Original Article

Effect of McKenzie therapy with and without strain counterstrain technique in patients with non-specific low back pain

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Objective: To compare the effectiveness of Mckenzie therapy with and without strain counterstrain technique in patients with non-specific low back pain.

Methodology: This quasi-experimental trial included 32 participants from Snabil Health Services Lahore and Jinnah Hospital Lahore who were randomly selected and categorized into two groups using a convenient sampling technique. Mckenzie treatment was given to Group A, while Mckenzie treatment with Strain Counterstrain was given to Group B. Roland-Morris questionnaire, Numeric pain rating scale (NPRS), and Bubble inclinometer were used to measure disability, pain, and lumbar range of motion, and readings were noted at pretreatment, after the second week and fourth week of treatment.

Results: The mean difference of NPRS between group A and group B was 0.062 and 0.00, respectively at baseline, after post treatment week two and post treatment week four.

Conclusion: Mckenzie treatment combined with strain counters trainwas as beneficial as Mckenzie treatment alone in relieving low back pain.

Keywords: Mckenzie therapy, low back pain, disability, manual therapy.

INTRODUCTION

Low back pain (LBP) is a condition characterized by fatigue, discomfort in the lumbosacral area, and a most common cause of disability.[1,2] It may begin with trauma and is worsened by deconditioning, psychotic conditions, other chronic diseases, and heredity.[3] Just 15% of LBP has a specific etiology, with the remaining 85% comprising non-specific LBP.[4] In developed countries like the USA, UK, Canada, Denmark, Sweden, Belgium the prevalence of LBP ranges from 6.8% to 33%.[5] In India, the incidence is between 42% and 83%.[4] For individuals with mechanical disorders of the spine, the McKenzie technique is widely utilized as a therapeutic option.[6,7] These movements may be done in a variety of postures, including standing, sitting, and lying.[8] Strain counter strain (SCS), also known as positional release treatment, is an indirect manual treatment technique.[9]This involves applying moderate pressure to painful spots to relieve pain. The goal of this study was to evaluate McKenzie treatment with and without the Strain Counterstrain technique to treat non-specific LBP.

METHODOLOGY

This was a Quasi-experimental trial which was done at Snabil Health Services Lahore and Jinnah Hospital Lahore from July to December 2019. The non-probability convenient sampling method enrolled the subjects. The sample size was 32, estimated by using the online EPITOOL sample size calculator by using the mean difference of NPRS scores (1.9) from earlier studies, with a 95% confidence level and an 80% power of the study.[10] Patients having non-specific LBP referred from orthopedic department having age between 18 and 65 years, symptom duration of less than and equal to 6 weeks, and postural syndrome (having a muscle spasm and lumbar flattening assessed from back by a physiotherapist) were included in the study. This study excluded those having a history of lumbar spine surgery, trauma, spondylolisthesis, SI joint problems, structural abnormality of the spine, piriformis syndrome, lumbar hypermobility, and significant cardiovascular or metabolic disorders.

Both groups received 20 minutes of hot pack (Model 055) on the lower back. Group A received McKenzie therapy with a basic treatment approach to stimulate pain-centralizing movement and postures while avoiding movements that exacerbated symptoms in the periphery. These exercises include lying flexion, prone press ups, seating flexion, standing extension, standing flexion, Mckenzie lateral shift correction.[11]

Group B received McKenzie therapy (as described above) with strain counter strain technique. Tender spots on the posterior pelvic area of the lumbar spine were evaluated in the Strain counter strain, and a comfortable posture was achieved by shifting the extremities in multiple directions, and the posture was sustained until discomfort was decreased by 70%. This was evaluated

clinically by having patients score their early tenderness to probing at painful areas at 100%. Subjects were again asked to describe if overall discomfort had decreased by about 70% at the same spot, after the passive position of ease. For 90 seconds this posture was quietly maintained. The identical move was performed three times with a 30-second rest break in between.

Before therapy, participants were assessed by using Roland Morris Disability Questionnaire (RMDQ), Numeric pain rating scale (NPRS), and Bubble inclinometer to measure disability, pain, and range of motion. Both groups received two weekly treatment sessions and were evaluated after the 2nd and 4th weeks of treatment. Based on the stage of condition and pain severity, both groups performed Mckenzie exercises 3 times a day including 10–15 repetitions. The initial assessment and treatment took an hour, and the remaining sessions took 30–45 minutes.

Statistical Analysis: The data were analyzed using SPSS version 25. Repeated measure ANOVA was applied to measure differences within the group from baseline to post-treatment week two and post-treatment week four for disability, pain, and range of motion. Independent sample t test was applied across the groups to determine a significant difference between them for NPRS, RMDQ and ROMs. $p < 0.05$ was considered significant.

RESULTS

A total of 32 patients (16 in each group) actively participated in the study. Total males in Group A were 9 (56.3%) and females were 7 (43.8%) while in Group B 10 (62.5%) were males and 6 (37.5%) were females. The mean age of patients in Group A was 36.50 ± 12.52 years compared to 37.41 ± 12.32 years in Group B (Table 1). The mean difference of NPRS between group A and group B was 0.062, 0.00, -0.50, respectively at baseline, after post treatment week two and post treatment week four (Table 2).

Table 1: Demographic data of patients.

