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Role of selective yoga postures and rope & belt therapy in conservative care of lumbar Spondylosis - A non-randomized control trial

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Abstract
Introduction: Lumbar Spondylosis is the most common degenerative condition of vertebral column causing low back pain. There is no specific treatment for lumbar Spondylosis but education, postural awareness, exercise regime, adequate rest, mental peace forms the multiple pillars for health of spine. Bearing this in mind, the present study was conducted to find out the usefulness of structured Yogic Postures and Rope & Belt Therapy (RBT) for lumbar Spondylosis.
Aim: To study the usefulness of selective Yoga Postures and Rope & Belt Therapy for Lumbar Spondylosis patients.
Method: 160 participants were divided in two groups of 80 each. Study group was given intervention of Yoga and RBT for 4 wks. Control group was not given any intervention but they were taking pharmacological treatment as prescribed by their Orthopedician.
Results: 4 wks of selective yoga postures and Rope & belt therapy significantly reduced Pain and disability in lumbar Spondylosis patients (P<0.001)
Conclusion: Yoga and Rope & belt therapy could open up new avenues for developing standards for best clinical practices for this patient population.

Keywords: Lumbar spondylosis, RBT, Yoga, Pain, Stiffness, Mobility

Introduction

Lumbar spine is the weak link in the vertebral column. It carries the burden of HAT, i.e. head, arms & torso. It has anterior convexity called lordosis.
This curvature of the lumbar spine leads to excessive compressive load on posterior part of intervertebral discs & facet joints [1]. The lumbar spine is often the site of degeneration at the bodies of vertebrae, inter vertebral discs & facet joints. Prolonged sitting work pattern of more than ten hours a day and increase in duration of daily travel time has enhanced the degenerative process in inter vertebral disc and facetal joints. These changes if unattended, lead to Lumbar Spondylosis in middle or early age. As otherwise this is an osteo arthritic spine disease of later life [2].
Lumbar Spondylosis is the most common degenerative condition of vertebral column in developed & developing countries. It is an important clinical, social, economic & public health problem affecting worldwide population. Low back pain is an important cause of work absenteeism. The prevalence of symptomatic lumbar Spondylosis ranges from 38 to 85 % of total population [3]. The percentage is more in population older than 40 years of age. Sex ratio reports have been variable but eventually equal.
There is no specific treatment for Spondylosis. Temporary relief of pain & stiffness with medicines give a precious chance to patients to look for restorative long-term care of the lumbar spine.
Selective, modified Yoga Postures of Phase 1 aim at relief of low back ache & stiffness. The relief is achieved by gentle, slow stretching of erector spinae in lumbosacral area, lateral rotators of hip joint, straightening of lumbar spine leading to distraction at L5 - S1 & L4 - L5 level [4]. Phase 2 yoga postures are aiming at strengthening of glutei muscles (pelvic extensors) & anterior abdominal wall muscles including core muscle. This keeps the lumbar spine well supported with optimum lordosis, optimum lumbosacral angle & healthy flexibility [5].
Use of Ambulatory belt called Pelvic lift leads to passive correction of excessively anti verted pelvis [1].
Rope & Belt Therapy in two sets help in lumbar traction to cause distraction at L5 - S1 & L4 - L5 levels for relief of pain & stiffness. It helps in correcting exaggerated lordosis & correction of lumbosacral angle [1].
Thus, this structured programme and Rope & Belt Therapy offers predictable short-term palliation & long-term restoration.
To the best of our knowledge there are no studies on effect of both, Yoga and Rope & Belt Therapy on lumbar spondylosis. Bearing this in mind, the present study was conducted to find out the usefulness of structured Yogic Postures and Rope & Belt Therapy for lumbar Spondylosis with following aim and objectives.

Aim: To study the usefulness of selective Yoga Postures and Rope & Belt Therapy for Lumbar Spondylosis patients.

