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Effectiveness of Progressive Relaxation Technique in Housewives with Non-Specific Low Back Pain in Three Patient Groups: OPD, Home Program and Telerehabilitation

Yogini Ramesh Vairat[1], Dr. Priyamwada Hinge (PT)[2]

[1]Intern, TMV's Indutai Tilak College of Physiotherapy, Tilak Maharashtra Vidyapeeth, Pune
[2] Assistant Professor, TMV's Indutai Tilak College of Physiotherapy, Tilak Maharashtra Vidyapeeth Pune

ABSTRACT:

Background: Non-specific LBP is defined as LBP that is not related to any kind of specific pathology. Housework is physically tiring job which may lead to non-specific low back pain. Progressive relaxation technique not only reduces the intensity of pain, stress and anxiety but also cures cramp and taut muscles. The Jacobson relaxation technique also known as progressive relaxation technique, is performed by tensing and relaxing specific area of the muscle. This study aimed to assess the effectiveness of progressive relaxation technique in housewives with non-specific low back pain with three types of treatment modes.

Aim:

1. To evaluate the disability related to low back pain in housewives before and after the intervention using Roland morris disability questionnaire.
2. To evaluate the quality of life in housewives before and after the intervention using WHOQOL Bref scale.
3. To evaluate the pain intensity levels in housewives before and after the intervention using NPRS.

Objective: To compare the pain intensity levels in housewives with non-specific low back pain before and after progressive relaxation technique and to evaluate the effect of progressive relaxation technique on quality of life of housewives with non-specific low back pain.

Methods: 60 Housewives were divided into three groups- OPD based, home program based and telerehabilitation (video calling) group exercise program. A treatment protocol of stretching, strengthening exercises and progressive relaxation technique was given to all three groups for 4 weeks and 5 days in a week. Pre and post scores were recorded and statistical analysis was done.

Result: The results showed that both OPD Based and telerehabilitation interventions produced significant reduction in low back pain while the home program showed least improvement in all aspects. However, more improvement in QOL was seen in patients of teleconsultation group.

Conclusion: Progressive relaxation technique along with strengthening exercises is an effective way in treating non-specific low back pain among housewives. Among the three groups of intervention OPD based treatment Program was the most effective followed by telerehabilitation and least in home program. These findings help us to understand the importance of supervision and guidance in daily exercise programs for treating housewives.

Keywords: Progressive relaxation technique, Housewives, Non-specific low back pain, NPRS, WHOQOL bref scale.

INTRODUCTION:

Non-specific LBP is defined as LBP that is not related to any kind of specific pathology. [1] A report suggested that prevalence of LBP is 49% to 70%, During which most of the individual may experience at least one episode of LBP in their lifetime. [2] Long term LBP which is defined as pain lasting for more than three months is experienced by significant number of patients. The patient may also suffer with reduced physical function and psychological distress associated with LBP. [2] In India, around 60% of people showed occurrence of low back pain and have experienced significant low back pain in some point of time in their lives . [3]

In India, the married women play the role of Daughter, mother, Wife, Daughter in law. [4] For a married Women, housework is the most demanding job. Studies have shown that to perform Housework and other various household chores performed by Housewives requires double the effort and energy compared to other jobs. [5] Housework generally comprise of activities like cleaning, cooking, washing, sweeping and looking after children and other family members, these activities require a significant amount of mental, emotional and physical efforts by Housewives. [5] Housewives often perform housework that includes cleaning, cooking, sweeping, washing utensils and washing clothes which often leads to overwork of the musculoskeletal system, and put housewives at a potential risk of musculoskeletal problems. [6] Housewives typically experience work related musculoskeletal disorders due to Household work which exposes housewives to physical and mental stresses which is more evident in lower back. [5]

There are very less evidences that proves the Efficacy of relaxation method in reducing non-specific low back pain. [7] The physiological effects of progressive relaxation technique are decreased blood pressure, reduced respiratory and heart rate, and can also reduce pain, anxiety and stress. [8] The Jacobson relaxation technique also known as progressive relaxation technique, is performed by tensing and relaxing specific area of the muscle. [9]

Patients experiencing both acute and chronic pain showed reduction in pain and improved daily activities with exercise programs that focused on Strengthening, Functional restoration and flexibility. [10]

As Housewives are prone to repetitive injuries on daily bases due to their nature of work, it is important to find suitable treatment options for them. Some housewives were not able to attend regular OPD sessions, so and alternative mode of treatment program of telerehabilitation and home program was chosen, so that the housewives could perform and the attend the treatment regularly. According to various study relaxation techniques are significantly known to reduce stress but very fewer studies have studied its effectiveness in pain management. As housewives are busy with their household chores, it is important to implement various modes of treatments which will be feasible to a Housewife.

