EFFECTIVENESS OF LUMBAR MANIPULATION (HIGH VELOCITY LOW AMPLITUDE) FOR THE TREATMENT OF LOW BACK PAIN IN COMPARISON TO BACK STRETCHING EXERCISES

ABSTRACT

OBJECTIVES
To assess the effectiveness of lumbar manipulation (high velocity low amplitude) for the treatment of low back pain in comparison to back stretching exercises.

STUDY DESIGN
Randomized Control Trial (Experimental Study)

METHOD
The study was conducted on 200 patients at the Physiotherapy Department of Ziauddin Hospital among patients with history of low back pain of acute, sub acute or chronic origin. In this study, patients were divided into two groups, group A and group B equally. Group A of 100 patients received Lumbar Manipulation (High Velocity Low Amplitude) and at the same time Group B of 100 patients were treated by back stretching exercises. A pre tested and structured questionnaire was used to collect data. Data was entered and analyzed by using SPSS.

OUTCOME MEASURES
Pain was measured on Visual Analogue Scale before and after the given treatment.

RESULTS
The study showed significant results for both the interventions in the treatment of low back pain but Lumbar Manipulation has been more effective in different types of low back pain while stretching exercises are less effective.

CONCLUSIONS
On the basis of this study, we are very confident that lumbar manipulation is more effective for the treatment of low back pain compared to back stretching exercise.

Key Words
Low Back Pain, Lumbar Manipulation, Stretching Exercises, Visual Analogue Scale, High Velocity, Low Amplitude

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INTRODUCTION

Low back pain (LBP) refers to pain felt in the lower back. Such pain or discomfort affects the low back as it supports most of our body's weight. Risk factors of developing LBP include old age, family history, pregnancy, compression fractures of the spine, back surgery, congenital deformity, prolong sitting, sedentary lifestyle, smoking, poor posture and stress[1,2]. LBP is usually divided into acute LBP (i.e. persisting for less than 6 weeks), sub acute LBP (i.e. persisting for 6 to 12 weeks) and chronic LBP (i.e. persisting for more than 12 weeks)[3]. It has been proposed that LBP has a point prevalence of 6% to 33% and 1-year prevalence of 22% to 65% and Lifetime prevalence ranged from 11% to 84%[4-7]. Hoy D et al in their article regarding epidemiology of low back pain mentioned point prevalence range from 1.0% to 58.1% with a mean prevalence of 18.1%[7].

The European Guidelines for Management of LBP recommed supervised exercise therapy as a very effective first-line management for LBP[8]. Exercise therapy appears to be slightly effective in decreasing pain and improving function in adults with chronic LBP, particularly in healthcare populations. In sub-acute LBP there is evidence that a graded activity program improves absenteeism outcomes, though evidence for other types of exercise is unclear[9,10].

Spinal manipulation is a safe intervention that is applied to patients with different types of low back pain. It can be defined as a localized or globally applied, single, quick, and forcible movement, alternately termed "high-velocity thrust", of small amplitude, following careful positioning of the patient[11]. The procedure is differentiated from mobilization in that a thrust is applied during the technique, versus lower velocity repetitive oscillations or sustained holds[12]. Spinal manipulation has been advocated in clinical practice guidelines for low back pain[13], with evidence that exists to support the use of spinal manipulation for improvement of pain and function in patients with acute LBP[4,14].

Spinal manipulative therapy is not only being used by physiotherapist but also by a number of other healthcare professions, such as chiropractors, osteopathic physicians, and medical physicians. The use by physical therapists (PT) has been challenged regarding whether manipulation falls within their scope of clinical practice[15]. Although initially underutilized by physical therapists, momentum and adherence to evidence-based practice have enhanced the efforts to improve clinical reasoning for selection and delivery of such techniques[16]. Concurrent with the increased use in the clinic have been published contributions by physical therapists on the effectiveness of spinal manipulation, and the recognition of these publications by other healthcare professions[17]. Despite of all the research done so far, yet not enough successful attempts have been made to effectively and comprehensively define outcomes associated with physical therapy manipulation and describe the effectiveness of this intervention for patients with low back pain.

The objective of this research was to analyze the effectiveness of physical therapy spinal manipulations for the treatment of patients with LBP. Effectiveness was determined by analyzing studies that compared physical therapy spinal manipulations with stretching exercises.

OBJECTIVE OF THE STUDY

To find the effectiveness of Lumbar Manipulation (HVLA) for treatment of low back pain in comparison to Back Stretching Exercises.

METHODOLOGY

Study Design
It is a randomized control trial, experimental study conducted on 200 patients suffering from Low Back Pain.