Objectives

1. To assess & compare improvement in pain and disability in Lumbar Spondylosis in study group (with Yoga and RBT intervention) at baseline and after 4 weeks
2. To assess and compare improvement in pain and disability in Lumbar Spondylosis in control group (without Yoga and RBT Intervention) at baseline and after 4 weeks.
3. To compare improvement in pain and disability in study group (with Yogic Postures & Rope & Belt Therapy) & control group (without Yogic postures & Rope & Belt Therapy) at the end of 4 weeks.

Materials & Methods

Type of study: Non-Randomized control Trial.

Study group: Diagnosed cases of Lumbar Spondylosis (on clinical & radiological assessment) having age between 35 to 75 years and undergoing Yoga and RBT intervention.

Control group: Age matched diagnosed patients of Lumbar Spondylosis, not undergoing Yoga & RBT intervention.

Sample Size: Study Group= 80 Control Group=80

The study was approved by Institutional Ethics Committee of B J Govt Medical College, Pune.

Inclusion Criteria

1. Age group – 35 to 75 years
2. Lumbar Spondylosis cases – Willing to minimize the use of analgesics & muscles relaxant medicines and willing to perform Yoga and RBT therapy

Exclusion Criteria

1. Cases of Lumbar Spondylosis with sensory or motor deficit or uninary incontinence
2. Subjects who do not like exercise of any type.

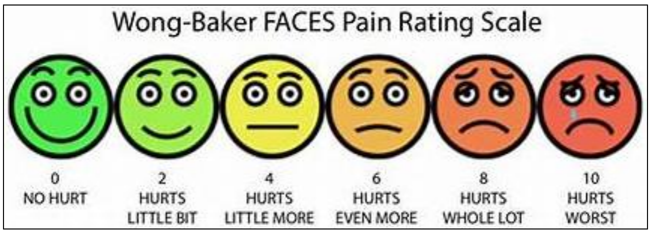
Methodology

A – Methodology adopted for Anthropometry

Age in Years	Weight – in Kg
Height – in meters	BMI- Wt in kg/Ht in meter [2]

B. Methodology adopted for assessment of pain, stiffness & mobility

1. Pain assessment chart – FPRS score (Faces Pain Rating Scale) Zero is no pain & 10 is extreme / severe pain. Presence of faces makes it easy & interesting to quantify pain [6].



2. Modified Oswestry Deformity Index (MODI) [7]

It consists of ten questions related to pain intensity, pain during day to day movements, when lifting weights, during walking, sitting, standing, sleeping, traveling, pain when doing work and home making and how pain is affecting social life. For each question the score is from zero to five (minimum to maximum). The final score is converted to % (Oswestry disability index-ODI). Lower score means less disability

3. Intervention by structured Yoga postures and Rope & Belt Therapy

- Study group subjects were taught selective Yoga Postures in 2 phases.

Phase 1 has Lumbar rest to be practiced for 15 minutes per day. It also has selective, modified postures which lead to stretching of erector spinae muscle in lumbosacral region, stretching of gluteus maximus and six deep lateral rotators and stretching of hamstrings at ischial tuberosity to mobilize the pelvis. Patients are taught active pelvic movement in lying, sitting and standing positions. Patients were advised to practice these postures twice a day. These postures of Phase 1 offer palliation in the symptoms of low backache & stiffness [1].

They were taught Phase 2 Yogic postures only after 50 to 70 % relief from symptoms. These selective modified Yogic postures aim at strengthening of erector spinae muscle in lumbosacral region, rectus abdominis, external & internal oblique with transverse abdominis muscle [1]. All these muscles form a lumbar supporting belt.

Patients are supposed to learn these postures & practice them once a day to restore the lumbar spine to normalcy.

- Patients are taught to use an ambulatory belt called Pelvic lift which offers passive correction of position of pelvis. Patients of Lumbar Spondylosis are found to have excessive anterior tilt of pelvis. This leads to increase in lordosis of lumbar spine, which leads to excessive compressive load on posterior part of intervertebral disc (IVD) & facet joints giving rise to slow degenerative process in both structures. Body reacts to this process by strong contraction or spasm of erector spinae muscle. Its effect is pain & stiffness at L5 / S1 area.

