

A COMMUNITY BASED SELF CARE APPROACH IN THE MANAGEMENT OF LOW BACK PAIN

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ABSTRACT

Introduction: The treatment & prevention of low back pain till date receives increased attention because of the high cost of medical / surgical management which targets the productive working age group. The needs of the patients vary and so every individual needs a clear understanding about their physical function & follow up care.

Need of the Study: Recovery, reoccurrence & further management is dependent upon patient's active participation following self-care principles & acknowledging his functional status. A Therapeutic approach which will assist the patient in acknowledging his corrective exercises, moving towards neutralizing pain status & achieving maximum independence making himself self-reliant is essential.

Aim: The aim of the study is to compare the significance of McKenzie's approach over the Lumbar stabilization approach in treating mechanical causes of Low back pain.

Objectives: To find out the significance level of a better approach by comparing 2 methods, namely McKenzie's approach & Lumbar stabilization exercises in treating Low back pain.

Methodology: Interventional study design, including both genders under the age group of 30 - 50 years with mechanical causes of low back pain were considered in the study. With informed consent all the participants have been compulsorily made to undergo a medical examination. The subjects will be divided into 2 groups and further Physical examination procedure to rule out the mechanical cause and to be considered as a subject for the study. The subjects were divided into 2 groups with Group I: McKenzie's approach & Group II: Lumbar stabilization exercise procedure. The pretest & posttest measures include the pain scales and lumbar range of motion.

Conclusions: The study has proved that McKenzie's exercise approach (Group-I) provided maximum pain relief, improved functional activities & lumbar range of motion which is the central tenet and long term goal in the management of low back pain.

KEYWORDS: Low Back Pain, Mckenzie Exercise, Lumbar stabilization exercises

INTRODUCTION

The treatment & prevention of low back pain till date receives increased attention because of the high cost of medical / surgical management which targets the productive working age group. Low Back Pain can be very complex,

difficult to diagnose & treat. In spite of various therapeutic applications. The needs of the patients vary and so every individual needs a clear understanding about their physical function & follow up care. The new therapeutic guidelines focus towards helping the individual to improve activity intolerance through mobilization and conditioning exercises. Bruce. I. Kodish, stated that an active approach to treatment, where patients learn how to treat themselves, at present, during recurrences as well as recourse to surgery would be an excellent approach with greater ease anywhere in the community cost effective.⁽¹⁾

NEED OF THE STUDY

- Recovery, reoccurrence & further management is dependent upon patient's active participation following self-care principles & acknowledging his functional status.
- A Therapeutic approach which will assist the patient in acknowledging his corrective exercises, moving towards neutralizing pain status & achieving maximum independence making himself self-reliant is essential.
- The therapeutic exercises should be safe & efficacious promoting the self – management skills integrating into the patient's treatment procedure.
- Community based studies should be applicable anywhere in the community with greater ease & cost effective with maximum level of benefit to every individual's need on the continuum.

AIM

The aim of the study is to compare the significance of McKenzie's approach over the Lumbar stabilization approach in treating mechanical causes of Low back pain.

OBJECTIVES

- To find out the significance level of McKenzie's approach in treating Low back pain.
- To find out the significance level of Lumbar stabilization exercises in treating Low back pain.
- To find out the significance level of a better approach by comparing both methods.

METHODOLOGY

- **Study Design:** Interventional study design
- **Study Setting:** Patients referred through free Orthopedic / Osteoporosis medical camps conducted regularly during summer camp from a charitable hospital.
- **Population:** All the participants including both genders belonged to the low income group as per Kuppaswami's Socio-economic status.
- **Sampling Method:** Simple random sampling method All the subjects were listed in the serial number. All the odd numbers were considered as Group I – McKenzie exercise approach and all the even numbers were considered as Group II – Lumbar stabilization exercise approach.

- **Sample Size:** Total sample size is 60 which has been scrutinized from large participants after Medical screening and both the groups had an equal sample size of 30 each.

Total participants were 124 and 72 came out of the study. 12 subjects were dropped out.

Inclusion Criteria

- Both genders under the age group of 30 - 50 years.
- Only mechanical causes of low back pain resulting from strain of muscles, tendons or any postural dysfunction.
- Low back pain of 3 - 6 months duration was only considered.