In this study, we will implement stretching, strengthening exercises and Jacobsons relaxation technique to housewives through three modes of treatment which is OPD based, A home program based and a telerehabilitation group. A group of strengthening exercises will be included that focuses on core muscles like the transverse abdominis, Multifidus, Gluteal muscles. Incorporated with relaxation technique. The aim of the study is to determine the Effect of stretching, strengthening exercises along with PRT in Housewives with non-specific low back pain and also determine which mode of treatment plan is effective for housewives.

MATERIALS AND METHODOLOGY:

The study is a Quasi intervention type with Multiple group pretest-posttest study design. The targeted population were housewives across Pune. The total sample size was 60 participants with convenient sampling and were divided into three groups – OPD based, home program based and telerehabilitation group respectively. Each group had 20 participants. The inclusion criteria included age group of housewives between 25-45 years with diagnosed non-specific low back pain and ability to understand and follow instructions, while the exclusion criteria included patients on daily analgesics and patients who are receiving treatment with electrotherapeutic modalities. A treatment protocol of strengthening exercises that included Tummy tucks, Bridging, Quadripod leg extension and back extension in prone with 10 repetitions, stretching included quadriceps, stretch Hamstring stretch and dorsal lumbar fascia stretch, each stretch was performed for 3 times with stretch duration of 1 minute along with Progressive relaxation Technique was assigned. The treatment program was conducted for 4 weeks for 5 days in a week. After the treatment Program the intensity of pain and Assessment of quality of life, post intervention was recorded again to state the difference. The outcome measures used in this study was numerical pain rating scale (NPRS). Roland-morris disability questionnaire and WHOQOL Bref scale.

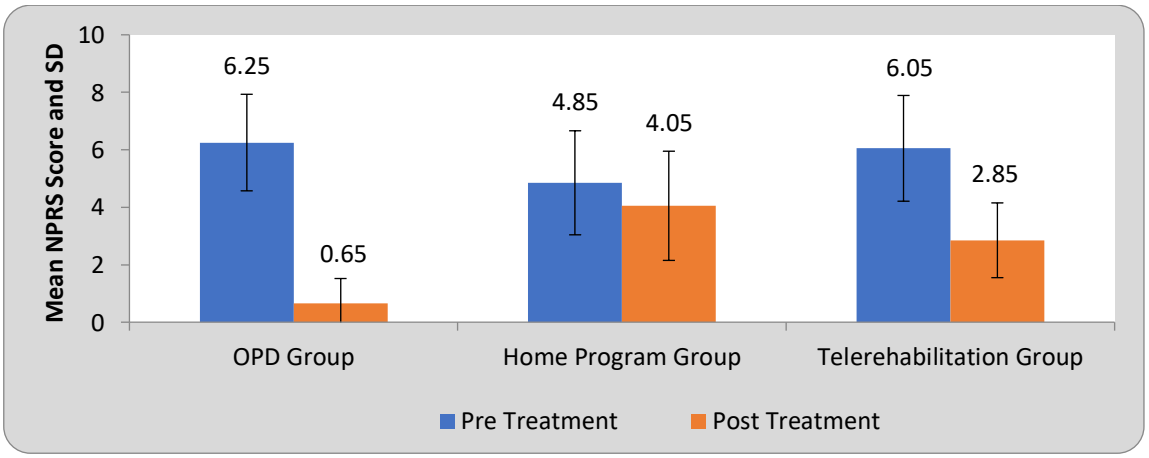
STATISTICAL ANALYSIS:

Statistical analysis was done by using descriptive and inferential statistics using One way ANOVA, Kruskal Wallis Test, Student's Paired t test and Wilcoxon. Normality test was used to check the normality of scores in NPRS, Rolad morris questionnaire and WHOQOL Bref scale in all three treatment groups. Signed Rank Test and software used in the analysis was SPSS 22.0 version and $p<0.05$ is considered as level of significance.

