

Original research article**Effect of spinal mobilization therapies in chronic low back pain patients****¹Dr. Ashish Mishra, ²Dr. Urvashi, ³ Dr. Shilpi Kapoor, ⁴ Dr. Vaibhav Choubey**^{1,3,4}Research Scholar, Department of Physiotherapy, Malwanchal University, Madhya Pradesh, India²Professor, Department of Physiotherapy, Malwanchal University, Indore, Madhya Pradesh, India**Corresponding Author:**

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Abstract

Background: Low back pain (LBP) is the most common health problem and almost people are suffered of life span, however, the etiology remains unclear. Mobilization and manipulation therapies are widely used to benefit patients with chronic low back pain.

Objective: To evaluate the effectiveness of spinal mobilization at reducing intensity of pain and disability compared in chronic LBP patients.

Materials & Methods: This prospective study was conducted in the Department of Physiotherapy in a tertiary care hospital, India. A total of 100 chronic low back pain subjects with were participated in this study. The participants were randomly assigned into two equal groups with 50 participants in each group. The experimental group received spinal mobilization therapy.

Results: The mean age among experimental group was 35.6 and among control group 24.3 years, statistically significant difference ($p < 0.05$). Male predominance was found in both cases and control group. Mean BMI in experimental group and control group were 24.9 and 23.8 kg/m² respectively. Statistically significant difference was found in pre and post spinal mobilisation group ($p < 0.05$). Spinal mobilisation therapy reduces intensity of chronic LBP.

Conclusions: Spinal mobilization technique significantly reduces LBP; it is a effective intervention for management of chronic low back pain.

Keywords: Low back pain (LBP), Spinal mobilisation, functional disability

Introduction

Low back pain (LBP) continues to be a debilitating condition that affects a large portion of the population ^[1]. Chronic Non-Specific Low Back Pain (CNSLBP) is defined as pain located between the costal margin and buttocks and lasts for longer than three months while particular causes of low back pain are unknown, accounting for <15% of all back pain cases ^[2]. It is estimated that approximately 40% of adults will suffer from low back pain at some point, with upwards of half of them meeting the criteria for chronic pain. Costs associated with chronic low back pain (cLBP) continue to rise at an alarming rate creating an imperative that more effective treatments be developed ^[3-4]. It is often difficult to find a cause of LBP clinically. LBP is a complex disorder that could be affected by various factors. It is sometimes caused by psychological factors, such as depression or anxiety, physical factors, and lifestyle factors ^[5-6]. Spinal manipulation as a treatment for musculoskeletal complaints has been practiced for centuries. In the last 50 years, the use of spinal manipulation has been equated with the practice of chiropractic and in part because of this, the use of spinal manipulation has been labeled an unorthodox treatment by the medical profession ^[7]. Manual therapists, osteopaths, and chiropractors are significantly oriented by biomechanical and physiological mechanism where mechanical forces are applied to specific vertebral regions may modify segmental biomechanics by releasing trapped menisci lesions, reducing adhesions and distortions of the annulus fibrosus ^[8] it is generally accepted that low back pain has a negative impact on quality of life. The quality of life of patients with non-specific low back pain is lower in comparison to general population and much lower with chronic condition ^[9]. Exercise therapy is the basic treatment for chronic low back pain but most of the effective exercise approach is still under discussion. A recent evaluation suggests that separately designed supervised exercise programs including stretching or strengthening may result from more functional development and pain relief than supervise exercise in CNSLBP ^[10]. LBP is one of the most common musculoskeletal conditions encountered in clinical practice. Multiple systematic reviews have indicated the beneficial effects of manual therapy in treating spinal pain conditions. Spinal manual therapy (SMT) is widely applied in the clinical setting to treat musculoskeletal pain; however, the mechanisms underlying its effectiveness remain largely unknown. Over the last two decades there has been increasing interest in the neurophysiological responses of the sympathetic nervous system (SNS) to SMT ^[11-13].

Aim: The purpose of the study to investigate the effects of spinal mobilization on low back pain subjects.

Material and Methods

This prospective study was conducted in the Department of Physiotherapy in a tertiary care hospital, India. Duration of study was 03 year (from-August 2015 to 2017).

Inclusion criteria

- Patients who had recently experienced LBP for more than 3 months but who did not show evidence of a specific disease on plain radiography or magnetic resonance imaging at diagnostic check-up attend OPD of our hospital during the study period enrolled in the study.
- Participant who give written consent for the study.