Study Duration
The study has been conducted in duration of one year.

Sampling Method
A sample size of 200 patients was calculated through Epi with a point prevelance 18.1%[7] at 95% confidence level and margin of error is 0.05. 200 Patients were a part of this study equally divided into two groups.
Group A: 100 patients were given Lumbar Manipulation.
Group B: 100 patients were given back stretching Exercises

Study Setting
Physiotherapy Department of Ziauddin Hospital, Karachi, Pakistan.

Data Collecting Procedure
The study is being conducted on the 200 patients including male and female, with age range of 18-65 years. All participants were suffering from Low Back Pain. The consent was sought from the subject before participating into the study, thereafter; the subjects were randomly divided into two groups, Group A and Group B, each consisting of 100 patients. Both groups received same protocol of treatment, including hot pack and Transcoetaneous Electrical Nerve Stimulation (TENS) before applying the main treatment intervention. Pain intensity was examined by a visual analogue scale (VAS) both pre-treatment and post-treatment which was recorde on a self administered questionnaire. The questionnaire was pre tested and structured for the collection of data. Data was analyzed on SPSS version 20.

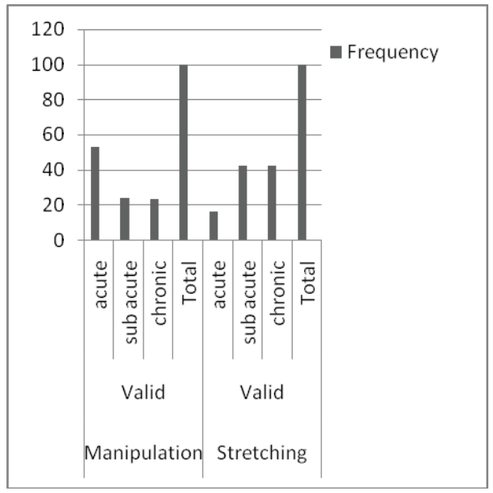
Inclusion Criteria
Patients diagnosed with low back pain within age of 18 – 65 years were included in this study.

Exclusion Criteria
Patients with history of Spinal fracture, Neurologic signs and symptoms, Tumor, malignancy, bone tissue infection, Pregnancy, Post surgical were not included in the study.

Ethical Consideration
According to ethical consideration Patient privacy, Patient hygiene factor, Patient therapist relationship and Environment of the place where we treat the patient were given due importance.

RESULTS

This study shows analysis of both treatment protocols given to a sample of 200 patients suffering from Low Back Pain where group A consisting of 100 patients was given lumbar manipulation while group B of 100 patients was given back stretching exercises for the pain management. Mean age of the total sample was 37.67 + 9.56 years. Out of 200 patients, 52.5% were male while 47.5%



females. Out of 100 patients of Group A, who were given lumbar manipulation, 53 complained of acute low back pain while 24 were sub acute and 23 chronic. In group B it was seen that 16 patients were of acute origin and 42 each of sub acute and chronic low back pain.

Table 1: Intensity of Pain (Before and After Treatment)

Treatment Protocol		Intensity of Pain on VAS Scale before Treatment	Intensity of Pain on VAS Scale after Treatment
Manipulation	N	100	100
	Mean	6.15	1.19
	Std. Deviation	1.009	.813
Stretching	N	100	100
	Mean	5.89	2.31
	Std. Deviation	.898	.873
Total	N	200	200
	Mean	6.02	1.75
	Std. Deviation	.961	1.011

Intensity of pain was measured on VAS Scale before and after treatments. It was observed that mean intensity of pain in patients of Group A was 6.15 ± 1.009 and after the treatment it was reduced to 1.19 ± 0.813. While in Group B, intensity of pain on VAS Scale before the treatment was 5.89 ± 0.898 and after treatment it was reduced to only 2.31 ± 0.873 (Table 1)

The data was analyzed to find out the effectiveness of lumbar manipulation in comparison to back stretching exercises for the management of low back pain. Paired Sample test was applied to found the effectiveness of these interventions and it was seen that both are effective (sig 0.00) for the management of low back pain. It was also observed that Lumbar manipulation has been more effective in all types of low back pain including acute, sub acute and chronic LBP (Table 2).