Exclusion Criteria

- Other causes which include Non-mechanical pain resulting from injury or illness.
- All types of disabilities, metabolic health disorders, polio patients, old history of complicated fractures, obesity and other complicated health disorders.

GENERAL SCREENING PROCEDURE

With informed consent all the participants have been compulsorily made to undergo a medical examination, Blood & Urine analysis and Radiological examination to screen for any red flags and further referred for the study.

The subjects will be divided into 2 groups and further Physical examination procedure to rule out the mechanical cause and to be considered as a subject for the study.

OUTCOME MEASURES

Pre - Test & Post - Test Measures

- Pain scales: Oswestry Low back pain questionnaire - Score shown in Percentage & Visual analogue scale - Score shown in centimeters
- Lumbar range of motion measured in centimeters. Flexion; Extension; Side – flexion (right) & Side – flexion (left)

Procedure

Both the groups had undergone a physical examination as per the treatment procedure and the exercise prescription based on the individual ailments was advised to be continued for 5 days continuously under supervision. 10 minutes of hot packs were used for all the subjects. Further the patients were advised to continue the exercises at home for 3 weeks and follow up care undertaken.

The Pre & Post test measures were recorded on the first day at the start of treatment and post 3 weeks duration. The results recorded was considered for statistical analysis and interpretation.

Exercise Procedures

The group I: McKenzie's approach:

An assessment was done with the McKenzie Institute lumbar spine assessment and examination chart.

The method of exercises includes the following principles:

Flexion Principle; Extension Principle; Side glides Principle; Progressive Repeated exercises neutralizing the Pain, Posture and Range of motion to normal; Followed by Back care program

Group II: Lumbar stabilization exercise procedure:

An assessment was done with the regular Physical examination procedure for low back pain.

Progressive lumbar stabilization exercises and strengthening which is said to be conventional was advised as per requirements.

Progressive lumbar stabilization exercises; General mobility exercises for the lumbar spine; abdominal strengthening; Back extensor strengthening & Followed by Back care program

Statistics Used

- Mean & standard deviation
- Paired t - test: The paired t- test statistics proves the effectiveness of treatment by finding out the difference in means between the pre-test and post-test measurements.
- Student t - test: The student t- test statistics proves the significance level of a better approach by comparing the changes of means between experimental and control groups.

DATA ANALYSIS & INTERPRETATION

Group I: Mckenzie Exercise (Pain Scale)

S. No	Pain Scale	Pre-Test		Post-Test		Difference		Paired T Value	Sig.
		Mean	SD	Mean	SD	Mean	SD		
1.	Oswestry (%)	34.53	15.69	9.87	8.61	24.67	10.24	13.19	P < 0.001
2.	VAS (Cm)	5.59	1.95	2.52	1.93	3.07	1.22	13.79	P < 0.001

This table shows the Mean, S.D and their difference in pain scale for the experimental group and it shows very high statistical significance level for both Oswestry and Visual Analogue Scale.

Group II: Mckenzie Exercise (Lumbar Range of Motion)

S. No	Movement (Cm)	Pre-Test		Post-Test		Difference		Paired T Value	Sig.
		Mean	SD	Mean	SD	Mean	SD		
1.	Flexion	4.41	0.82	6.88	0.59	2.47	0.92	14.67	P < 0.001
2.	Extension	3.04	0.75	4.35	0.38	1.31	0.71	10.06	P < 0.001
3.	Side Flex(Right)	52.97	4.74	50.17	5.33	2.80	2.17	7.06	P < 0.001
4.	Side Flex(Left)	55.40	4.34	52.40	5.20	3.0	2.39	6.87	P < 0.001

This table shows the mean, SD and their difference in lumbar range of motion and it shows very high statistical significance level for all the four variables.

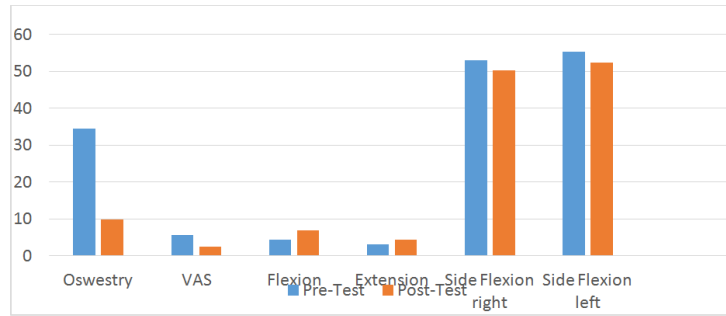


Figure 1: Pain (Oswestry & VAS) & Lumbar Range of Motion – Pre Post - Test Mean - Mckenzie Approach