Exclusion criteria

- Participants were excluded if they had any neurological disorder, spine fracture, osteoporosis, arthritis, neoplasm, vascular disease or cognitive disorder, were pregnant, and had undergone surgery within the previous 3 months.
- Who did not give consent for the study.

Participants were evaluated for pain in pre and post spinal mobilization group. Participants were randomly distributed to either the experimental group or the control group using a table of random numbers (50 in each group).

The experimental group and the control group both performed the same conservative physical therapy for 6 weeks, consisting of 40 minutes three times a week. Additionally, the experimental group was conducted spinal mobilization for 15 minutes. After the intervention, all subjects were evaluated to investigate treatment effects.

Statistical Analysis: All statistical analyses were performed with SPSS 18.0 All data were summarized as the mean ± standard deviation. A paired t-test was used to compare pre- and post-test results within each group. P value < 0.05 was considered significant

Results

A total of 100 participants of LBP were enrolled in the study, randomly divided into two groups (50 in each group). Experimental group (provide spinal mobilization therapy) and control group (not provide spinal mobilization). Majority of the participant was male in both the groups. The mean age among experimental group was 35.6 and among control group 24.3 years, statistically significant difference ($p < 0.05$). Mean BMI in experimental group and control group were 24.9 and 23.8 kg/m² respectively. No significant difference in duration of LBP and disability between experimental and control group ($p > 0.05$). [Table:1] All the participants completed the study without reporting any adverse effects. Statistically.

Table 1: Baseline Characteristics of the Study Participants

Variable	Cases (N=50)	Control (N=50)	P value
Male	26 (59)	28 (58)	0.688
Female	24 (41)	22 (42)	
Age, mean (SD), y	35.6 (12.3)	24.3 (5.3)	<0.001
Body mass index, mean (SD)	24.9 (4.35)	23.8 (3.28)	0.156
LBP duration, mean (SD), y	6.7 (5.6)	6.5 (5.6)	0.858
Disability, mean (SD)	9.7 (4.5)	10.1 (4.5) [8.5-11.7]	0.657

Table 2: Compare pre and post treatment of the study participants

Variable	Pre-treatment	Post treatment
Outcomes	8.72 ±0.91	3.62 ±1.14
P value	<0.001	

Discussion

The spinal manipulation with ergonomic advice showed a greater improvement in postural sway (centre of foot pressure), pain sensitivity PPT, and quality of life compared to core stability exercise therapy with ergonomic advice and supervised exercise with ergonomic advice after two weeks of treatment period and four weeks of follow-up^[14].

Present study found male preponderance; in both experimental and control group, no significant difference ($p > 0.05$) this has been corroborated by other studies like M Tahir *et al.*^[15] and Halme JA *et al.*^[16].

In our study mean age of the participant in experimental group was 35.6 and in control group 24.3, statistically significant difference was found between the groups ($p < 0.05$), concordance finding also reported by Zunke *et al.*^[17] and Pasquier *et al.*^[18].

Current study observed no statistically significant difference ($p > 0.05$) among cases and control group in terms of BMI, duration of LBP and disability, similar finding also reported by Coulter *et al.*^[19], G Krekoukias *et al.*^[20] and K K Sarker *et al.*^[21].

The spinal mobilization technique was done for the participants in the experimental group and analyzed the LBP intensity level pre and post treatment. A significant difference ($p < 0.05$) in pain intensity level was found in pre and post spinal mobilisation therapy, our finding were comparable with the many other studies like: Gong *et al.*^[22], Fernandes WVB *et al.*^[23], Mohamed N Fiaad *et al.*^[24] and Taeseong Ju *et al.*^[25]. An appropriate explanation for the improvement of pain level and functional disability as by spinal mobilization is that it affected the mechanical properties of peripheral nerves, and this alteration in nerve mechanics lead to direct effect on nerve physiology. It has been reported that neural mobilization generated various amounts of longitudinal nerve excursion and strain. Neural mobilization techniques helped in restoring the movement between the nerve and surrounding structures through the gliding movement.

The manual spinal mobilization therapy significantly reduces LBP and improves quality of life.

Conclusions

Spinal mobilization technique is an effective intervention for reduction of pain, functional disability and enhancing the physiological function of the nerve root in low back pain with lumbosacral radiculopathy. It is proving to be effective in the short-term treatment in patients with chronic nonspecific low back pain.

Conflicts of interest:None.

Source of funding:None.

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