

A Single Arm Clinical Trial to Study the Efficacy of Sahachar Tail Sthanik Padabhyang in Gridhrasi with Special Reference to Sciatica

Dr. Kaustubh Avinash Muley¹, Dr. Nirmala Sonawane², Dr. Pramod Mandalkar³, Dr. Apeksha Umalkar⁴

MD Scholar, Department of Panchakarma¹

Guide and Professor, Department of Panchakarma²

HOD and Professor of Department of Panchakarma³

Associate Professor, Department of Panchakarma⁴

SMBT Ayurveda College and Hospital, Dhamangaon, Igatpuri, Nashik

kaustubhamuley@gmail.com, ayurved05@gmail.com

vdpramod31@gmail.com, apekshaumalkar@gmail.com

Abstract: Background - Gridhrasi, one of the Nanatmaja Vata Vyadhis described in Ayurveda, closely resembles Sciatica in contemporary medicine. It is characterized by radiating pain, stiffness, pricking sensation, and restricted movement of the lower limb, significantly affecting quality of life. Sahachar Taila, owing to its Vatahara, Vedanasthapana, and Brimhana properties, is traditionally indicated in the management of Vata disorders.

Aim -To evaluate the efficacy of Sahachar Tail Sthanik Abhyanga in the management of Gridhrasi (Sciatica).

Materials and Methods - A single-arm clinical trial was conducted on 20 patients aged 30–60 years diagnosed with Gridhrasi. Sahachar Tail Sthanik Abhyanga was administered locally for 30 minutes daily for 7 days. Assessment was performed before and after treatment using subjective parameters (Ruka, Toda, Stambha, Spandana) and the objective parameter (Straight Leg Raise Test). Statistical analysis was carried out using the Wilcoxon Signed-Rank Test, with $p < 0.05$ considered statistically significant.

Results - Statistically significant improvement was observed in all assessment parameters following treatment. Significant reductions were noted in Ruka ($Z = -3.742$, $p = 0.0001$), Toda ($Z = -3.317$, $p = 0.001$), Stambha ($Z = -3.464$, $p = 0.001$), Spandana ($Z = -3.317$, $p = 0.001$), and improvement in Straight Leg Raise Test ($Z = -3.000$, $p = 0.003$). These findings indicate marked relief in pain, stiffness, neurological symptoms, and functional mobility.

Conclusion - Sahachar Tail Sthanik Abhyanga is an effective, safe, and non-invasive therapeutic modality for the management of Gridhrasi (Sciatica). It significantly reduces pain and associated symptoms while improving lower limb function and mobility. The therapy can be considered a beneficial conservative treatment for patients with Sciatica..

Keywords: Gridhrasi, Sciatica, Sahachar Taila, Sthanik Abhyanga, Panchakarma, Vata Vyadhi, Wilcoxon Signed-Rank Test

I. INTRODUCTION

Sciatica is a common neuropathic pain syndrome characterized by radiating pain along the distribution of the sciatic nerve. It typically presents as pain originating in the lumbosacral region and extending through the buttock to the posterior



aspect of the thigh, leg, and foot. The pain may be burning, stabbing, shooting, or electric shock-like in nature and is often associated

with numbness, paresthesia, muscular weakness, and functional disability. The condition commonly results from compression or irritation of the lumbosacral nerve roots due to lumbar intervertebral disc prolapse, spinal stenosis, degenerative disc disease, or spondylolisthesis. Sciatica significantly affects mobility, occupational performance, and quality of life.^{1,2}

In Ayurveda, the clinical presentation of Sciatica closely resembles Gridhrasi, one of the Nanatmaja Vata Vyadhi described in the classics. The term Gridhrasi is derived from the word Gridhra (vulture), indicating the characteristic gait adopted by the patient due to severe pain and restricted movement. Acharya Charaka describes Gridhrasi as a condition in which pain, stiffness, pricking sensation, and twitching radiate sequentially from the gluteal region to the lower extremity.³

Similarly, Acharya Sushruta has described pain radiating from the heel to the lower limb due to aggravated Vata, which closely resembles the symptomatology of Sciatica.⁴ The classical manifestations such as Ruk (pain), Toda (pricking sensation), Stambha (stiffness), and Muhuspandana (tingling or fasciculations) show remarkable similarity with the neurological features observed in contemporary clinical practice.

