



EFFECTIVENESS OF JANDA'S APPROACH IN THE TREATMENT OF CHRONIC LOW BACKACHE: RCT

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ABSTRACT

Background and Objectives : In the present era of modernization, every individual lives a busy life from early morning till late night. Inturn, they tax most of their body parts, unnoticed. This leads to overstress and primarily affects the low back region. The objective of the study was to find out the effectiveness of Janda's approach in the management of chronic low back pain.

Methodology: This randomized controlled trial was carried out in the Department of Physiotherapy, K.L.E.S. Hospital and M.R.C., Belgaum during Jan-2006 to Dec-2006 among 40 participants, both male and female with clinical diagnosis and radiological evidence of lumbar spondylosis. Demographic data was collected and participants were randomly allocated into two groups of 20 each after informed consent had been obtained. Both the groups were treated with continuous short wave diathermy for 20 minutes, static back extension exercises and in addition patients in study group were treated with Janda's approach to strengthen weak abdominal and gluteal muscles and to stretch tight erector spinae, iliopsoas and rectus femoris. Statistical analysis was done by Mann Whitney Test and Unpaired 't' test.

Results : The participants treated under study group had pain relief in terms of VAS ($p=0.000$) the strength of abdominal ($p=0.000$) and gluteal muscle ($p=0.000$) improved. The tightness of iliopsoas ($p=0.000$), rectus femoris ($p=0.000$), erector spinae ($p=0.000$) and percentage of disability ($p=0.000$) was decreased.

Conclusion : Janda's approach when used along with conservative management is beneficial in the treatment of chronic low backache with muscular imbalance pattern.

KEY WORDS: Janda's Approach, Chronic low back pain, lumbar spondylosis, Muscular imbalance pattern.

INTRODUCTION

Human spine has a very complex structure and function. It has segmental column of vertebrae that constitutes the major subcranial part of the axial skeleton. Its individual elements are united by a series of intervertebral articulations to form a firm but flexible shaft that supports the trunk and its appendages while providing a protective covering for the spinal cord. These bones are arranged in 3 natural curves that are necessary to keep the body supported. Strong flexible muscles help to maintain these curves.¹ Muscles surrounding the vertebral column gives stability to the spine. The stabilizing system of the lumbar spine includes an active mechanism provided by muscles, ligaments, capsules and intervertebral disc.² The main stabilizing muscles are back extensors, abdominals, hip flexors and gluteal muscles. If any imbalance occurs in these muscles it will cause increase in the curvature of the lumbar spine.³

Change in the anatomical and biomechanical functions of spine leads to many diseases. The commonest presentation of these diseases is low back pain. Low back pain has been existing since the recorded history of time. It is one of the most frequent health related complaint in the society.⁴ 60%-90% of the populations have low back pain at some point in their lives.⁵ Disability owing to low back pain is a major social, occupational, economical and emotional problem. Low back pain is bound to have a significant economic impact on health care expenditure.⁶ Postural changes are sometimes a risk factor for low back pain. Abnormal posture creates strain on ligaments and muscles that indirectly affects the curvature of lumbar spine.

Vladimir Janda (1987), a Czech neurologist did extensive research on the causes of low back pain and found a muscular imbalance pattern around the spine, which causing more stress over the spine. He called it as a crossed syndrome. This imbalance pattern is present in terms of tightness and weakness of opposing muscles. Janda classified a crossed syndrome into upper crossed and lower crossed syndrome. In the lower crossed syndrome the postural (tonic) muscles like iliopsoas, rectus femoris and erector spinae become tight and short, while the phasic muscles such as abdominals and gluteal muscles become weak.. As a result of this imbalance pattern, there is forward tilting of pelvis in frontal plane and cause increase in lumbar lordosis. This inturn will cause more stress on posterior intervertebral disc, resulting in severe pain and dysfunction.⁷ This biomechanical malalignment seen in many patients with chronic LBA. Hence the present study is planned to treat the cause along with conservative measure which may be beneficial for the betterment of patient

OBJECTIVES

The objective of the present study was to find out the effectiveness of Janda's approach combined with conventional treatment and compare to only conventional treatment in the management of chronic low back pain.

METHODS

The study design was a randomized controlled trial. Ethical clearance was obtained from the institutional ethical committee, J. N. Medical College, Belgaum before commencement of the study.

Sample size

The present study was conducted on 40 participants with clinical diagnosis and radiological evidence of lumbar spondylosis referred to the physiotherapy outpatient department.

Sampling method

Sample size was calculated considering 80% of the patients referred to Department of Physiotherapy, K.L.E.S. Dr. Prabhakar Kore Hospital and Medical Research Centre, Belgaum in last three consecutive years.