Pelvic lift is a belt which is positioned in a specific way & fixed in a pattern for active pelvic movement. It offers passive pelvic extension which stretches the erector spinae muscle at lumbosacral area. Extension of pelvis minimizes the increased lordosis to minimize compressive load .[1]

This belt is advised to be used for 6 to 8 hours in a day, at a stretch for 2 to 3 hours till the symptoms persist. It is also advised to be used during prolonged travelling hours.

- After practicing Yogic postures & learning Pelvic lift, patients are given Rope & Belt Therapy. This therapy is divided into two sets. Set 1 is indicated for young & middle-aged patients of low back ache without radiating pain in lower limbs. Set 2 is advised if patients have radiating pain in lower limbs (sciatica) or elderly patients (with or without radiating pain) Rope & Belt Therapy is given to patients by trained & experienced Yoga Therapists at well equipped Yoga center

Set 1: Slanting/ Horizontal Lumbar Traction

- Standing forward position with lumbar traction
- Sitting forward position with lumbar traction
- Padangushthasan with lumbar traction

All these therapeutic postures are helped by medical rotation of hip joints for better mobilization of pelvis. This is done by specific techniques using belts and ropes

Effects: Extension of pelvis, straightening of lumbar spine, stretching of erector spinae, Distraction at L5 - S1 level, Stretching of Hamsting muscles, Stretching at Thoraco - lumbar junction [1].

Set 2: Double rope pelvic lift

- Sciatic nerve entrapment release
- Padangushthasan with lumbar traction

Effects: Lifting of pelvis anteriorly, Extension of pelvis posteriorly, Total effective passive correction of position of pelvis, Significant distraction at L5 - S1 level & above, widening of intervertebral foramen at L4 - L5 & L5 - S1 levels, Flexion, addiction & medical rotation at hip joints, Stretching of Gluteus maximus & deep lateral rotators of hip joint, Entrapment release of Sciatic nerve in between Pyriformis & Gamelli superior [1].

- Study was conducted at 'Unnati Yogatheray & Training Center' Shivajinagar, Pune.
- Duration of therapy was 75 to 90 minutes per day for 6 days a week for 4 weeks
- Each subject practiced selective, modified Yogic postures at home & used Pelvic lift belt for 6 to 8 hours. Phase 1 for relief of pain & stiffness & Phase 2 for prevention of recurrent same trouble.
- Cases of low back ache with radiating pain(sciatica) & elderly needed therapy for 2 to 3 months.
- All cases were advised to take analgesics & muscle relaxants only for severe spasm for 2/ 3 days with bed rest.
- Control group did not participate in Yoga & RBT programme. They were taking analgesics as prescribed by their orthopedician.
- All subjects were assessed by FPRS and MODI index at Baseline and at the end of 4 weeks
- All the test parameters and Yogic exercises are non-invasive and harmless for the patients. Yet a written informed consent was taken from all subjects participating voluntarily in the study.

Observations and results

Data were analyzed using descriptive and analytical tests by SPSS software.

The numerical variables are described by mean and standard deviation. A paired-t-test is performed to investigate the efficacy of treatment in both the groups. Concerning the primary outcome, the comparison between two groups is analyzed by test for equality of means (Z-test). A two-sided p-value of less than 0.05 is considered as statistically significant.

Initially, one hundred and sixty-six patients were included in this study. Of them, twenty-seven patients in control group lost their 1st month follow up and were excluded from the study. Both groups were well-matched for baseline and demographic characteristics (Table 1)

Table 1: Demographic Characteristics

Variable	Control Group		Trial Group	
	(Mean ± SD)		(Mean ± SD)	
Age	48.84 ± 14.14		50.10 ± 13.18	
BMI	25.29 ± 3.38		27.47 ± 4.78	
Gender	MALE N (%)	FEMALE N (%)	MALE N (%)	FEMALE N (%)
	16 (28.5%)	40 (71.5%)	38 (45.8%)	45 (54.2%)

