise group consisted of 10 contractions and relaxations, the duration of each contraction and relaxation was for 6 seconds) and the exercise was repeated in the exercise group for 5 times per day (50 contractions per day) during the second month.

The next progression was where the participants were instructed to increase the duration of holding to 9 seconds and increase the number of contractions and relaxations to 15 times and this was repeated in the exercise group for 5 times per day (75 contractions per day) during the 3rd month.

Improvement in Stress urinary incontinence was recorded using Questionnaire for Urinary Incontinence Diagnosis (QUID) and improvement in Pelvic floor muscle strength was recorded using Oxford grading scale where the participants were assessed before and after exercise session.

The participants scores on both the above outcome measures were assessed pre-test and post-test and the values were analyzed. The data was managed by MS word 2016 and analyzed by SPSS version 27.

RESULTS:

Table-1 Comparing the Pre-Treatment and Post-Treatment Outcomes of Questionnaire for Urinary Incontinence Diagnosis (QUID)

S. No	Parameter	Mean ± Standard Deviation	P- Value
1	Pre-Treatment	8.18 ± 2.151	<0.001*
2	Post-Treatment	4.12 ± 2.049	

Statistical Software: SPSS Version 27; Statistical test: Paired T-Test; P-Value <0.05 Significant*

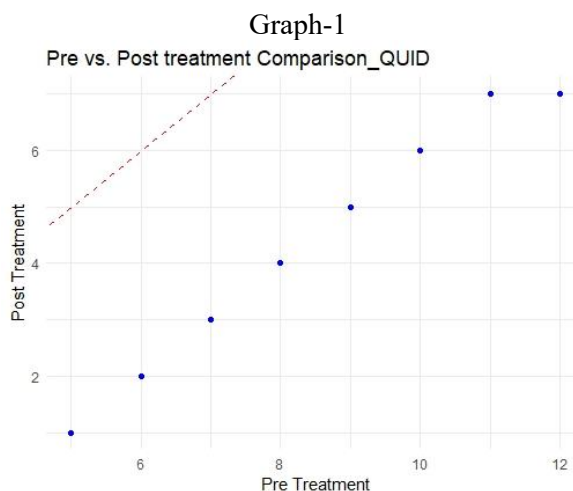
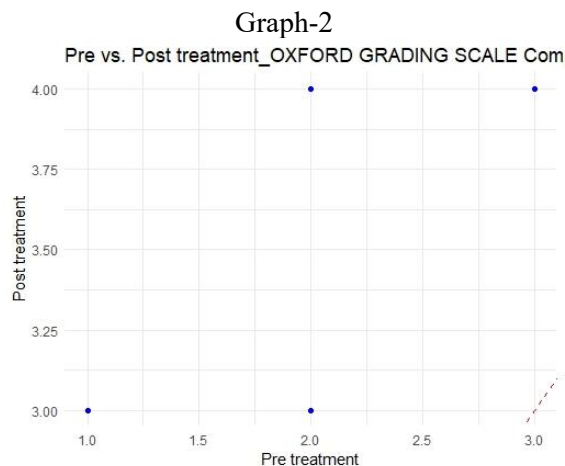


Table-2 Comparing the pre-treatment and Post-Treatment Outcomes of the Oxford Grading Scale

S. No	Parameter	Mean \pm Standard Deviation	P- Value
1	Pre-Treatment	1.87 \pm 0.814	<0.001*
2	Post-Treatment	3.59 \pm 0.494	

Statistical test: Paired T-Test; P-Value <0.05 Significant*

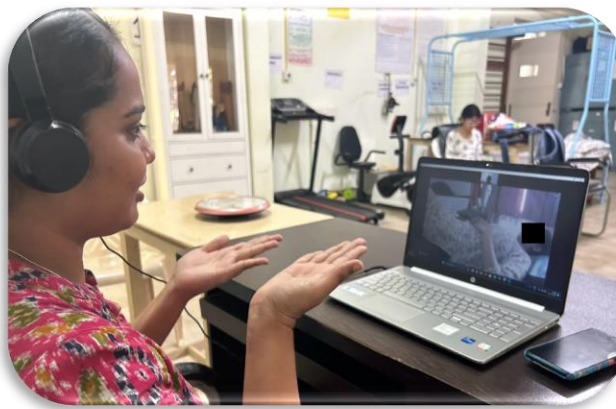


Statistical Analysis:

By comparing the pre and post treatment outcomes there was a significant improvement in the post treatment outcomes for QUID and oxford grading scale which is evident from the table-1, graph-1 and table-2, graph-2 respectively.

The participants had a significant decrease in urinary incontinence episodes and increase in pelvic floor muscle strength to a large extent after a 3month period of tele rehabilitation protocol.

With a search for low-cost simple and easily administered treatments, this study contributes to the development of treatment protocols which are effective and with less expense for the public health system



Discussion

This current study shows a significant decrease in urinary incontinence episodes and increase in pelvic floor muscle strength. Only a few studies exist in the literature comparing the efficacy of Pelvic Floor Muscle Training (PFMT) telerehabilitation programs with the conventional ones. The present study is therefore important as it highlights the potential of using the telerehabilitation interventions, in terms of cost and time savings.

Our study was similar to that of Sjöström et al.⁹ in concluding that an internet-based treatment for SUI is a new, cost-effective treatment, but they compared the modality with treatment information provided by protocol and also analysing different economic indicators.

Hui et al.²⁰ concluded in their study that videoconferencing is as effective as conventional methods in the management of UI in an 8-week intervention period with one session per week, but their intervention period was not the one considered by current guidelines to assess sustainable benefits.

The results of Carrión Pérez et al.'s²¹ pilot study was similar to ours but they included only 19 patients in a 12-week program. However, their adherence to treatment between groups was also uneven, making the comparison between groups less robust than that performed in our study.

Moreover, although we used a methodologically robust and adequately powered RCT to assess the effectiveness of a telerehabilitation protocol, the carry-over effect of this intervention over time was not evaluated, so its long-term benefits are not yet known.

Additionally, the scale-up and adoption of the purposed intervention require the patients to have technological skills, which may be insufficient among some patients with stress urinary incontinence with low digital literacy.

In conclusion, this telerehabilitation protocol showed effectiveness with respect to improving stress urinary incontinence symptoms and stress urinary incontinence-related quality of life, proving to be a viable alternative, especially in pandemic times. It makes treatment affordable and convenient especially for a new mother who has multiple chores to do along with taking care of the baby.

Limitations and recommendations:

This study was conducted for a shorter period of time, in upcoming studies time period can be increased. The washing off effect can be studied as well.

CONCLUSION:

According to the results, this telerehabilitation protocol showed effectiveness in reducing the urinary incontinence in postpartum females with urinary incontinence. It made these women avail treatment for SUI at the comfort of their homes and made the treatment affordable at the same time, a time conservation approach as it saved the travel time.

CONFLICTS OF INTEREST:

The authors do not have any conflict of interest to declare.

ETHICAL APPROVAL:

The study was approved by the research committee and a formal permission was obtained from Narayana Health Academics Ethics Committee (NHAEC), Bangalore. No ethical issues arose during the study.

STATEMENT OF INFORMED CONSENT:

Informed consent was obtained during the study. The subjects were informed that the confidentiality of the data was maintained. The subjects were informed that their participation was on voluntary basis and can withdraw from the study at any time.

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