Since Vata Dosha is the principal factor involved in the pathogenesis of Gridhrasi, therapies possessing Vatahara, Snigdha, and Brimhana properties are considered beneficial. Among the various treatment modalities described for Vata Vyadhi, Sthanik Abhyanga (localized therapeutic oil massage) occupies an important place. Abhyanga is regarded as an effective form of Bahya Snehana that alleviates Vata, improves tissue nourishment, enhances flexibility, and relieves pain and stiffness. Acharya Charaka states:⁵

The therapeutic effect of Sthanik Abhyanga is attributed to the Snigdha (unctuous), Ushna (warm), and Sukshma (penetrating) properties of medicated oils. Application of medicated oils such as Sahacharadi Taila, Mahanarayana Taila, and Kottamchukkadi Taila over the Kati, Sphik, and affected lower limb helps pacify aggravated Vata Dosha, reduce stiffness, improve local circulation, and facilitate neuromuscular relaxation. From a modern perspective, massage therapy has been shown to improve blood flow, decrease muscle spasm, enhance soft tissue flexibility, and reduce pain perception through neurophysiological mechanisms.⁶

Demographic data

Sciatica is an enervating condition where the patient experiences pain that radiates from the lower back and throughout the limb. Sciatica strikes 12.2% to 43% of people at some point in their existence, with the prevalence varying from 2.2 to 34.2% per year and the estimated point prevalence rate ranging from 1.6% to 13.4%. It primarily affects people between the ages of 30 and 60 and people doing heavy strenuous work and lifting heavy weights

Primary Research Question -Is Sahachar tail sthanik abhyanga effective in pain management of gridhrasi with special reference to Sciatica?

Objective -Study the effect of Sahachar Tail Sthanik Abhyanga in pain management of Gridhrasi with special reference to sciatica on subjective and objective criteria after 7 days of treatment

Null Hypothesis :- H0- Sahachar tail sthanik abhyanga is not effective in pain management of gridhrasi with special reference to Sciatica

Alternate Hypothesis :- H1- Sahachar tail sthanik abhyanga is effective in pain management of gridhrasi with special reference to Sciatica

Methodology

Type of Study- Single Arm Study

Study Setting -For present clinical study patients having classical sign and symptom of Grudhrasi who fulfils the inclusive criteria will be taken from opd and ipd of Panchakarma dept



Duration of Study-3 Months

Duration of Treatment -07 Days of Treatment and follow up on 10th day

Study Population-Patients Fulfilling the diagnostic criteria of Grudhrasi between the age group of 30-60 yr

Sample Size - 20 patients

Inclusion Criteria

- 1) Patient with classical features of gridhrasi-i.e ruk,tod,stambha,kati,uru,janu,jangha,pada.
- 2) Patient with SLR test positive at 35-75 degrees
- 3) Gender - Both Male and Female
- 4) Age Group – 30 to 60 years

Exclusion Criteria

- 1) Pregnant Women
- 2) Neoplastic / traumatic/ Infective condition of spine
- 3) Infected joints disorder
- 4) Laminectomy Patient
- 5) Recent Trauma/ Recent Spine Surgery
- 6) Patient not fit for Abhyanga
- 7) Patients with uncontrolled DM and HTN

Withdrawal Criteria -

- 1] Patients who want to discontinue treatment
- 2] Patients which are not giving proper follow up
- 3] Patients with major allergic reaction

Treatment details-

Subject–Single Group

Type –Single Arm Study

Drug–Sahachara Tail Sthanik Abhyanga

Dose–Once a day for 30 min

Study Duration–7 Days

Observation during treatment –Baseline 0th, 7th day

Route of Administration –Medicated Massage Therapy

After Treatment Follow up-7th day

Assessment Criteria -

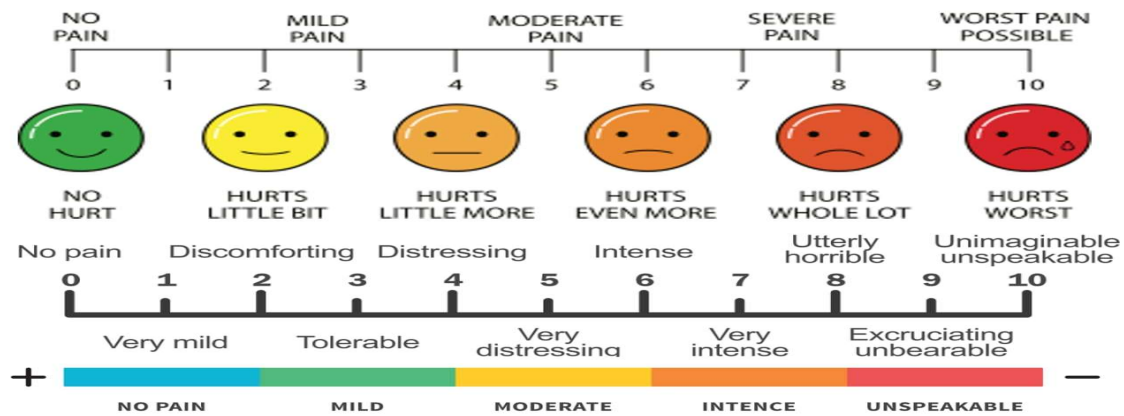
A) SUBJECTIVE CRITERIA

According to symptoms of “Gridhrasi” mentioned in the classics.