Table 1: Comparison of NPRS score in three groups at pre and post treatment(Student's paired t test)

Group	Pre Treatment	Post Treatment	Mean Difference	t-value
OPD Group	6.25±1.68	0.65±0.87	5.60±1.27	19.67,p=0.0001,S
Home Program Group	4.85±1.81	4.05±1.90	0.80±1.76	2.12,p=0.047,S
Telerehabilitation Group	6.05±1.84	2.85±1.30	3.20±1.43	9.96,p=0.0001,S

Graph 1: Comparison of NPRS score in three groups at pre and post treatment (Student's paired t test)

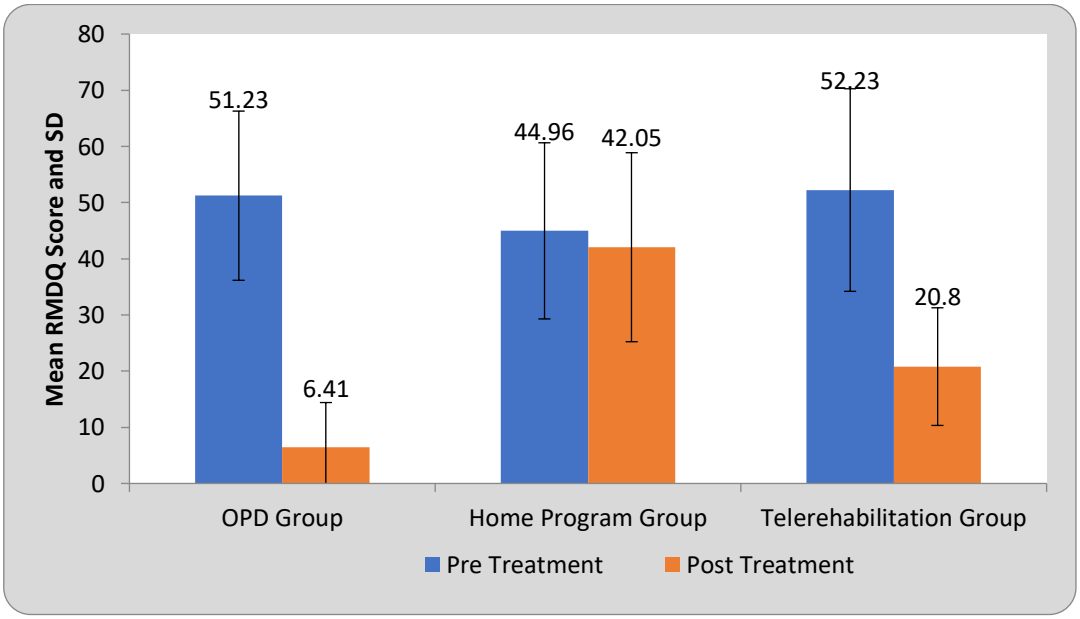


INTERPRETATION: The above data shows us that OPD group showed the largest reduction in pain with post results of 0.65±0.87. And telerehabilitation group showed similar results in reducing pain that is 2.85±1.30 but was less effective than OPD group. Home program showed least reduction in pain with post results of 4.05±1.90.

Table 2: Comparison of RMDQ score in three groups at pre and post treatment(Student's paired t test)

Group	Pre Treatment	Post Treatment	Mean Difference	t-value
OPD Group	51.23±15.06	6.41±7.99	44.81±12.90	15.53,p=0.0001,S
Home Program Group	44.96±15.68	42.05±16.82	2.91±13.03	1.00,p=0.33,NS
Telerehabilitation Group	52.23±18.03	20.80±10.47	31.42±13.47	10.43,p=0.0001,S

Graph 2: Comparison of RMDQ score in three groups at pre and post treatment (Student's paired t test)