Apparatus and Equipments

Following apparatus were used for the study.

- 1) Short wave diathermy machine
- 2) Measuring tape
- 3) Weighing machine

Inclusion Criteria

- Clinical diagnosis and radiological evidence of lumbar spondylosis.
- Symptoms of duration of more than 3 months.
- Increased lumbar lordosis
- Abdominal and gluteal muscle weakness.
- Tightness of erector spinae group and hip flexor muscles.

Exclusion Criteria

- Acute low back pain
- Fractures or fracture dislocations
- Previous spinal surgery.
- Corticosteroid injections for pain relief in preceding 3 months.
- Acute inflammatory or infectious process in tight muscles and surrounding region.
- Sharp, acute pain with joint movement or muscle elongation.
- Any other local or systemic major illness.

Interventional therapy

Janda's approach is often called as the post facilitation stretch technique. This technique is used to improve flexibility of tight muscles like erector spinae and hip flexors. Here the tight muscle is placed in a mid range position about half way between fully stretched and fully relaxed state. The participant contracts the muscle isometrically using maximum effort for 5 – 10 sec, then a rapid stretch is given to reach new barrier. This is held for at least 10 sec. with about 20 sec. rest in between and the maneuver is repeated for five times.

Main outcome measures

- 1) Pain
- 2) Modified Oswestry Disability Questionnaire
- 3) Manual Muscle Testing
- 4) Tightness

Procedure

All participants with lumbar spondylosis, referred to the physiotherapy out patient department were screened. After finding their suitability as per the inclusion and exclusion criteria, they were requested to participate in the study. The selected participants were divided (Tabular format) in two groups viz Group A and Group B of 20 each. The study consisted of both male and female participants. Envelope method was used for the purpose of allocation. Envelopes were prepared with number from 1 to 40, all participants who picked up odd numbers were put into the control group and those who picked up even numbers were allocated to the interventional group.

Their demographic data was collected along with their initial assessment of VAS score, abdominal and gluteal muscle strength, the iliopsoas, rectus femoris and erector spinae muscle tightness and Modified Oswestry Disability Questionnaire score.

In the control group (A), 20 participants were treated with continuous short wave diathermy (CSWD) for 20 minutes and static back extension exercises (10 repetitions) on successive days for two weeks. In the interventional group (B), 20 participants were treated with continuous short wave diathermy for 20 minutes, static back extension exercises and Janda's approach to strengthen weak abdominal and gluteal muscles and to stretch the tight erector spinae, iliopsoas and rectus femoris. The participants were asked to grade their pain on VAS scale 0 to 10 cms (Left side indicating no pain and right side indicating maximum pain) with one mark per centimeter prior to the treatment. A Modified Oswestry Disability Questionnaire was given to the participant to fill up before the therapy was begun.

The interventional group (B) received additional Janda's approach immediately following this. In this technique the tight muscle is placed in a mid range position about half way between fully stretched and fully relaxed state. The participant contracts the muscle isometrically using maximum effort for 5 – 10 sec, then a rapid stretch to reach new barrier. This is held for at least 10 sec. with about 20 sec. rest period in between and the maneuver is repeated for 5 times.

VAS score, MMT and tightness were measured on day one and fourteenth day pre and post treatment, and Modified Oswestry Disability Questionnaire was given to every participant to fill up pre treatment on the first day and post treatment on the last day of the 2 week treatment session.

Follow-up was done for 14 days (Over 2 weeks) and outcome was assessed on the basis of post treatment scores.

Statistical Analysis

Statistical analysis was done by using software "Graph Pad Prism" 0.4 version so as to verify the results obtained. For this purpose the data was entered into Microsoft excel spreadsheet, tabulated and subjected to statistical analysis. Various statistical measures such as mean, standard deviation (SD) and test of significance such as Mann Whitney Test for VAS, MMT, MODQ score and unpaired 't' test was used to measure the difference between Tightness.

