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Comparative Evaluation of CSET (Chakrasiddh Spine Expert Therapy) and Standard Physiotherapy in Management of Cervical Spondylosis

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ABSTRACT

Background: *Cervical spondylosis (CS) or Ceganavatham in Siddha medicine is a common degenerative disorder of the cervical spine that leads to chronic neck pain, stiffness, and functional limitations. Conservative treatment is the preferred approach, with physiotherapy being widely practiced however, achieving long-term benefit is often inadequate. Siddha-based Chakrasiddh Spine Expert Therapy (CSET), a multidimensional approach not only targets musculoskeletal alignment and pain reduction but also addresses the underlying imbalances described in Siddha medicine, thereby promoting long-term healing in cases of CS.*

Objective: *This study aimed to compare the effectiveness of CSET with conventional physiotherapy rehabilitation program in reducing pain, improving cervical functional outcomes, and enhancing quality of life in female patients with cervical spondylosis.*

Methods: *A randomized controlled trial was conducted which included 60 female patients with cervical spondylosis in Chakrasiddh OPD assigned into two groups: Group A (n=30) received CSET, and Group B (n=30) received supervised physiotherapy for 8 weeks. Pain intensity was measured using the Visual Analogue Scale (VAS), functional disability using the Neck Disability Index (NDI), and cervical range of motion (ROM) using a goniometric cervical measurement system. Assessments were conducted pre- and post-intervention. Statistical analysis was performed using paired and unpaired t-tests with significance set at $p<0.05$.*

Results: *Both group patients demonstrated significant improvement in outcome scales from baseline ($p<0.05$), however, the results of Group A (CSET) showed greater reduction in pain, disability, flexibility and enhanced quality of life compared to Group B (physiotherapy). The mean VAS reduction was 5.6 in CSET versus 3.8 in physiotherapy, and the mean NDI reduction was 14.2 versus 9.0, respectively. CSET also produced superior gains in cervical ROM across flexion, extension, lateral flexion, and rotation, along with reported improvements in sleep quality, posture, and daily activity endurance.*

Conclusions: *The findings suggest that CSET is more effective than conventional physiotherapy in alleviating pain, reducing disability, and improving cervical mobility in patients with cervical spondylosis. CSET may serve as a comprehensive, non-invasive, and integrative therapeutic option for managing cervical spine disorders. Further large-scale randomized controlled trials are recommended to validate these results.*

Keywords

Cervical spondylosis, Siddha medicine, Chakrasiddh Spine Expert Therapy (CSET), Physiotherapy, Varmam, Thokkanam, Non-surgical treatment, Spinal rehabilitation.

Introduction

Cervical spondylosis (CS) is a common degenerative condition primarily affecting the zygapophysial (facet) joints of the cervical vertebrae that significantly impairs daily activities and quality of life of the individuals. Clinical manifestations vary widely, ranging from localized neck and shoulder pain to radiating symptoms involving the hands, back, along with paresthesia and muscle weakness in the limbs. Other common symptoms associated with cervical include numbness in the hands, nausea, vomiting, and in some vertigo [1]. These may lead to stiffness, restricted mobility, and neurological disturbances; more advanced stages cause spinal cord compression, resulting in myelopathy or vertebrobasilar insufficiency [2]. Although often considered an age-related condition, lifestyle factors such as sedentary work, prolonged computer use, poor posture, and obesity have led to its earlier onset, even among younger adults. Radiological evidence indicates that approximately 50% of individuals demonstrate asymptomatic cervical spondylitis changes by the age of 40, and this prevalence rises to nearly 85% by the age of 60 [3]. Studies indicate that CS affects both genders but tends to be slightly more prevalent and severe in men before the age of 45, whereas in older populations, the prevalence is higher in women, likely due to postmenopausal degenerative changes [4]. Given this increasing trend, CS has emerged as a growing health concern both nationally and globally due to its high and steadily rising prevalence with advancing age. It affects millions of individuals worldwide and contributes significantly to healthcare costs and productivity loss. The resulting pain, stiffness, and functional limitations greatly diminish quality of life, work capacity, and overall well-being, making cervical spondylosis a growing socioeconomic and public health challenge [5].