- 1) Ruka
- 2) Toda
- 3) Spandana
- 4) Stambha



Gradation of Symptoms will be assessed by Visual Analogue Scale–



1) Ruka (Pain)

Score	Particulars
0	No Pain during walking 0 Score
1	Mild Pain During walking (1-3) score
2	Moderate Pain During Walking
3	Severe Pain During Walking (8-10) score

Toda (Pricking Sensation)

Score	Particulars
0	No Pricking sensation
1	Pricking sensation with no interference in daily activities
2	Pricking sensation, tolerable but hampering daily activities
3	Peristent Pricking sensation, intolerable, hampering daily activities



Stambha (Stiffness)

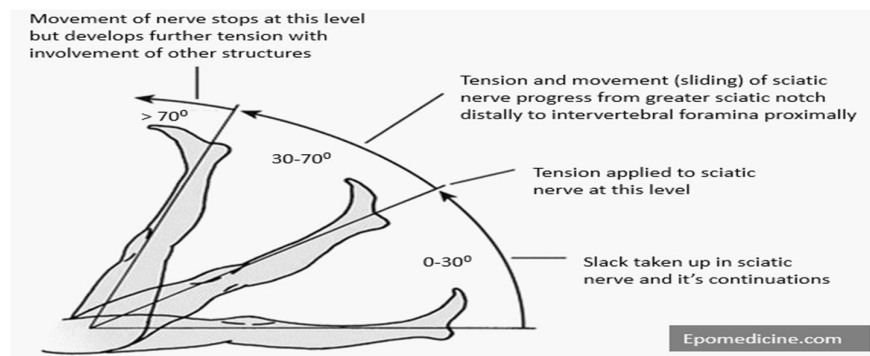
Score	Particulars
0	Absent
1	Ocassionaly 10-30mins daily
2	For 30-60min daily
3	Persistent > 60 min daily

3)Spandan (Twitching)

Score	Particulars
0	No twitching
1	Ocassionaly twitching
2	10-30 min daily
3	Persistent > 30 min daily

B) OBJECTIVE CRITERIA--

1) Straight Leg Raise Test



Grade	SLR Test in Degree
0	>70
1	55-70
2	40-55
3	30-40

Treatment Review - Abhyanga

1) Abhyanga

स्नेहनं स्नेहविष्यन्दमार्दवक्लेदकारकम् ।

स्तम्भगौरवशीतघ्नं स्वेदकरमुदाहृतम् ॥ (Charaka Samhita, Sutrashtana 22/11)^{7,8,9}

Meaning

Snehana (oleation therapy) possesses the qualities of:

Sneha – provides lubrication and unctuousness.

Vishyanda – facilitates liquefaction and movement of accumulated Doshas.

Mardava – imparts softness to tissues.

Kleda Karaka – maintains moisture and prevents dryness.

Stambha-ghna – relieves stiffness.

Gaurava-ghna – reduces heaviness.

Shita-ghna – alleviates coldness caused by aggravated Vata.

Svedakara – promotes sweating and enhances circulation.^{7,8,9}

Relevance in Gridhrasi (Sciatica)

Gridhrasi is predominantly a Vata Vyadhi, characterized by Ruk (pain), Toda (pricking pain), Stambha (stiffness), Spandana (twitching), and radiating pain from Kati (low back) to Pada (foot). According to Ayurveda, aggravated Vata causes Ruksha (dryness), Khara (roughness), and Stambha (rigidity) in the affected structures. Snehana counteracts these qualities through its Snigdha and Mridu properties.⁷⁻¹²

Therapeutic Action in Gridhrasi-⁸⁻¹²

Snehana Property	Effect in Gridhrasi
Sneha	Pacifies aggravated Vata
Mardava	Relaxes muscles and soft tissues
Kleda	Prevents tissue dryness
Stambha-ghna	Reduces stiffness in low back and leg
Shita-ghna	Relieves Vata-induced coldness and pain



Svedakara	Improves local circulation and flexibility
Vishyanda	Facilitates movement of obstructed Doshas

2) Tailam

मारुतघ्नं न च श्लेष्मवर्धनं बलवर्धनम् ।

त्वच्यमुष्णं स्थिरकरं तैलं योनिविशोधनम्॥(Charaka Samhita, Sutrasthana 13/15)⁸⁻¹²

Meaning

Oil (Taila) possesses the following qualities:

Marutaghna – alleviates Vata.

Na cha Shleshma Vardhanam – does not excessively increase Kapha.

Balavardhanam – improves strength.

Tvachyam – beneficial for skin and superficial tissues.

Ushnam – warm in potency.

Sthirakaram – imparts stability and firmness.