RESULTS

Table No. 1: VAS score

	Experimental group	Control group	'z' value	p value
VAS Day 1	18.65	22.35	1.060	0.289
VAS Day 14	13.95	27.05	3.617	0.000
VAS Diff.	12.80	28.20	4.341	0.000

Table No. 2: Muscle strength (MMT)

		Experimental group	Control group	'z' value	p value
Abdominal muscle	Day 1	18.10	22.90	1.466	0.143
	Day 14	12.70	28.30	4.534	0.000
	Difference	12.00	29.00	5.369	0.000
Gluteal Muscle	Day 1	20.00	21.00	0.313	0.255
	Day 14	13.00	28.00	4.416	0.000
	Difference	11.48	29.53	5.570	0.000

Table No. 3: Muscle tightness

		Experimental group	Control group	't' value	p value
Iliopsoas	Day 1	56.25 ± 17.91	51.25 ± 18.98	6.994	0.000
	Day 14	23.75 ± 12.76	46.25 ± 18.63		
	Difference	32.50 ± 14.28	5.00 ± 10.26		
Rectus femoris	Day 1	58.75 ± 16.77	51.25 ± 18.98	8.850	0.000
	Day 14	26.25 ± 9.85	51.25 ± 17.16		
	Difference	32.50 ± 14.28	0.00 ± 8.11		
Erector spinae	Day 1	58.75 ± 14.68	53.75 ± 18.63	5.596	0.000
	Day 14	28.75 ± 12.23	47.5 ± 16.02		
	Difference	30.00 ± 13.08	6.25 ± 13.75		

Table No. 4: MODQ

	Experimental group	Control group	'z' value	p value
Day 1	24.15	16.85	1.987	0.050
Day 14	13.00	28.00	4.416	0.000
Difference	27.48	13.53	3.795	0.000

The participants treated under interventional group got mean pain relief in terms of VAS ($p=0.000$) at the end of 2 weeks. The strength of abdominal muscle improved ($p=0.000$) and that of gluteal muscle improved ($p=0.000$). The mean tightness of iliopsoas, rectus femoris and erector spinae

decreased ($p=0.000$), ($p=0.000$) and ($p=0.000$) respectively. The mean percentage of disability was decreased ($p=0.000$).

DISCUSSION

Results of the study were focused on the pain relief, improvement of muscle strength, reduction of the percentage of muscle tightness and disability based on Modified Oswestry Disability Questionnaire score. It was noticed that there was recovery of all the above parameters in interventional group (The group receiving Janda's approach).

There was only reduction in pain and percentage of disability in the control group (receiving conventional physiotherapy in the form of short wave diathermy and static back extension exercises). There was no change in muscle power and tightness.

Significant relief of pain was observed in both group subjects over 2 weeks. It is important to note that all participants were given short wave diathermy and static back extension exercise as a common mode conventional treatment. Studies about the short wave diathermy for pain relief have found positive correlation along with static back exercises⁸ and the current findings were in accordance. However, more significant difference was seen amongst the participants treated with Janda's approach. Better relief of pain in the interventional group could be attributed to Janda's post facilitation stretch technique (stretching and strengthening exercises). This is in accordance with study by those authors who found a positive co-relation in the effect of stretching and strengthening exercise in chronic lumbar spondylosis with muscular imbalance pattern.⁹ Alternatively, the relief of pain in the interventional group could be due to placebo effect as well. Janda stated that pain relief by means of stretching and strengthening exercises could be due to reducing abnormal load over the intervertebral disc; this in turn decreases the pain.

According to some authors there is link between back pain and strength and length of the trunk muscles. Significant increase in strength of abdominals and gluteal muscles were observed in the interventional group (the group receiving Janda's approach).¹⁰

According Takemasa et al,¹¹ there is a link between abdominal and gluteal muscle strength and low back pain. In this study there was a significant difference observed in muscle strength amongst the control and interventional groups.

In present study, the participants treated with Janda's post facilitation stretch technique showed significant reduction in muscle tightness and improvement in muscle strength. There was marked reduction in the lumbar lordosis after 2 weeks of treatment session.

The results of improvement in percentage of disability in terms of Modified Oswestry Disability Questionnaire score were comparable in the two groups and were statistically significant. MODQ is widely used to assess the disability in low back pain.¹² In this study, there was significant reduction in percentage of MODQ in both the groups. The reason for decrease in percentage of MODQ in control group is unknown. Some authors suggested that, reduction may be due to significant decrease in pain. Because of less pain patient can perform some of the daily activities.

The present study had several limitations like small sample size, time constraint and variable patient mass.

The present study was for duration of only 2 weeks. However, the literature review suggests variable duration of intervention ranging from 2 – 6 weeks for acceptable relief of pain. Therefore, the therapy can be studied for a longer time in the future.

CONCLUSION

On the basis of the present research study, it can be concluded that Janda's approach when used with conservative management is beneficial in the treatment of chronic LBA with muscular imbalance pattern.

Scope of the study

Efficacy of Janda's approach alone needs to be tested in the management of chronic LBA with muscular imbalance pattern.

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PHOTOGRAPHS



Photograph No. I: Patient receiving stretching of erector spinae



Photograph No. II: Patient receiving Isometric abdominal exercise