



Effectiveness of Stretching and Strengthening Program of Core Muscles on Lumbar Dysfunction in Housewives.

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KEYWORDS

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ABSTRACT:

Introduction: Lumbar dysfunction in housewives in India is a growing concern, as the demands of daily household tasks often lead to physical strain and musculoskeletal disorders. The core muscles, which include the abdominal, back, and pelvic muscles, play a vital role in maintaining spinal stability and supporting proper posture. Weakness or dysfunction in these muscles can exacerbate the risk of lumbar injury and pain. Strengthening and stretching exercises specifically targeting the core muscles can help to improve posture, enhance flexibility, and alleviate pain, making them a promising approach to preventing and managing lumbar dysfunction.

Methods: The study was conducted to explore and evaluate the effectiveness of stretching and strengthening program specifically designed to ease lumbar spine dysfunction in 47 housewives according to the inclusion and exclusion criteria of the study. The outcome measures of the study were Numerical pain rating scale, MMT and Lumbar range of motions using modified Schober's test. The Intervention protocol was for 3weeks, 6 days a week 45 minutes. Subjects were given stretching and strengthening program of 3weeks to determine its effect on the pain and range of motion of Lumbar area.

Result: Results revealed significant improvements in Lumbar range of motion; lumbar flexion (29.56 ± 7.9 vs 49.89 ± 11.8), lumbar extension (14.9 ± 5.47 vs 24.94 ± 7.8), lumbar right side flexion (25.4 ± 7.89 vs 31.8 ± 8.1), lumbar left side flexion (19.5 ± 5.7 vs 28.7 ± 7.8), reduction in pain (7.97 ± 0.820 vs 5 ± 0.834) and Oswestry Disability Index (28.25 ± 5.697 vs 15.61 ± 2.592).

Conclusion: Stretching and strengthening program of core muscles has found to be effective in housewives who are suffering from lumbar dysfunction.

INTRODUCTION:

The term "lumbar dysfunction" describes a disorder that affects the lower back (lumbar spine) and interferes with its normal function, frequently resulting in pain, stiffness, or trouble carrying out daily tasks[1]. Numerous things, such as poor posture, spinal misalignment, muscular imbalances, or damage to the lower back's discs, joints, ligaments, or muscles, can cause it.[2]. Lumbar mobility declines as a result of persistent low back discomfort, which also impacts the core muscles.[3]

Challenges faced by housewives: Lumbar dysfunction is a common musculoskeletal condition that can have a major impact on daily functioning and quality of life. It is characterized by pain or discomfort in the lower back region. Because of the nature of their daily activities, which frequently entail prolonged standing, lifting, bending, and repetitive movements that put strain on the lumbar spine, housewives are more susceptible to lumbar dysfunction than other demographic groups. Muscle imbalances, bad posture, and elevated lumbar strain can result from these everyday tasks as well as the physical demands of running a household.[4]



The increasing prevalence of lumbar dysfunction, especially in housewives, emphasizes the need for accessible, and effective treatments. Daily activities like childcare, housework, and other repetitive motions can cause physical strain for housewives, increasing their risk of developing lumbar dysfunction and lower back pain.[5]

The abdominal, lower back, and pelvic muscles make up the core muscles, which are essential for supporting the spine during a variety of movements. These muscles can become weak or imbalanced, which can cause misalignment, put more strain on the lumbar spine, and cause lumbar dysfunction. As a result, back pain treatment regimens now often include stretching and strengthening exercises designed to improve the flexibility and function of the core muscles.[6]

The goal of this study is to determine how well housewives with lumbar dysfunction respond to a structured stretching and strengthening program designed to target the core muscles. The study will specifically evaluate how such a program can strengthen core muscles, improve lumbar stability, and lessen pain. The study intends to offer evidence that could guide useful interventions for this population, enhancing their general quality of life and physical health.

This study is especially significant because it analyses the efficacy of a particular exercise protocol constructed to strengthen and stretch the core muscles, which are essential for maintaining spinal stability and avoiding lower back pain. If successful, a structured core exercise program could be used as a prophylactic, lowering the prevalence of back pain and encouraging housewives' long-term spinal health.