Yonivishodhanam – purifies and nourishes body channels.⁸⁻¹²

Relevance in Gridhrasi

Since Gridhrasi is a Vata-dominant disorder, Taila is considered the ideal medium for Abhyanga because it directly opposes the properties of aggravated Vata.⁸⁻¹²

Property	Action
Marutaghna	Relieves sciatic pain by pacifying Vata
Ushna	Reduces muscle spasm and stiffness
Balavardhana	Improves muscular strength and endurance
Sthirakara	Enhances stability of lumbar and pelvic structures
Tvachya	Facilitates transdermal nourishment
Non-Kapha aggravating	Suitable for prolonged use

Modern Interpretation of Sciatica

Sciatica is characterized by pain along the distribution of the sciatic nerve due to lumbar disc prolapse, nerve root compression, foraminal stenosis, piriformis syndrome, and degenerative spinal changes. Symptoms include radiating pain from the lower back to the foot, tingling and numbness, muscle weakness, restricted mobility, and muscle spasm. These manifestations closely resemble the Ayurvedic description of Gridhrasi¹³⁻¹⁷

Benefits of Abhyanga in Sciatica (Gridhrasi)

Abhyanga is the therapeutic application of medicated oil using systematic massage techniques.

Ayurvedic Perspective



1. Vata Shamana

The Snigdha and Ushna qualities of medicated oils counteract the Ruksha and Shita qualities of aggravated Vata.⁷⁻¹²

Result: Reduction in pain, stiffness, and restricted movement.

2. Stambha Hara

Massage softens contracted muscles and ligaments.⁷⁻¹²

Result: Improved flexibility and gait.

3. Srotoshodhana

Abhyanga helps remove obstruction in channels and promotes normal movement of Vata.⁷⁻¹²

Result: Better neuromuscular functioning.

4. Balya Effect

Regular oil massage nourishes Mamsa, Asthi, and Majja Dhatus.⁸⁻¹²

Result: Improved structural support of the spine and lower limbs.

5. Nidra and Manasika Benefits

Abhyanga calms the nervous system and promotes relaxation.¹⁸⁻²⁰

Result: Better sleep and reduced pain perception.

Modern Scientific Explanation of Abhyanga in Sciatica

Improved Blood Circulation-Massage increases local blood flow to muscles and connective tissues.¹⁸⁻²⁰

Effect: Enhanced oxygen delivery and removal of inflammatory metabolites.

Reduction of Muscle Spasm-Mechanical pressure relaxes hypertonic muscles around the lumbar spine and gluteal region.¹⁸⁻¹⁹

Effect: Reduced compression on the sciatic nerve.

Pain Gate Mechanism-Stimulation of cutaneous mechanoreceptors activates large sensory fibers, which inhibit pain transmission at the spinal cord level according to the Gate Control Theory.²¹

Effect: Immediate reduction in pain perception.

Enhanced Lymphatic Drainage-Massage promotes lymphatic circulation.¹⁸⁻²⁰

Effect: Reduced local inflammation and edema.

Improved Tissue Elasticity-Oil application and massage improve flexibility of fascia, tendons, and muscles.¹⁸⁻¹⁹

Effect: Better range of motion and reduced stiffness.

Parasympathetic Activation-Abhyanga reduces sympathetic overactivity and stress hormone levels.²⁰

Effect: Muscle relaxation and long-term pain relief.

The Charaka descriptions of Snehana and Taila provide a strong theoretical basis for the use of Abhyanga in Gridhrasi.

Through its Vata-shamaka, Stambha-hara, Balya, and Srotoshodhaka actions, Abhyanga addresses the fundamental Ayurvedic pathology of Gridhrasi.⁷⁻¹² From a modern perspective, it improves circulation, reduces muscle spasm, modulates pain pathways, enhances tissue flexibility, and promotes neuromuscular relaxation.¹⁸⁻²¹

Thus, Abhyanga serves as a valuable non-invasive therapeutic intervention in the comprehensive management of sciatica¹³⁻¹⁷

Probable Mode of Action of Abhyanga in Gridhrasi (Sciatica)

According to Ayurvedic principles, the normal functioning of joints and locomotor activities is governed primarily by Vyana Vayu and Shleshaka Kapha. In Gridhrasi (Sciatica), aggravated Vata Dosha, particularly due to its Ruksha (dry), Khara (rough), Sheeta (cold), and Sthambha (stiffening) qualities, produces pain, stiffness, restricted movement, and functional impairment of the affected limb. Abhyanga, performed with warm medicated oil, acts as an effective therapeutic intervention by counteracting these pathological changes.



1. Pacification of Vata Dosha

The medicated oils used in Abhyanga possess predominantly Snigdha (unctuous), Ushna (warm), Mridu (softening), and Guru (nourishing) qualities, which are antagonistic to the qualities of aggravated Vata. Through regular application and gentle massage, the dryness and roughness of tissues are reduced, leading to restoration of tissue lubrication and flexibility. The warmth of the oil further alleviates coldness and rigidity, thereby reducing pain and stiffness associated with Gridhrasi.