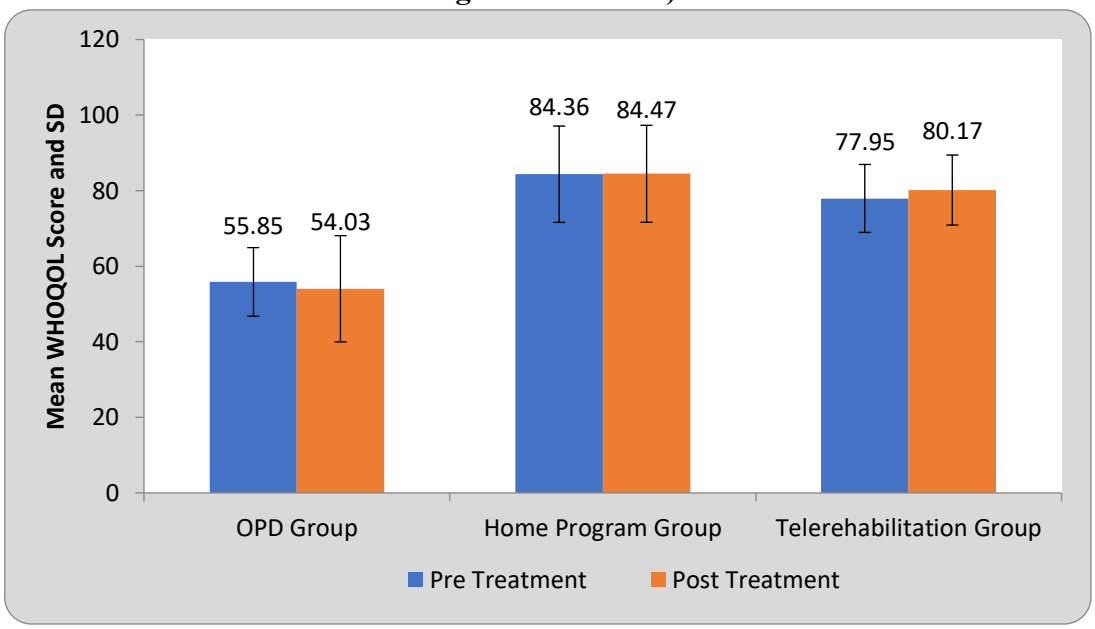


INTERPRETATION: The Roland morris disability score of OPD group improved to 6.41±7.99 which shows significant reduction in disability of back pain Followed by telerehabilitation group which showed reduction in disability with a score of 20.80±10.47.
Home program showed the least improvement from disability with a score of 42.05±16.82.

Table 3: Comparison of WHOQOL score in three groups at pre and post treatment(Wilcoxon Signed Rank Test)

Group	Pre Treatment	Post Treatment	Mean Difference	z-value
OPD Group	55.85±9.07	54.03±14.06	1.81±12.08	0.67,p=0.50,NS
Home Program Group	84.36±12.75	84.47±12.83	0.10±0.44	1.05,p=0.30,NS
Telerehabilitation Group	77.95±8.99	80.17±9.27	2.22±3.75	2.64,p=0.016,S

Graph 3: Comparison of WHOQOL score in three groups at pre and post treatment(Wilcoxon Signed Rank Test)



INTERPRETATION: The above graph interprets that post WHOQOL score in OPD program did not improve from pre interventions but saw a slight decline in QOL with score of 54.03±14.06. The home program also did not see any significant difference in pre and post interventions. The telerehabilitation group saw significant increase in QOL post intervention with a score of was 80.17±9.27.

RESULTS:

The results showed that both OPD Based and telerehabilitation based interventions produced significant reduction in pain and disability of low back pain while the home program showed least improvement in all aspects. However, improvement in QOL in patients was seen in telerehabilitation program.

DISCUSSION:

This study aimed to find out the effectiveness of Progressive relaxation technique in Housewives with non-specific low back pain and were divided into three groups OPD group, home program group and telerehabilitation group.

OPD GROUP:

The NPRS scale showed reduction of pain in all three groups, with the OPD group showing the largest reduction in pain which indicates a very effective improvement. With reduction in pain from mean NPRS score in OPD group at pre treatment was 6.25±1.68 and at post treatment it was 0.65±0.87. By using Student's paired t test statistically significant difference was found in NPRS group at pre and post treatment group. OPD program was the most effective program in reducing pain intensity which might be due to participants were directly monitored by a physiotherapist and was clearly able to analyse which group of muscles were in contracted and relaxed state while performing stretches, exercises and PRT. Roland- morris Disability Questionnaire was used to assess disability in low back pain which showed similar results as of NPRS scale with OPD based patients disability reduced from 51.23±15.06 to 6.41 ±7.99. OPD based treatment did not show any improvement in Quality of life in participants. Which might

be due to personal, psychological and environmental factors which are the components of WHOQOL Bref scale. This suggests us that though OPD based program showed the greatest improvement in pain intensity it did not improve quality of life. Which might be due various factors which needs to be studied. A study conducted by Priti Mehendale and Madhavan Iyenagar indicated that patients experiencing non-specific low back pain when treated through Telerehabilitation showed improved ROM, decrease in pain intensity and improvement of QOL in patients and concluded that Telerehabilitation can also be used as an alternative to OPD treatment. [11]

HOME PROGRAM:

In this study we implemented 20 participants with home based exercises which was not supervised. The results were Mean NPRS score in home program group at pre treatment was 4.85±1.81 and at post treatment it was 4.05±1.90. By using Student's paired t test statistically significant difference was found in NPRS group at pre and post treatment group. Similar study was seen in a study by Nuten Gizem Tore and Deran oskay, found that Pain intensities of both telerehabilitation and control group reduced significantly, controlled group were prescribed with home exercises. [12] The statistical data showed that telerehabilitation showed significantly higher result in reduction of pain intensity than control group, which is similar to our study. Another study conducted by Bryan ping Ho chung and wendy kam Ha chiang found that Online video sessions were superior to conventional home program in exercise adherence [13]. Roland morris Disability Questionnaire was used to assess low back pain Mean RMDQ score in Home Program group at pretreatment was 44.96±15.68 and at post treatment it was 42.05±16.82. By using Student's paired t test statistically no significant difference was found in RMDQ group at pre and post treatment group. This result might be as home program was not supervised by a therapist. Mean WHOQOL score in Home Program group at pre treatment was 84.36±12.75 and at post treatment it was 84.47±12.83. By using Wilcoxon Signed Rank test statistically no significant difference was found in WHOQOL group at pre and post treatment group($z=1.05, p=0.30$). This result may be due to various factors like personal, social, psychological and environmental factors which needs to be studied.

TELEREHABILITATION PROGRAM:

The telerehabilitation group showed great reduction in Pain but was less effective that the OPD program the results were Mean NPRS score in telerehabilitation at pre treatment was 6.05±1.84 and at post treatment it was 2.85±1.30. By using Student's paired t test statistically significant difference was found in NPRS group at pre and post treatment group. Similar results were found in a study by a study conducted by Priti Mehendale and Madhavan Iyenagar indicated that patients experiencing non-specific low back pain when treated through Telerehabilitation showed improved ROM, decrease in pain intensity and improvement of QOL in patients and concluded that Telerehabilitation can also be used as an alternative to OPD treatment. [11] The roland morris disability questionnaire also showed similar result with Mean RMDQ score in telerehabilitation group at pre treatment was 52.23±18.03 and at post treatment it was 20.80±10.47. By using Student's paired t test statistically significant difference was found in RMDQ group at pre and post treatment group this may be due to as pain reduced hence disability in low back pain was reduced. The Quality of life was seen to be improved in telerehabilitation program with results of Mean WHOQOL score in telerehabilitation group at pretreatment was 77.95±8.99 and at post treatment it was 80.17±9.27. By using Wilcoxon Signed Rank test statistically significant difference was found in WHOQOL group at pre and post treatment group this result might be due to telerehabilitation was

convenient and there was interaction among participants which could have lead to positive outcomes in telerehabilitation group which was not possible in other program, similar result was found in a study conducted by Priti Mehendale and Madhavan Iyenagar indicated that patients experiencing non-specific low back pain when treated through Telerehabilitation showed improved ROM, decrease in pain intensity and improvement of QOL in patients and concluded that Telerehabilitation can also be used as an alternative to OPD treatment. [11]

Overall the results suggests us that OPD based program is the most effective program for reducing pain as well as reduce percentage of disability low back pain followed by telerehabilitation program which showed similar results and also it showed improved Quality of life in patients. In contrast, unsupervised home programs were less effective which might be due to lack of monitoring.

CONCLUSION:

The study concluded that progressive relaxation technique along with strengthening exercises is an effective way in treating non-specific low back pain among housewives. Among the three groups of intervention OPD based treatment Program was the most effective followed by telerehabilitation and least in home program. These findings help us to understand the importance of supervision and Guidance in daily exercise programs for treating Housewives.

CLINICAL IMPLICATION:

This study shows Progressive relaxation technique can be given as an adjunct to strengthening and stretches for non- specific low back pain in housewives. Significant pain reduction and improved Quality of life in telerehabilitation participants suggests us that telerehabilitation sessions can also be an alternative to offline exercises as it provides similar results. And can be used in patients who are not able to attend daily offline sessions.

LIMITATION:

The telerehabilitation relied on internet connectivity and the familiarity of patients for using telerehabilitation app which often hindered the participation. it was observed that some housewives performed a lot of daily household chores and some housewives were not performing a lot of daily chores which was not assessed in this study.

FUTURE SCOPE:

A combined treatment with Conventional physiotherapy and telerehabilitation can be studied to know its effectiveness.

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