Pathophysiology and Clinical Presentation

The pathogenesis of CS is complex and multifactorial. Progressive intervertebral disc degeneration, primarily due to aging, dehydration and loss of intervertebral discs, results in diminished disc height and altered load distribution across the cervical spine. These biomechanical changes trigger compensatory osteophyte formation, contributing to segmental instability. Concurrently, facet joint hypertrophy and thickening of the ligamentum flavum further reduce the dimensions of the spinal canal and intervertebral foramina, leading to mechanical compression of neural structures [1].

Clinically, CS manifests across a wide symptom spectrum. The predominant complaint is chronic axial neck pain and stiffness, which may extend to the shoulders and upper thoracic region and sometimes in dorsal region. Neurological involvement often presents as cervical radiculopathy, characterized by radiating pain, paresthesia, and motor weakness in the upper extremities secondary to nerve root compression. In advanced stages, cervical myelopathy may develop, presenting with impaired gait, fine motor dysfunction of the hands, and sphincter disturbances [6]. Additional features such as cervicogenic headaches, vertigo, and vertebrobasilar insufficiency reflect the integrative involvement of musculoskeletal, neurological, and vascular systems in disease progression [2].

Management Approaches of CS

Management strategies for cervical spondylosis encompass a spectrum of approaches, including physiotherapy, manipulative and osteopathic therapies, and surgical interventions such as decompression or spinal fixation is generally reserved for patients with severe neurological compromise or those unresponsive to conservative measures [6]. However, majority of patients are managed conservatively with a combination of pharmacological therapy, physiotherapy, and lifestyle modification. Pharmacological agents, including nonsteroidal anti-inflammatory drugs (NSAIDs), muscle relaxants, and neuropathic pain modulators, provide symptomatic relief but are often associated with side effects such as gastrointestinal upset, renal impairment, and long-term dependency [7]. These limitations necessitate the integration of non-pharmacological approaches that can offer sustained benefits without adverse effects.

Among conservative options, physiotherapy has demonstrated notable benefits in preserving cervical range of motion, maintaining soft tissue flexibility, strengthening weakened musculature, and enhancing spinal stability. Common physiotherapy techniques include: dynamic neck exercises that improves flexibility and mobility, isometric exercises which works on strengthening weak cervical muscles, manual therapy and traction relieving nerve compression and restore alignment and electrotherapy modalities such as TENS and ultrasound, that helps reduce pain and inflammation [8]. Physiotherapy, though plays a keen role in managing CS; outcomes often remain limited and long-standing results are not achieved. A notable limitation of conventional physiotherapy is the delayed onset of therapeutic benefits, as patients often require multiple and sustained treatment sessions before perceiving significant reductions in pain and functional impairment. Consequently, the overall course of management may become prolonged and demanding. Furthermore, the financial burden associated with frequent physiotherapy sessions can render such treatment economically restrictive, thereby limiting accessibility for patients with inadequate financial resources or limited healthcare coverage [9]. Moreover, conventional physiotherapy primarily targets the musculoskeletal component, often overlooking the mind-body connection, lifestyle factors, and energy imbalances. This demands the need for integrative approaches that address both structural and functional aspects of the disorder to obtain a long-standing outcome.

In recent decades, there has been a growing interest in complementary and alternative medicine (CAM) modalities for musculoskeletal disorders, including cervical spondylosis. CAM approaches, including massage, manipulation, mobilization, exercise, herbal medicines, acupuncture, and cognitive behavioral approach, which are increasingly favored by patients with the hope of alleviating pain-related symptoms with few adverse events and cost-effectiveness [10,11]. Alternative practices such as Ayurveda [12], Siddha [13], Yoga, Acupuncture [11], and Chiropractic therapy [14] have also gained popularity in recent times, either as

standalone treatments or in combination with physiotherapy. These approaches emphasize holistic healing by addressing not only physical dysfunction but also lifestyle, diet, and psychosomatic contributors to disease.

Siddha Medicine and Chakrasiddh Spine Expert Therapy (CSET)

The Siddha system of medicine, one of the oldest traditional healing systems of South India, has gained increasing recognition for its role in musculoskeletal rehabilitation with lasting results. Rooted in the principles of energy balance and holistic well-being, Siddha therapy employs a patient-centric strategy through a range of external and internal modalities to restore body equilibrium that promotes functional recovery, pain reduction, and reintegration into daily life activities. Cervical spondylosis (CS) or *Ceganavatham* in Siddha medicine is a common degenerative disorder of the cervical spine that leads to chronic neck pain, stiffness, and functional limitations [13,15].