2. Nourishment of Shleshaka Kapha

Shleshaka Kapha is responsible for maintaining lubrication, stability, and smooth movement of joints. In chronic Vata disorders, depletion or dysfunction of Shleshaka Kapha may contribute to joint discomfort and restricted mobility. The oleation provided by Abhyanga replenishes the lubricating environment of the joints and surrounding tissues, thereby supporting normal joint function and improving the range of motion.

3. Improvement of Srotas Patency

Vitiated Vata can cause obstruction and impaired circulation within the bodily channels (Srotas), leading to pain, stiffness, and reduced tissue nourishment. The combined effects of massage and warmth help remove Srotorodha (channel obstruction) by enhancing circulation and facilitating proper movement of bodily fluids. Improved channel patency allows better nourishment of tissues and facilitates removal of accumulated metabolic waste products, resulting in relief from stiffness and improved functional mobility.

4. Transdermal Absorption of Medicated Oil

From a modern scientific perspective, the skin serves as a semi-permeable membrane. The outermost layer, the epidermis, contains a lipid-rich barrier through which lipid-soluble substances can penetrate more readily. Medicated oils act as effective carriers for bioactive phytoconstituents because their lipophilic nature facilitates passage through the skin.

Massage increases skin hydration and softens the stratum corneum, thereby enhancing permeability. Once absorbed, the active constituents may reach deeper tissues through local circulation and exert anti-inflammatory, analgesic, and tissue-nourishing effects. Thus, the oil serves not only as a lubricant but also as a medium for delivering therapeutic substances to underlying structures.

5. Effects of Thermal Stimulation

The warmth generated during Abhyanga produces a mild sudation (Swedana-like effect), which contributes significantly to symptom relief. Heat promotes local vasodilation of capillaries and arterioles, increasing blood circulation in the affected region. Enhanced blood flow improves oxygen and nutrient delivery while facilitating the removal of inflammatory mediators and metabolic waste products.

The rise in local temperature also accelerates cellular metabolic activity, improving tissue repair and recovery processes. Furthermore, heat reduces muscle spasm and increases the extensibility of collagen fibers, leading to relaxation of muscles and connective tissues. This reduction in muscular tension decreases nerve compression and contributes to improved mobility and pain relief.

6. Neuromuscular Effects

The mechanical stimulation produced during massage activates cutaneous mechanoreceptors and sensory nerve endings. This stimulation may modulate pain transmission through neural pathways, reducing the perception of pain. Improved circulation and relaxation of paraspinal, gluteal, and lower limb muscles help decrease pressure on the sciatic nerve, thereby alleviating radiating pain and associated symptoms.

Abhyanga in Gridhrasi acts through a multidimensional mechanism involving Vata shamana, nourishment of Shleshaka Kapha, clearance of Srotorodha, enhancement of transdermal drug absorption, improvement of local circulation, muscle relaxation, and neuromodulation of pain pathways. The combined Snehana and mild Swedana effects restore tissue lubrication, reduce stiffness, improve joint mobility, and alleviate sciatic pain, making Abhyanga a valuable therapeutic modality in the management of Gridhrasi.



General Observation:

Descriptive Statistics of parameters:

1. SLR

Table: Distribution of patients before and after treatment for parameter SLR

SLR	BT	AT
Grade 0	0	5
Grade 1	12	11
Grade 2	8	4
Grade 3	0	0

Before treatment, 12 patients were in grade 1 and 8 patients were in grade 2. No patient was observed in grade 0 or grade 3.

After treatment, 5 patients shifted to grade 0, 11 patients were in grade 1, and 4 patients remained in grade 2. No patient was observed in grade 3.

Before treatment, most patients were in grade 1 and grade 2, whereas after treatment the majority shifted to grade 0 and grade 1, indicating improvement in SLR.

Figure No. : Distribution of patients before and after treatment for parameter SLR

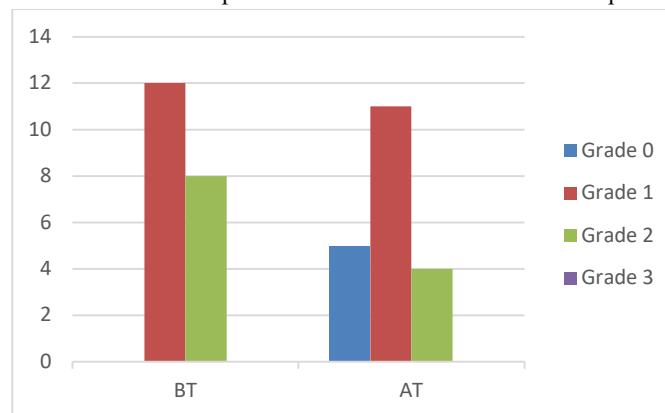


Table: Descriptive Statistics For Parameter SLR

SLR		
Trial Group	BT	AT
Mean	1.40	0.95
SD	0.50	0.69
Median	1	1
Mode	1	1



2. Ruka

Table: Distribution of patients before and after treatment for parameter Ruka

Ruka	BT	AT
Grade 0	2	12
Grade 1	13	7
Grade 2	5	1
Grade 3	0	0

Before treatment, 13 patients were in grade 1, 5 patients were in grade 2, and 2 patients were in grade 0. No patient was observed in grade 3.