Group III: Lumbar Stabilization Exercise (Pain Scale)

S. No	Pain Scale	Pre-Test		Post-Test		Difference		Paired t Value	Sig.
		Mean	SD	Mean	SD	Mean	SD		
1.	Oswestry (%)	35.67	12.66	25.70	13.16	9.97	7.18	7.6	P < 0.001
2.	VAS (Cm)	6.07	1.54	4.64	1.71	1.43	1.06	7.42	P < 0.001

This table shows the mean, SD and their difference in pain scale for control group and it shows a statistically high significance level for both Oswestry and Visual Analogue Scale

Group IV: Lumbar Stabilization Exercise (Lumbar Range of Motion)

S. No	Movement(Cm)	Pre-Test		Post-Test		Difference		Paired t Value	Sig.
		Mean	SD	Mean	SD	Mean	SD		
1.	Flexion	4.70	0.97	5.83	0.61	1.14	0.89	6.96	P < 0.001
2.	Extension	2.75	0.48	3.31	0.44	0.56	0.31	9.75	P < 0.001
3.	Side Flex(Right)	53.20	3.08	52.80	2.89	0.40	0.50	4.40	P < 0.001
4.	Side Flex(Left)	55.63	3.79	55.23	3.70	0.40	0.67	3.25	P < 0.001

This table shows the mean, SD and their difference in lumbar range of motion of control group and it shows statistically high significance level for all the four variables.

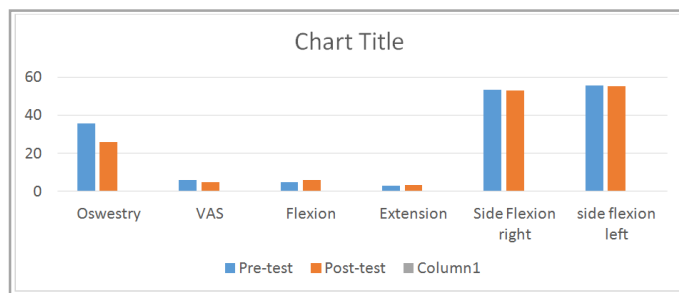


Figure 2: Pain, (Oswestry & VAS) & Lumbar Range of Motion - Pre Post - Test Mean –Lumbar Stabilization Exercise Group

Group V: Comparing Mckenzie Vs Lumbar Stabilization Exercise Group (Pain Scale)

S. No	Pain Scale	Mckenzie Group		Lumbar Stabilization Group		t Value	Sig.
		Mean	SD	Mean	SD		
1.	Oswestry (%)	24.67	10.24	9.97	7.18	6.44	P < 0.001
2.	Vas (Cm)	3.07	1.22	1.43	1.06	5.57	P < 0.001

This table shows the difference in mean and S.D of the experimental group and a control group for the pain scale variables. The t value shows that both the variables are statistically highly significant, i.e., p<0.001

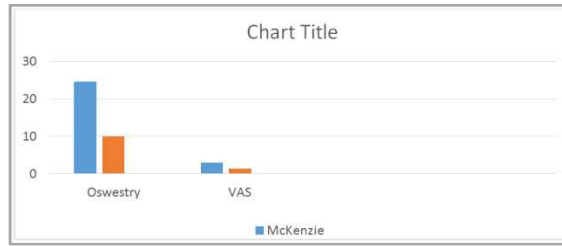


Figure 3: Significance Level of a Better Approach by Comparing Means of Both Groups (Pain Scale: Oswestry & VAS)

Group VI: Comparing Mckenzie Vs Lumbar Stabilization Exercise Group (Lumbar Range of Motion)

S. No	Pain Scale	Mckenzie Group		Lumbar Stabilization Group		t Value	Sig.
		Mean	SD	Mean	SD		
1.	Flexion	2.47	0.92	0.89	1.14	5.68	P < 0.001
2.	Extension	1.31	0.71	0.31	0.56	5.27	P < 0.001
	Side Flex(R)	2.8	2.17	0.50	0.40	5.90	P < 0.001
	Side Flex(L)	3.0	2.39	0.67	0.40	5.73	P < 0.001