Variable	Group A (Mckenzie Group)	Group B (Mckenzie with SCS Group)
Age Mean ± S.D	36.50 ± 12.52	37.41 ± 12.32
Weight(kg) Mean ± S.D	65.12 ± 10.68	67.12 ± 9.30
BMI Mean ± S.D	23.74 ± 2.28	24.30 ± 1.70

Table 2: Comparison of NPRS, RMDQ, and ROMs across the groups.

		Group A Mckenzie Group	Group B Mckenzie with SCS Group	Mean Difference	P-value
NPRS	Pretreatment NPRS (Mean ± S.D)	7.56 ± 0.31	7.50 ± 0.18	0.062	0.29
	Post-treatment Week 2 NPRS (Mean ± S.D)	5.25 ± 0.26	5.25 ± 0.17	0.00	0.08
	Post-treatment Week 4 NPRS (Mean ± S.D)	2.62 ± 0.25	3.12 ± 0.22	-0.50	0.25
RMDQ	Pretreatment RMDQ (Mean ± S.D)	15.37 ± 1.58	15.75 ± 0.85	-0.37	0.038
	Post-treatment Week 2 RMDQ (Mean ± S.D)	11.56 ± 1.67	12.12 ± 1.08	-0.56	0.11
	Post-treatment Week 4 RMDQ (Mean ± S.D)	7.75 ± 1.87	7.81 ± 1.83	-0.62	0.87
lumbar flexion	Pretreatment lumbar flexion (Mean ± S.D)	49.37 ± 3.73	49.31 ± 2.62	0.06	0.13
	Post-treatment Week 2 lumbar flexion (Mean ± S.D)	53.50 ± 3.14	51.87 ± 2.70	1.62	0.48
	Post-treatment Week 4 lumbar flexion (Mean ± S.D)	57.37 ± 3.55	53.56 ± 2.39	3.81	0.19
lumbar extension	Pretreatment lumbar extension (Mean ± S.D)	22.31 ± 3.17	21.75 ± 2.32	0.56	0.46
	Post-treatment Week 2 lumbar extension (Mean ± S.D)	24.93 ± 3.67	23.56 ± 2.36	1.37	0.27
	Post-treatment Week 4 lumbar extension (Mean ± S.D)	27.06 ± 3.35	25.12 ± 2.18	1.93	0.28

Table 3: Comparison of NPRS, RMDQ, and ROMs within the groups.

Variable	Group	Pre-treatment (Mean ± S.D)	Post-treatment Week 2 (Mean ± S.D)	Post-treatment week 4 (Mean ± S.D)	Mean Difference	p-value
NPRS	Mckenzie	7.56 ± 0.31	5.25 ± 0.26	2.62 ± 0.25	4.93	0.00
	Mckenzie with SCS	7.50 ± 0.18	5.25 ± 0.17	3.12 ± 0.22	4.37	0.00
RMDQ	Mckenzie	15.37 ± 1.58	11.56 ± 1.67	7.75 ± 1.87	7.62	0.00
	Mckenzie with SCS	15.75 ± 0.85	12.12 ± 1.08	7.81 ± 1.83	7.93	0.00
Lumbar Flexion	Mckenzie	49.37 ± 3.73	53.50 ± 3.14	57.37 ± 3.55	-8.00	0.00
	Mckenzie with SCS	49.31 ± 2.62	51.87 ± 2.70	53.56 ± 2.39	-4.25	0.00
Lumbar Extension	Mckenzie	22.31 ± 3.17	24.93 ± 3.67	27.06 ± 3.35	-4.75	0.00
	Mckenzie with SCS	21.75 ± 2.32	23.56 ± 2.36	25.12 ± 2.18	-3.37	0.00

The mean difference of RMDQ between group A and group B was -0.37, -0.56, -0.62, respectively at baseline, after post treatment week two and post treatment week four. The mean difference of lumbar flexion between group A and group B was 0.06, 1.62, 3.81, respectively at baseline, after post treatment week two and post treatment week. The mean difference of lumbar extension between group A and group B was 0.56, 1.37, 1.93, respectively at baseline, after post treatment week two and post treatment week four. Because the p-values were greater than 0.05, there's no significant difference between group A and B, indicating that both treatment techniques are effective (Table 3).

DISCUSSION

Recent research suggests that the strain counter strain method has an advantage over other pain-relieving strategies such as the integrated neuromuscular inhibition method and manual pressure release.[12] This study had the same results showing that the Strain counter strain technique was beneficial in reducing pain but slightly different in results when combined with exercise therapy. Another study reported significant improvement in pain, although there were no significant differences between the groups.[4] This study has the same results as the current study that McKenzie therapy combined with strain counterstrain is equally good as McKenzie therapy alone in relieving symptoms.

There are several studies in which Mckenzie exercises have benefits in reducing symptoms.[13,14] Their results came into agreement with our findings as they showed Mckenzie exercises have benefits in reducing symptoms and there were no significant advantages of using the strain counter strain approach to manage low back pain. The Mckenzie approach does not lead to significant additional short-term advantages in pain, impairment, performance, or overall perception.[15] Their results came into disagreement with our findings as in the treatment of acute LB, McKenzie treatment is successful.

Only immediate effects (just after the exercise) and no adverse effects and long-term impacts were noted in this research. The strain counter strain method did not completely follow the recommendations, for example, painful points on the front abdomen and pelvis were not assessed. The patient's medicines were not under the supervision of the therapist.

CONCLUSION

Strain counterstrain had no additional effect on Mckenzie therapy in non-specific LBP. McKenzie therapy combined with strain counterstrain is almost as successful as McKenzie therapy alone.

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