Current Interventions and Limitations: Traditional interventions for Lumbar dysfunction include physical therapy such as manipulation or mobilization, medications, and ergonomic modifications. While these approaches have demonstrated efficacy, they often require access to healthcare facilities, which may be a logistical challenge for many housewives. Additionally, the sustainability of treatment gains are influenced by adherence to prescribed exercises and lifestyle modifications, posing potential challenges in busy household schedules.[7]

Stretching and strengthening Interventions:

Recurrences of low back pain may be lessened by targeted exercise therapy in conjunction with medical management and returning to normal activities than by medical management and normal activity alone[8]. Recognizing the unique circumstances of housewives, stretching and strengthening interventions emerge as a practical and accessible solution. Customized stretching and strengthening programs to be performed at home acknowledges the limitation of time and resources while providing a viable strategy for promoting lumbar spine health. Such programs can empower housewives to take an active role in their well-being and self-care.[9] This comprehensive study seeks to investigate the effectiveness of stretching and strengthening programs specifically designed for housewives experiencing lumbar spine dysfunction. This study aims to delineate the impact of these programs on pain reduction, functional improvement, and overall quality of life for housewives. The findings of this study are anticipated to have far-reaching implications for the development of targeted interventions that align with the unique needs and constraints of housewives. If proven effective, home-based stretching and strengthening programs could serve as a practical, cost-efficient, and empowering strategy for managing and preventing cervical spine dysfunction in this vulnerable demographic.

METHOD:

The present study was an experimental study that was started after being approved by the Institutional ethical clearance committee of Krishna institute of medical sciences deemed to be university, Karad. The present research comprised of 47 individuals. The study duration was period of six months with a 3 weeks protocol period. Housewives ranging from 30-45 years of age experiencing low back pain for at least 30 days and have a high Oswestry disability index according to the Oswestry disability index (ODI) assessment and falling under 4-8 score of Numerical pain rating scale were included. Patients were excluded if they had history of some trauma or surgery to the lumbar spine or abdomen, recent history of trauma or fracture, congenital disorder of lumbar spine and psychiatric disease or drug abuse, spinal cord disease, and other chronic diseases that cause long-term immobilization.

**PROCEDURE:**

The study protocol was presented for approval in front of the Protocol Committee and the Institutional Ethics Committee of KVV, Karad. After finding the suitability of the subjects as per the inclusion and exclusion criteria the participants were briefed about the nature of the study and the intervention. The informed consent was obtained from the participants who are willing to participate and were recruited for the study. All the subjects were assessed for the symptoms such as low

PROTOCOL:

back pain, decreased range of motion or any kind of disability faced on daily basis which could have been the cause of a lumbar spine dysfunction. Subjects were selected according to the inclusion criteria. The 3-week protocol was given to the subjects after the proper assessment. Once the 3-week protocol is done the assessment was repeated and output was recorded. The 3 weeks stretching and strengthening program for housewives with lumbar spine dysfunction was as follows:

Sr No.	Stretching Protocol	Initial Stage	Once there is reduction in pain
1	Hamstring stretch	10 second hold, 3 Reps	30 second hold, 3 Reps
2	Quadratus Lumborum stretch	10 second hold, 3 Reps	30 second hold, 3 Reps
3	Cat and cow stretch	10 second hold, 3 Reps	30 second hold, 3 Reps
4	Knee to chest stretch	10 second hold, 3 Reps	30 second hold, 3 Reps
5	Psoas major stretch	10 second hold, 3 Reps	30 second hold, 3 Reps

Sr no.	Strengthening Protocol	Initial stage	Once there is reduction in pain
1	Static back	10 reps	30 reps
2	Pelvic bridging with pelvic floor contraction	Hold and relax, 10 reps	10 sec hold and relax, 10 reps
3	Abdominal draw-in exercise	Hold and relax, 10 reps	10 sec hold and relax, 10 reps
4	Squats	10 reps	30 reps
5	Lunges	10 reps	30 reps
6	Quadriceps isometrics	Hold and relax, 10 reps	10 sec hold and relax, 10 reps

IMAGE 1: PELVIC BRIDGING WITH PELVIC FLOOR CONTRACTION

The purpose of pelvic bridging was to improve posture, balance, and flexibility because gluteus muscles, including the hamstrings and the gluteus maximus, medius, and minimus. The core muscles are stabilized

as a result of all. Pelvic floor contraction helps in strengthening of pelvic floor muscles, which eventually avoids further condition like urinary incontinence which commonly seen in females.



IMAGE 2: HAMSTRING STRETCH



In patients with persistent low back pain, treating hamstring tightness may help reduce pain. Working on appropriate hamstring flexibility is crucial if some persons have this problem. Improving the flexibility of

the hamstrings may aid in increasing pelvic mobility, which helps relieve low back stress and lessen low back discomfort. [10]

IMAGE 3: QUADRICEPS ISOMETRICS



Patients with low back pain have deteriorating function of the quadriceps, with reduced endurance and feedforward compared to normal[11], therefore