Table 2: Facial Pain Rating Score (FPRS) of the Control and Study group at baseline and after 4 wks

FPRS Parameters	(Mean ± SD)	t	p-Value
Control Group (n=56)			
At baseline	7.30±1.37	24.794	<0.001*
After 4 wks	3.05±1.21		
Study Group (n=83)			
At Baseline	6.96 ± 1.94	16.870	<0.001*
After 4 wks	4.47 ± 1.77		

*Significant (p < 0.05)

Table 3: Comparison of Pain and Disability using MODI Score amongst Control group at baseline and after 4 wks

MODI Scale	Control Group (Mean ± SD)	t	p-Value
At baseline	40.34 ± 15.82	14.880	<0.001*
After 4 wks	11.86 ± 6.69		

*Significant (p < 0.05)

(Modi-Modified Oswestry Low Back Pain Disability Index)

Table 4: Comparison of Pain and Disability using MODI Score amongst Study group at baseline and after 4 wks

MODI Scale	Trial Group (Mean ± SD)	t	p-Value
At baseline	34.66 ± 15.39	7.420	<0.001*
After 4 wks	22.24 ± 12.76		

*Significant (p < 0.05)

Table 5: Comparison of Pain and Disability after 4 wks between control and study group participants

MODI scale	(Mean ± SD)	t	p-Value
Control group	11.86 ± 6.69	-6.247	<0.001*
Study group	22.24 ± 12.76		

*Significant (p < 0.05)

Discussion

The present study was performed to investigate the effect of Yoga and Rope & belt therapy on mild to severe lumbar spondylosis symptoms. Control group subjects did not receive any yoga and RBT intervention and were taking pharmacological treatment as prescribed by their orthopedician. All parameters were recorded at baseline and after 4 wks of pharmacological treatment. Study group subjects received yoga and RBT intervention and all parameters were recorded at baseline and after 4 wks of intervention.

As shown in Table No 1, participants in study and control group were matched for age and BMI.

Table 2 shows the intensity of back pain as perceived by Facial Pain Rating Scale. In control group Mean+-SD at baseline was 7.30+-1.37 and after 4 wks it was 3.05+-1.21. P value is < 0.001 which is highly significant. For study group, values were 6.96+-1.94 and 4.47+-1.77 at baseline and after 4 wks of intervention respectively. P is < 0.001 which is also highly significant. This indicates that in both the groups the back pain was reduced significantly after 4 wks.

Table 3 shows scores of Pains and Disbility using MODI Questionnaire amongst Control group at baseline and after 4 wks. There is highly significant reduction in total score at baseline from 40.34+-15.82 to 11.86+_6.69 after 4 wks indicating improvement in those parameters due to pharmacological treatment.

Table 4 shows scores of Pains and Disbility using MODI Questionnaire amongst study group at baseline and after 4 wks. There is highly significant reduction in total score at baseline from 34.66+- 15.39 to 22.24 +- 12.76 after 4 wks indicating improvement in those parameters due to Yoga and RBT.

Table 5 shows Comparison of pain score by MODI questionnaire after 4 wks between control and study group participants. There is highly significant reduction in total MODI score in control group as compared to study group (11.86+- 6.69 & 22.24+- 12.76) after 4 wks.

In our study, both the control and study groups showed statistically significant differences in pain reduction as shown by FPRS and MODI score at 4 wk follow up.

When control and study groups were compared at the end of 4 wks there was significant reduction in pain and disability in control group as compared to study group as they experience immediate relief after taking pharmacological treatment,

On the other hand, for those in the study group reduction in pain, stiffness and functional improvement occurred gradually from baseline through 4 wks of follow-up. Additionally, despite the fact that the results showed a greater degree of reduction in the MODI score in control group (on pharmacologic treatment) than in the study group, it is important to acknowledge the significant reduction in pain and disability in study group at baseline and after 4 wks of Yoga and RBT intervention.

As far as effect of yoga on lumbar spondylosis is concerned our results are consistent with findings of other studies.