CSET designed by Chakrasiddh holistic centre, Hyderabad; based on ancient siddha principles; provides a more integrative therapeutic framework in treating musculoskeletal disorders like CS. It offers a holistic, non-invasive approach that often demonstrates earlier symptomatic relief through targeted manual manipulations, energy rebalancing, postural correction, and individualized lifestyle modifications thereby restoring spinal alignment and neuromuscular coordination [16]. The fundamental philosophy behind CSET is to initiate the body's innate self-healing capacity by addressing structural, functional, and energetic imbalances simultaneously. Central to this approach is Marma or Varmam therapy, which targets vital bio-energetic points believed to regulate the flow of life energy. Stimulation of these points through precise techniques is intended to release blocked energy channels caused by trauma or any traumatic incident, alleviate localized stress, and accelerate healing responses [17]. In addition, the incorporation of diet-based interventions and therapeutic exercises contributes to tissue regeneration and improved muscular support, particularly around weight-bearing joints such as the cervical spine [18]. By addressing both the biomechanical and energy imbalances underlying cervical dysfunction, CSET not only reduces dependency on prolonged treatment sessions but also provides a cost-effective rehabilitation strategy, thereby enhancing accessibility and long-term adherence and overall quality of life.

Need for Comparative Study

Given the rising global burden of cervical spondylosis and the limitations of current conservative management strategies, there is a compelling need to explore innovative, integrative approaches. Existing literature supports the benefits of physiotherapy in improving cervical function, while anecdotal and case-based evidence suggests significant outcomes with Siddha-based therapies such as CSET. While physiotherapy emphasizes only on biomechanical correction and muscle re-education, CSET combines biomechanical alignment with neuromuscular reactivation and energy balancing, resulting in improvements in different parameters as pain scores, cervical mobility, posture, sleep quality, and overall functional capacity [16]. Numerous studies have been documented for the effectiveness of physiotherapy-based rehabilitation programs in managing cervical spondylosis however, limited research has explored the comparative impact of physiotherapy with integrative Siddha-based approaches such as CSET in the management of cervical spondylosis. Recent research studies have shown Siddha therapy as a modality with better outcome as compared to physiotherapy so there is a paucity of robust comparative clinical studies evaluating their relative efficacy.

Aim and Objective of Study

The aim of this study is to evaluate and compare the clinical effectiveness of Physiotherapy Rehabilitation and Siddha-based Chakrasiddh Spine Expert Therapy (CSET) in female patients with Cervical Spondylosis (CS), focusing on their ability to reduce pain, improve cervical spine function, and enhance overall quality of life.

The objective of the research is to assess the effectiveness of CSET and physiotherapy program in alleviating pain and improving cervical mobility among female patients with cervical spondylosis; to compare the outcomes between both groups and to establish whether CSET can serve as a safe, holistic, and sustainable non-surgical alternative in the management of cervical spondylosis. The research will provide evidence-based insights of both therapies and will highlight into more effective, economical and sustainable management strategies for cervical spondylosis.

Research Methodology

Participants and Settings

This comparative clinical study was conducted among female patients who attended Chakrasiddh Holistic Healing Centre, Hyderabad between January 2024 and June 2024 with complaints of neck pain. A total of 60 participants who fulfilled the eligibility criteria were enrolled and randomly allocated into two groups: Group A (n=30) received CSET, while Group B (n=30) received physiotherapy rehabilitation program.

The study protocol was approved by the Institutional Ethical Review Committee of Chakrasiddh, and all participants were informed about the objectives of the study. Written informed consent was obtained before enrolment. The participants for the intervention were
selected based upon the following criteria [7]:

Inclusion Criteria

- Female patients aged 30–60 years
- Body Mass Index (BMI) < 32 kg/m²
- Clinically diagnosed cervical spondylosis with chronic neck pain (> 8 weeks duration)
- Willingness to undergo therapy and complete follow-up

Exclusion Criteria

- Acute neurological or orthopedic conditions
- Recent cervical fractures or dislocations

- Severe cardiovascular disease, uncontrolled diabetes, or systemic illness
- Patients with vertigo, vertebrobasilar insufficiency, or pregnancy
- Prior cervical spine surgery

Therapeutic Interventions

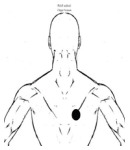
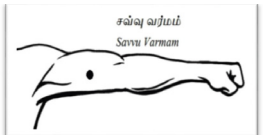
All the participants were advised to stop any medications they were taking during the 4-week course of therapy for standardization. Both groups - Group A (receiving CSET), and Group B (receiving physiotherapy rehabilitation program) were intervened with the said program for 20 days, 5 days in a week for 4 weeks duration followed by supervised maintenance advice.