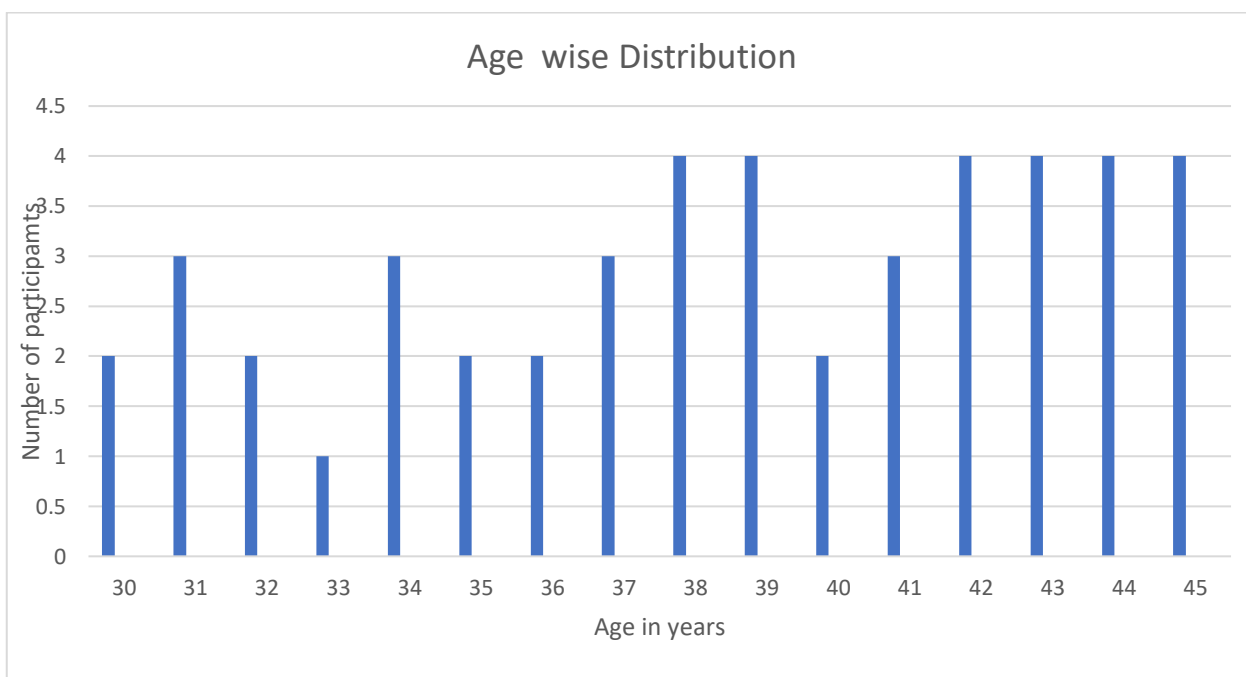
isometrics of quadriceps muscle will help strengthening of muscle and reduce low back pain.



RESULTS:

This study was an experimental study, with the sample size of 47 housewives with lumbar dysfunction who had complaints about the low back pain and decrease range of motion. The below chart shows the age wise distribution of the total sample size, which shows the number of patients affected by lumbar spine dysfunction in particular age. The span from 30's to 40's has the most patient with Lumbar spine dysfunction. The result has three main interpretation i.e. Numerical pain rating scale, Lumbar range of motion with the help of measuring tape and Oswestry disability index. The

pre and post numerical pain rating scale interpretation was taken which shows that before the stretching and strengthening exercise protocol the NPRS was between 6-9 and after the based stretching and strengthening exercise protocol the NPRS was between 2-5 which shows that the exercises for housewives with Lumbar spine dysfunction is effective way to treat the pain in low back area. All the Lumbar range of motion was taken by using measuring tape which included range of motion of flexion, extension, side flexion of each side of lumbar region. Oswestry disability index was used to detect the disability faced by housewives during their day-to-day household working activities.



Graph no.1: Age wise distribution of housewives with lumbar dysfunction.

Table no 1: Age wise mean and Standard deviation.

Variable	Housewives with Lumbar spine dysfunction (Mean and Standard deviation)
Age	38.55 ±4.610

Above graph shows the age wise distribution of housewives suffering from lumbar dysfunction and

table no 1 chart shows the mean and standard deviation of age.

OUTCOME MEASURES:

Table no 2: Numerical Pain Rating Scale (NPRS)

Variable	Pre	Post	P value	Result
NPRS	7.97±0.820	5 ±0.834	0.0003	Extremely significant



Comparison of Pre and Post Mean and Standard deviation scores of NPRS.

The above table shows that there is significant difference in pre and post NPRS values, which indicates that which shows that this exercises for housewives with lumbar dysfunction is effective way to treat the pain.

Table no 3: Oswestry Disability Index

Variable	Pre	Post	P value	Result
Oswestry Disability Index	28.25 ±5.697	15.61 ± 2.592	< 0.0001	Extremely significant

Comparison of Pre and Post Mean and Standard deviation scores of Oswestry Disability Index.

The Oswestry Disability Index was used to identify the functional disability caused by low back pain that housewives experienced while performing household tasks. The pre-test results showed scores ranging from 21 to 40, indicating a moderate disability in housewives. When the Oswestry Disability Index was recalculated after three weeks of the protocol, the scores ranged from 0 to 14, indicating no disability or a mild disability.