After treatment, 12 patients shifted to grade 0, 7 patients were in grade 1, and 1 patient remained in grade 2. No patient was in grade 3.

Before treatment, most patients were in grade 1, whereas after treatment most patients shifted to grade 0, showing marked reduction in pain.

Figure : Distribution of patients before and after treatment for parameter Ruka

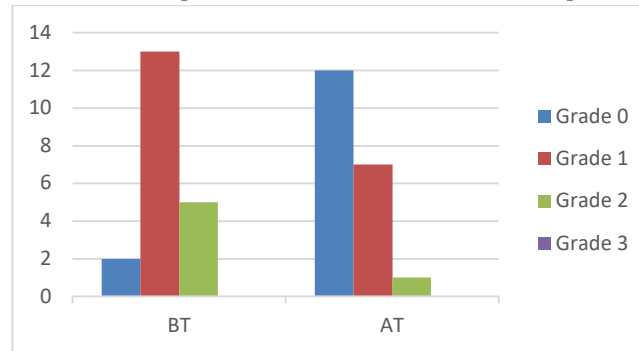


Table: Descriptive Statistics For Parameter Ruka

Ruka		
Trial Group	BT	AT
Mean	1.15	0.45
SD	0.59	0.60
Median	1	0
Mode	1	0

3. Toda

Table: Distribution of patients before and after treatment for parameter Toda

Toda	BT	AT
Grade 0	4	10
Grade 1	11	10
Grade 2	5	0
Grade 3	0	0



Before treatment, 11 patients were in grade 1, 5 patients were in grade 2, and 4 patients were in grade 0. No patient was observed in grade 3.

After treatment, 10 patients were in grade 0 and 10 patients were in grade 1. No patient remained in grade 2 or grade 3.

Before treatment, grade 1 predominated, whereas after treatment patients were equally distributed between grade 0 and grade 1, indicating significant reduction in Toda.

Figure: Distribution of patients before and after treatment for parameter Toda

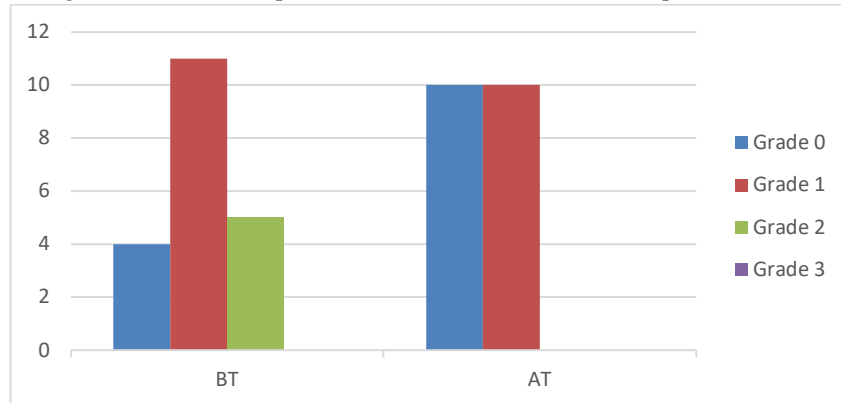


Table: Descriptive Statistics For Parameter Toda

Toda		
Trial Group	BT	AT
Mean	1.05	0.50
SD	0.69	0.51
Median	1	0.5
Mode	1	0

4. Stambha

Table: Distribution of patients before and after treatment for parameter Stambha

Stambha	BT	AT
Grade 0	0	11
Grade 1	18	8
Grade 2	2	1
Grade 3	0	0

Before treatment, 18 patients were in grade 1 and 2 patients were in grade 2. No patient was observed in grade 0 or grade 3.

After treatment, 11 patients shifted to grade 0, 8 patients were in grade 1, and 1 patient remained in grade 2. No patient was observed in grade 3.

Before treatment, most patients were in grade 1, whereas after treatment the majority shifted to grade 0, indicating improvement in stiffness.