Group A (30): Chakrasiddh Spine Expert Therapy (CSET)

Group A or the intervention group participants was given CSET for 45 minutes. The therapy included:

- **Marma/Varmam therapy** [13] **& Thokkanam** [19]**:** In this, stimulation of cervical and upper back region were done to relieve stiffness and restore flexibility. Varmam therapy may help alleviate pain, reduce stiffness, and improve circulation by stimulating Varmam points (Table-1) to encourage energy flow (prana or vital energy). Thokkanam or therapeutic pressure stroke/massage technique can help ease muscle tightness and support mental relaxation, essential for managing cervical spondylosis symptoms. Azhutham (Pressing), Izhutham (Stretching), Thadavu (Rubbing), and Pidithal (Holding and Releasing) are different techniques done gently for limited time period (10-12 minutes) to achieve favorable results.
- **Energy healing sessions** [17]**:** Siddha practitioner performed two biofield alignment practices at week 2nd and 4th to reduce stress and muscular spasm. These are given in all intervention group for 10 mins duration for removing blockages associated with trauma, emotional or past incident.
- **Mild rehabilitative neck exercises:** Postural training, isometric cervical strengthening, and mobility drills tailored to individual tolerance [20]. The participants were allotted 15-20 minutes of exercises for 3 days a week with trained physical therapist. Sessions began with educating participants for correct spinal postures by placing patients in standing position and correcting their sitting style to enhance the neck curvature. Each exercise program composed of 5-mins warm-up exercises, 10-mins strengthening exercises, 5-min Kaya-karpam [21] or mild stretching exercises for neck, and some breathing exercises to de-stress.
- **Siddha dietary modifications:** Anti-inflammatory and light diet was formulated.

Table 1: Varmam points for CS (*ref fromTraditional and Complementary Medicine Practice Guideline on Varmam Therapy).

Varmam points [19,22]	**Location**	**Therapeutic Effect**	**Diag location of Varmam pt***
Mudicchu Varmam	Prominence corresponding to C7 vertebra	helps to relieve muscular tension, enhance blood and energy circulation, and reduce inflammation in the cervical joints.	
Kakkatia Varmam	Supra clavicular fossa on both sides	improving neck flexibility, reducing radiating pain to the upper limbs, and improving shoulder mobility.	
Kaichulukki Varmam	three fingerbreadths laterally on both sides of the spinal column	relief from radiating arm pain, shoulder heaviness, and grip weakness	
Chippi Varmam	Found below shoulders close to upper thoracic and lower cervical region	Enhances ROM in neck rotation, flexion, and extension. It also alleviates referred pain to the scapular and shoulder region.	
Savvu Varmam	In The Medial Border Of The Humerus	It balances *Vatha energy*, enhances neuromuscular coordination, and restores the functional mobility of the cervical spine.	
Kavuli Varmam	In The Web Between the Thumb And the Index Finger	Improve grip strength and hand coordination, relieves radiating pain, numbness	
Nadi Varmam (Energy Pathway Points)	Various points along the energy pathways of the body	to form an effective energy circuit or energy rebalancing	

Group B (30): Physiotherapy [8,20]

Patients underwent standard physiotherapy protocols for cervical spondylosis under trained physical trainer at centre for 45 mins for 5 days a week:

- **Dynamic neck and shoulder exercises:** Flexion, extension, lateral flexion, and rotation of neck and shoulder clock wise and anticlock wise in both directions by positioning his hand above the shoulder (8–10 repetitions, 3 times/week, for 8 weeks).
- **Isometric exercises:** Performed in sitting for flexion, extension, side flexion, and rotation (5–10 reps, 6-sec hold, 3 sessions/week, 8 weeks).
- **Postural and ergonomic training** for neck care at work and home.

Supervised sessions were provided at the clinic, with patients encouraged to continue home-based exercises.

Assessment Measures

All patients diagnosed with Cervical Spondylosis enrolled in the trial underwent a comprehensive initial assessment at the Physiotherapy Department of the Chakrasiddh Centre. During the baseline evaluation, demographic information (age, gender, occupation), physical characteristics (weight, height, BMI, and habitual activities, jobs), and clinical details including current medications and any previous physiotherapy or other alternative treatments were documented.