Table no 4: Lumbar flexion.

Variable	Pre	Post	P value	Result
Lumbar Flexion	29.56 ±7.9	49.89 ± 11.8	0.0001	Extremely significant.

Interpretation: Above table shows comparison between pre and post mean value of lumbar flexion which was measured by Measuring tape.

The values are found statistically extremely significant with P value is 0.0001.

Table no 5: Lumbar extension

Variable	Pre	Post	P value	Result
Lumbar Extension	14.9 ±5.47	24.94±7.8	< 0.0001	Extremely significant

Interpretation: Above table shows comparison between pre and post mean value of lumbar extension which was measured by Measuring tape.

The values are found statistically extremely significant with P value is less than 0.0001.

Table no 6: Lumbar side flexion (right)

Variable	Pre	Post	P value	Result
Side flexion (right)	25.4± 7.89	31.8 ±8.1	<0.005	Extremely significant

Interpretation: Above table shows comparison between pre and post mean value of lumbar side flexion (right) which was measured by Measuring tape.

The values are found statistically extremely significant with P value is less than 0.005.

Table no 7: Lumbar side flexion (left)

Variable	Pre	Post	P value	Result
Side flexion (left)	19.5 ± 5.7	28.7 ± 7.8	<0.001	Extremely significant

Interpretation: Above table shows comparison between pre and post mean value of lumbar side flexion (left) which was measured by Measuring tape.

The values are found statistically extremely significant with P value is less than 0.001.

DISCUSSION:

The majority of housewives experience low back pain. There is a direct correlation between pain severity and physical quality of life[12].Bad posture, such as sitting unsupported, bending without knee flexion, etc. Long-term low back discomfort is also caused by poor ergonomics.

Stretching and strengthening regimens designed for housewives with lumbar spine dysfunction have been linked to favourable results in a number of studies. These results include decreased low back pain,



improved functional ability, enhanced flexibility and strength. Each of the core strength training techniques this study addressed helps to reduce low back pain. Patients with persistent low back pain can improve their deep trunk muscles by engaging in core strength training.[13]. People's quality of life is greatly impacted by lower back pain (LBP), which is becoming more and more common worldwide, particularly in developing nations. According to recent studies, LBP's growing impact indicates that it ranks among the top 10 causes of disability. It has been demonstrated that dysfunction of the lumbopelvic-hip muscles (the core) increases the strain on the spine and decreases its stability. It has been found that regular exercise can reduce and even eliminate lower back pain by strengthening the pelvic and core muscles. The primary causes of the previously mentioned problems and discomforts are certain body areas' lack of muscle activation. The benefits of simple core stability exercises include preventing backache and lumbar lordosis.[14].

The enhancement of posture and body awareness is one prominent advantage of these training. Housewives may develop bad posture habits as a result of their frequent participation in physically taxing and repetitive household tasks. By including exercises that improve muscle balance and proprioception, people can improve their posture and maintain a more ergonomically sound and neutral posture when performing daily tasks. improved standard of living.

The enhancement of posture and body awareness is a noteworthy advantage of these programs. Housewives may develop bad postural patterns as a result of their frequent participation in physically taxing and repetitive domestic duties. The inclusion of muscle-building workouts Proprioception and balance can have a beneficial impact on posture, assisting people in maintaining a more neutral and ergonomic posture while going about their daily lives. improved standard of living. Housewives' quality of life is improved as a result of decreased low back pain and improved functional capacities. A reduction in pain makes it possible to participate more fully in everyday activities without experiencing discomfort, which promotes wellbeing. People who have better physical function are also better equipped to carry out their household chores more quickly and with less physical strain.[15].

Stretching exercises can help people who suffer from low back pain or are susceptible to it as a result of their job. A stretching exercise program has a high degree of Low back pain relief and is a safe, effective non-pharmacological intervention for managing lumbar pain.[16].

Their functional capacities were significantly improved by the stretching technique, as seen by the large rise in back extensor static strength and the correspondingly significant increase in back muscle myoelectric signals. Additionally, following consistent treatment, a notable reduction in their degree of pain was noted. Patients with chronic low back pain experienced greater functional improvements when the systematic stretching procedure was used. The functional abilities significantly improved after performing the stretching.[17].

A customized approach is necessary because lumbar spine dysfunction can present differently in each person. Research on tailoring stretching and strengthening regimens to each person's needs and symptoms may yield important insights. Addressing individual differences in response to exercises and customizing interventions to particular impairments may improve the overall efficacy of the program.

CONCLUSION:

This study concludes that stretching and strengthening program of core muscles has found to be effective on housewives who are suffering from lumbar dysfunction.

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