Figure: Distribution of patients before and after treatment for parameter Stambha

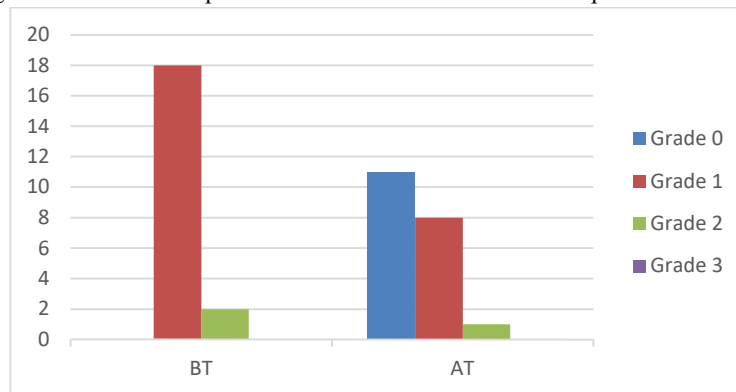


Table: Descriptive Statistics For Parameter Stambha

Stambha		
Trial Group	BT	AT
Mean	1.10	0.50
SD	0.31	0.61
Median	1	0
Mode	1	0

5. Spandan

Table: Distribution of patients before and after treatment for parameter Spandan

Spandan	BT	AT
Grade 0	2	10
Grade 1	15	10
Grade 2	3	0
Grade 3	0	0

Before treatment, 15 patients were in grade 1, 3 patients were in grade 2, and 2 patients were in grade 0. No patient was in grade 3.

After treatment, 10 patients shifted to grade 0 and 10 patients were in grade 1. No patient remained in grade 2 or grade 3.

Before treatment, grade 1 predominated, whereas after treatment most patients shifted to grade 0 and grade 1, showing reduction in Spandan.



Figure: Distribution of patients before and after treatment for parameter Spandan

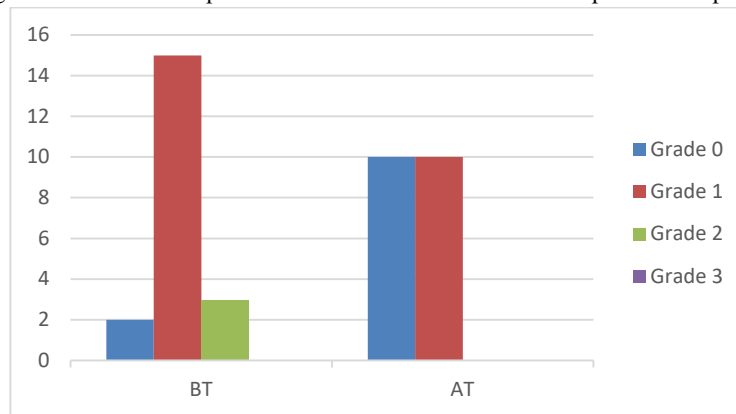


Table: Descriptive Statistics For Parameter Spandan

Spandan		
Trial Group	BT	AT
Mean	1.05	0.50
SD	0.51	0.51
Median	1	0.5
Mode	1	0

Statistical analysis within groups

To examine the effectiveness of Drug, a within-group analysis was conducted by comparing Before & After scores.

H0 (Null Hypothesis): There is no significant difference between Before & After Scores

H1 (Alternative Hypothesis): There is a significant difference between Before & After scores.

The Wilcoxon Signed-Rank Test was employed for the data on ordinal scale. This non-parametric test is appropriate for comparing paired observations before and after an intervention within the same group.

Comparison of before and after treatment parameter values with Wilcoxon Signed Rank Test

Table: Analysis of Effect of treatment with Wilcoxon Signed Rank Test

Parameter	N	Z value	p Value	Significance
SLR	20	-3	0.003	Significant
Ruka	20	-3.742	0.0001	Significant
Toda	20	-3.317	0.001	Significant
Stambha	20	-3.464	0.001	Significant
Spandan	20	-3.317	0.001	Significant

1. Straight Leg Raising Test (SLR)

Result

The Wilcoxon Signed Rank Test showed a Z value of -3.000 with a p value of 0.003 (< 0.05), indicating a statistically significant difference between before-treatment and after-treatment scores.



Interpretation

Before treatment, most patients were distributed in Grade 1 and Grade 2, indicating restricted SLR. After treatment, a noticeable shift was observed toward Grade 0 and Grade 1, reflecting improvement in leg raising ability. The statistically significant p value confirms that this shift was consistent across patients and not due to random variation.

Inference

The treatment produced a statistically significant improvement in SLR, indicating enhanced functional mobility after therapy.

2. Ruka (Pain)

Result

Wilcoxon Signed Rank Test revealed a Z value of -3.742 with a p value of 0.0001 (< 0.05), showing a highly significant reduction in pain scores.

Interpretation

At baseline, the majority of patients were in Grade 1 and Grade 2, reflecting mild to moderate pain. After treatment, most patients shifted to Grade 0, with very few remaining in higher grades. The highly significant p value demonstrates a uniform and marked reduction in pain severity across the study population.

Inference

The intervention was highly effective in reducing Ruka, producing a statistically significant decrease in pain intensity.

3. Toda (Pricking Pain)

Result

The Wilcoxon Signed Rank Test showed a Z value of -3.317 and a p value of 0.001 (< 0.05), indicating statistically significant improvement.

Interpretation

Before treatment, Grade 1 predominated, while some patients were in Grade 2. After treatment, all patients shifted to Grade 0 or Grade 1, with complete absence of Grade 2 and Grade 3. The statistically significant result indicates that the reduction in Toda was consistent and meaningful.