Rajesh Kumar Manik, Ashok Kumar Mahapatra *et al*l [8] studied effect of selected Yogic Practices on pain and disability in patients with lumbar spondylitis and found that selected yoga therapy has got the better result in management of pain in lumbar spondylitis.

Vishvajeet Singh and Vikesh Kumar Kamra [9] studied the impact of yoga and physical exercises on lumbar spondylosis and concluded that yogic and physical activities contributed significantly to the reduction of lumbar spondylosis disability levels as compared to controls.

Paijwar P, Awasthi H, Gautam V *et al*l [10] wrote a Systematic Review on Effect of Selected Yogic Asanas on Lumbar Spondylosis after screening of published articles on Lumbar spondylosis and its management through Yoga and similar physical therapies, concluded that Asanas are very much effective in improvement and strengthening the muscles of back, endurance and tone of whole back. Regular practice of Yoga poses stimulates many body parts, including the organs, muscles, joints, ligaments, vessels, and nerves. This is especially beneficial for treating lumbar spondylosis.

Edith Meszaros Crow, Emilien Jeannot, Alison Trewhela [11] wrote a systematic review on Effectiveness of Iyengar yoga in treating spinal (back and neck) pain Overall six studies with 570 patients showed, that Iyengar yoga is an effective means for both back and neck pain in comparison to control groups.

To the best of our knowledge there are no studies to evaluate the effect of Rope and Belt Therapy on lumbar spondylosis. Our study evaluated the effect of both Yoga and RBT in lumbar spondylosis patients

Yoga and Rope & belt therapy as mentioned in detail above generates favorable outcomes, reduces pain and disability and improves the performance status of patients with lumbar spondylosis. Patients are willing to take this conservative therapy because they want to avoid adverse reactions of analgesic drugs.

Conclusion

The findings of this study could open up new avenues for developing standards for best clinical practices for this patient population. Improving the awareness and ability of patients seems crucial for improving their health status. As a result, we can conclude that Yoga and rope & belt training can assist lumbar spondylosis patients in undertaking self-care measures and improving their health condition by avoiding side effects of pharmacological treatment.

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Conflict of interest: Authors declare no conflict of interest

References

1. Joint Structure function. Pamela K Levantine Cynthia C Norman, 4th edition
2. Harrison's Principles of Internal Medicine, 15th edition.
3. Ritsu Tsujimoto, Yasuyo Abe: Prevalence of lumbar spondylosis its association with low back pain among community dwelling Japanese women. BMC musculoskeletal disorder,2016:1:17:493.
4. Anatomy of Movements. Blandine Calais-Germain. English Language Edition Eastland Press, Seattle, WA 98111 USA, 1993.
5. Back in Action. Sara Key. Vermilion Publisher. An imprint of Edury Press, London, 1993.
6. Wong d, Baker CM. Wong Baker Faces Pain Rating Scale, 1988. APA Psyc Tests - https://doi.org/10.1037/t05330-000
7. Fritz JM, Irrgang JJ. A comparison of a modified Oswestry Low Back Pain Disability Questionnaire the Quebec Back Pain Disability Scale. Physical Therapy,2001:81:776-788.
8. Rajesh Kumar Manik Ashok Kumar Mahapatra. Effect of Selected Yogic Practices on Pain Disability in Patients with Lumbar Spondylitis. International journal of yoga,2017:10(2):81-87
9. Vishvajeet Singh, Vikesh Kumar Kamra the impact of yoga physical exercises on lumbar spondylosis: A

comparative study. International Journal of Sanskrit Research,2024:10(5):27-33
10. Paijwar P, Awasthi H. *et al*. Effect of Selected Yogic Asanas on Lumbar Spondylosis. A Systematic Review. Journal of Orthopedics bone disorders, 2024, 8(1).
11. Edith Meszaros Crow, Emilien Jeannot, Alison Trewhela. Effectiveness of Iyengar yoga in treating spinal back, neck pain. A systematic review Int J Yoga,2015:8(1):3–14.