Table 2: Mean Intensity of Pain in Different Types of LBP

Type of LBP	Mean Intensity of Pain on VAS Scale before Treatment	Mean Intensity of Pain on VAS Scale after Treatment
Acute		
Manipulation	6.06	1.19
Stretching	6.00	2.19
Sub Acute		
Manipulation	6.04	1.21
Stretching	5.62	2.31
Chronic		
Manipulation	6.48	1.17
Stretching	6.12	2.36

Mean intensities on VAS Scale before and after the given interventions evidently show that there is remarkable difference in pain after lumbar manipulation in all types of low back pain compared to back stretching exercises. In Acute LBP, intensity of pain 6.06 before Lumbar manipulation and was reduced to 1.19 while in Sub acute LBP, pain intensity was 6.04 earlier and 1.21 after lumbar manipulation. In chronic patients of LBP, pain intensity was 6.48 before the said treatment and 1.17 after manipulation. On the other hand stretching exercises have shown less effectiveness on VAS scale.

Table 3: Comparison of Manipulation and stretching exercise

Group	Mean ± SD	t	Sig. (2-tailed)
Manipulation	4.96 ± 1.23	40.31	0.00
Stretching Exercise	3.58 ± 1.23	29.04	0.00

This study has found that Lumbar Manipulation (HVLA) and back stretching exercises are effective in the management of low back pain but when compared lumbar manipulation (HVLA) has shown to be more effective in management of LBP of all types on the basis of VAS Scale.

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DISCUSSION

All the patients in this study were between the age group of 18-55 years with Low Back Pain without any history of spinal fracture, neurologic signs and symptoms, pregnancy or post surgical complications.

In our study, the patient's response to specific treatment was assessed on Visual Analogue Scale (VAS). All patients felt relief in pain after the given treatment but there was prominent reduction in pain in patients who underwent manipulation compared to stretching exercises.

According to Evans et al. manipulation is beneficial in reducing low back pain but for a shorter period[18]. It was evident in our data that manipulation showed better results in patients with acute low back pain.

IIn another article by Koppenhaver SL et al stated that if a patient has LBP that is fairly acute without any focal and irritable symptoms, may be the best candidates Spinal Manipulative Therapy treatment approach[19]. In our study we had similar patients and the Manipulative therapy has been extremely effective as a treatment option.

According to Bronfort G et al suprvised exercise was more significant for the management of chronic low back pain compared to spinal manipulation[20]. In the same way, in our study stretching exercise was seen to be slightly more effective in management of low back pain of chronic origin.

Other treatment options for managing low back pain include other exercise plans as well such as William Flexion Exercises or McKenzie Extension Exercises which are given to patients for home. These exercises might be effective if done for longer duration but manipulation and stretching exercises show immediate results which might be for shorter duration but are more effective in managing pain.

Manipulative Therapy is effective for the treatment of chronic nonspecific LBP. Researches also suggest that lumbar manipulation may be extremely effective to obtain long-term benefit, after the initial intensive manipulative therapy[21-24].

Rubinstein S. et al suggests that High- quality evidence is present that there is no clinically relevant difference between SMT and other interventions for reducing pain and improving function in patients with chronic low-back pain[25-26].

In my experience, spinal manipulation has been more effective in treating acute low back pain while stretching has shown better results in chronic low back pain.

CONCLUSION

We are 95% confident that the effectiveness of lumbar manipulation (high velocity low amplitude) for the treatment of low back pain is not equal to stretching exercises. But statistics obtained from the table 1, 2 and 3 we could suggest that the lumbar manipulation treatment is better than the stretching exercises for the management of low back pain.

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THE ASSOCIATION OF SITTING POSTURE AND CERVICOGENIC PAIN AMONG THE STUDENTS OF PHYSICAL THERAPY

ABSTRACT

OBJECTIVE

To determine the prevalence and association of cervicogenic pain and poor sitting posture among the students of Physical Therapy.

METHOD

A cross sectional survey was conducted among the students through convenient sampling, aged 18 – 30 years. A Structure questionnaire was used to collect the data. Both descriptive and interference statistics were used to analyzed the data.

STUDY DESIGN

A cross- sectional study design was selected for this study.

STUDY SETTINGS & PARTICIPANTS

Students (n=100) has been selected from the different private and government Physical Therapy institutes of Karachi.

RESULTS

From the sample size (n=100) including students of Physical Therapy, had studying for more than 8 hours. During the analysis of data it was found that 71% of students were aware about the correct sitting posture and only in 36% of students' cervicogenic pain is the reason of decrease their activities.

CONCLUSION

The result of the study shows that the prevalence of cervicogenic pain is higher among the students but poor sitting posture is not consistent reason of pain there were other associated factors too. Maximum numbers of students were aware about the correct posture during sitting for study and using computer. Among entire population ratio of pain was higher in female than male students.

Key Words
Posture, Musculoskeletal Disorders, Cervicogenic Pain, Prevalence, Ergonomic, Morbidity.

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