Inference

The treatment resulted in a statistically significant reduction in Toda, indicating effective control of pricking pain.

4. Stambha (Stiffness)

Result

Wilcoxon Signed Rank Test yielded a Z value of -3.464 with a p value of 0.001 (< 0.05).

Interpretation

Initially, the majority of patients were in Grade 1, with some in Grade 2, showing notable stiffness. After treatment, most patients shifted to Grade 0, with very few remaining in higher grades. The significant p value confirms a true reduction in stiffness rather than a chance finding.

Inference

The therapy produced a statistically significant improvement in Stambha, indicating reduction in stiffness.

5. Spandan (Twitching Sensation)

Result

The Wilcoxon Signed Rank Test showed a Z value of -3.317 and a p value of 0.001 (< 0.05), demonstrating statistically significant improvement.



Interpretation

Before treatment, Grade 1 predominated, while some patients were in Grade 2. After treatment, patients shifted predominantly to Grade 0 and Grade 1, with complete absence of higher grades. The significant p value confirms consistent improvement across participants.

Inference

The intervention produced a statistically significant reduction in Spandan, indicating effective symptom relief.

Overall effect of treatment:

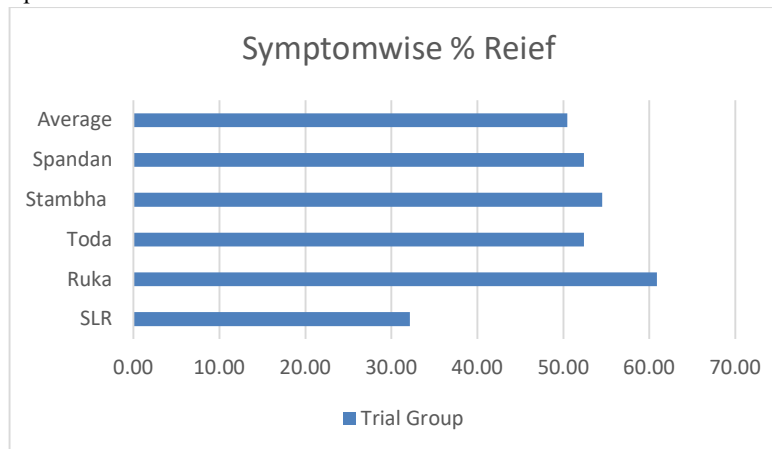
Effect of therapy according to % relief in parameters

Table: % relief in parameters

Symptoms	Trial Group			
	BT	AT	Relieved	% Relief
SLR	28	19	9	32.14
Ruka	23	9	14	60.87
Toda	21	10	11	52.38
Stambha	22	10	12	54.55
Spandan	21	10	11	52.38
Average % Relief				50.46

Average relief in symptoms was 50.46%.

Figure No. % relief in parameters



Distribution of Patients according to relief:

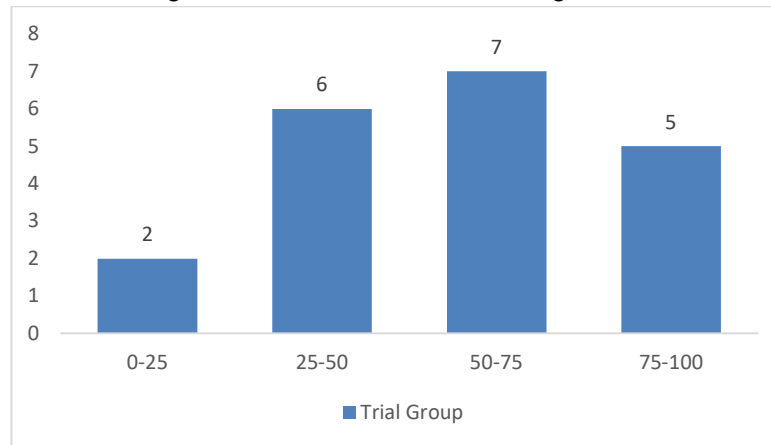
Table: Distribution of Patients according to relief

Improvement	Trial Group	%
0-25	2	10%
25-50	6	30%
50-75	7	35%
75-100	5	25%
Total	20	100%



Out of 20 patients, 2 patients (10%) showed 0–25% improvement, 6 patients (30%) showed 25–50% improvement, 7 patients (35%) showed 50–75% improvement, and 5 patients (25%) showed 75–100% improvement. Thus, the majority of patients (60%) achieved moderate to marked improvement (50–100%), while a smaller proportion showed mild improvement.

Figure: Distribution of Patients according to relief



FINAL INFERENCE

Within-group statistical analysis using the Wilcoxon Signed Rank Test demonstrated statistically significant improvement in all parameters assessed in this single-group study. The percentage relief and patient distribution further support a moderate to marked overall therapeutic effect, confirming the effectiveness of the intervention in improving clinical symptoms.

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