This table shows the comparison between the experimental and control group variables of the lumbar range of motion. The t-value of all the four variables are statistically highly significant. i.e., p<0.001

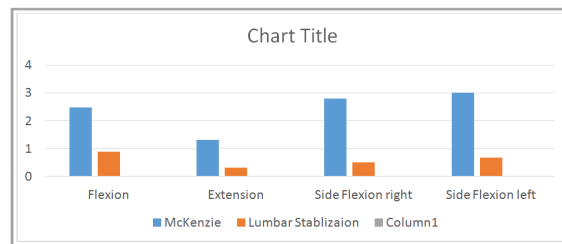


Figure 4: Significance Level of a Better Approach by Comparing Means of Both Groups (Lumbar Range of Motion)

RESULTS

The statistical values are significant in both the approaches with the paired – t test. But on comparing the mean values of both groups with student - t test, McKenzie exercise approach finds to be highly significant.

DISCUSSIONS

The McKenzie group I have shown significant values, i.e. p<0.001 compared to the other group. The McKenzie method responds well to mechanical stress as it is a selective exercise regimen. E.g. Bent finger principle. Thus the mechanical pain responds poorly to pain killers, but which responds well to the movements. ⁽²⁾

Positional exercises, extension exercise often centralize, reduce & abolish pain, improving range of motion and functional status. Ponte et al 1984 found that subjects receiving the Mckenzie protocol for treatment of low back pain demonstrated greater improvement in pain over a shorter period of time compared to subjects receiving Williams’s flexion protocol. ^(3, 4)

In the case of posterior derangement, the patient is advised extension exercises, especially early in the treatment, in order to assist the migration of the nucleus pulposis anteriorly. ⁽⁵⁻⁹⁾ later lumbar flexion exercises are also integrated into the program in order to maintain full range of motion of the lumbar spine once pain has centralized. Thus, if the condition

is due to an internal derangement, it can be reduced by changing the shape and location of the displaced material, and restore normal relations among the spinal structure, through the judicious use of mechanical therapy. ⁽¹⁰⁾ By this, the patients were taught to become self-reliant by using the positions and movements that were found in the evaluation to centralize, reduce or abolish symptoms.

For instance, if a person had an injury in a flexed position exercised in a way, which leads to more flexion, the condition could be aggravated. ⁽¹¹⁾

Safe repeated movements towards the end range is a reason for increased range. Functional demands for the need of lumbar stabilization indicate that isometric low level tonic contractions performed repeatedly placing the spine in a resting position were founded beneficial to ease pain through relaxation. The lumbar range of motion has shown a statistically highly significant value when compared with the control group, i.e., $p < 0.001$. This is because, the patient is concentrating on self-treatment and regularly continues the same exercise pattern, which would be beneficial for his recovery, and the range of motion improves easily. The Mckenzie group responded well to the treatment because, the mechanical diagnostic procedure followed by appropriate mechanical therapy of the spine was helpful in guiding the patients to implement self-treatment in the form of simple exercises due to the following reasons.

Self-treatment in the absence of the therapist. Exercises were designed to centralize and relieve the symptoms based upon their movements itself. Within the few visits of the therapist they were able to understand their self-care principles and preventive strategies. This makes the Mckenzie method a safe, efficacious and highly cost effective form of treatment, which is highly beneficial to the community.

FEEDBACK OF GROUP - I: MCKENZIE APPROACH SUBJECTS

- Easier to perform exercises in the absence of therapists.
- Repeated exercises were beneficial in improving lumbar range of motion & functional status.
- Able to acknowledge the exercise needs as per progression.

FEEDBACK OF GROUP - II: LUMBAR STABILIZATION APPROACH SUBJECTS

- Assistance of family members was required while doing exercises.
- Repeated exercises were beneficial, but confused by the sequence of exercises.
- Patients needed rest with progression of exercises.

CONCLUSIONS

The study has proved that McKenzie's exercise approach (Group-I) provided maximum pain relief, improved functional activities & lumbar range of motion which is the central tenet and long term goal in the management of low back pain.

CLINICAL IMPLICATIONS

The patient has to recognize that his recovery and functional status are largely the result of his own efforts and prevention of complications with regular exercises.

SUGGESTION FOR INNOVATIVE RESEARCH

To utilize innovative ideas & significant research output to create new inventions in promoting spinal care for performing spinal exercises with greater ease.

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