The physical activity level of each participant was measured using the International Physical Activity Questionnaire–Short Form (IPAQ-7) [8] at baseline. All assessments were conducted pre- and post-intervention, following a 6-week therapy period involving either CSET or conventional physiotherapy. The outcome assessor remained blinded to group allocation throughout the study to maintain the validity and reliability of the findings. To evaluate the impact of therapy, standardized outcome measures were employed: pain intensity was assessed using the Visual Analogue Scale (VAS), functional disability was evaluated with the Neck Disability Index (NDI) [23], and cervical range of motion (ROM) [24] was measured using a goniometric cervical measurement system.

- **Pain Severity** – Pain intensity was assessed using the Visual Analog Scale (VAS, 0–10 cm), where 0 = no pain and 10 = worst possible pain.
- **Neck Disability** – Functional disability was evaluated using the Neck Disability Index (NDI); total score classified as none (0–4), mild (5–14), moderate (15–24), severe (25–34), or complete disability (>34).
- **Cervical Range of Motion (ROM):** Flexion, extension, lateral flexion, and rotation measured with a cervical goniometer (in degrees).
- **Quality of Sleep & Daily Functioning:** Assessed with a structured in-house questionnaire comprising of questions related to sleep disturbance, intensity of pain while sleeping or any activity, daily tasks hindered like combing, closing buttons etc.

Statistical Analysis

Data were analyzed using SPSS version 25.0. Descriptive statistics (mean ± SD) were calculated for all variables. Paired t-test was applied to compare pre- and post-treatment scores within groups, while independent t-test compared differences between CSET and physiotherapy groups. A p-value < 0.05 was considered statistically significant.

Results

A total of 60 female patients (n=30 in each group) completed the study without dropout. Baseline characteristics such as age, BMI, pain duration, and disability scores were comparable between both groups ($p > 0.05$). Most participants were middle-aged females (mean age ~42 years) with chronic cervical pain (>1 year) and BMI in the overweight range. Approximately 70% of participants had previously used at least one form of complementary or alternative medicine (CAM) before participating in the study including physiotherapy sessions. Most reported only temporary or partial symptom relief, the leading contributing factors for cervical spondylosis were poor posture, prolonged screen use, and sedentary lifestyle habits. No significant baseline differences were found between the two groups ($p > 0.05$), ensuring comparability prior to intervention (Table 2). In this comparative study, both CSET and physiotherapy groups showed significant improvement in pain, function, and mobility among cervical spondylosis patients; however, the extent of recovery was notably higher with CSET therapy (Table 3).

Pain Intensity (VAS): The mean reduction in pain intensity (VAS) was greater in the CSET group (5.6 ± 1.2; from 7.9 to 2.3, $p < 0.0001$) compared to physiotherapy (3.8 ± 1.4; from 7.8 to 4.0, $p < 0.0005$), with a significant between-group difference ($p = 0.001$) favouring CSET.

Neck Disability Index (NDI): Functional improvement, assessed through the Neck Disability Index (NDI), also revealed superior outcomes with CSET (14.2 ± 4.8-point improvement; $p < 0.0001$) versus physiotherapy (9.0 ± 3.9; $p < 0.001$), showing a highly significant difference ($p = 0.002$) between the two highlighting CSET with superior effectiveness in reducing neck-related disability and restoring functional mobility among cervical spondylosis patients.

Cervical Range of Motion (ROM): Cervical range of motion (ROM) improved in both groups, though CSET produced more pronounced results across all parameters — flexion (32.1° vs 21.4°, $p = 0.004$), extension (28.6° vs 19.5°, $p = 0.007$), lateral flexion (25.4° vs 17.2°, $p = 0.006$), and rotation (40.2° vs 27.5°, $p = 0.003$). These outcomes indicate enhanced spinal mobility and neuromuscular coordination following CSET.

Quality of Sleep and Daily Functioning: In terms of overall well-being, 76% of CSET patients reported restful sleep and 82% noted improved work efficiency, compared to 48% and 56% in the physiotherapy group ($p = 0.01$). Collectively, these findings

suggest that Siddha-based CSET therapy offers superior pain relief, functional recovery, and holistic improvement over conventional physiotherapy in managing cervical spondylosis.

Overall, the outcomes clearly demonstrated CSET with a higher clinical effectiveness in reducing pain, improving cervical ROM, reducing disability, and enhancing quality of life compared to conventional physiotherapy.

The comparative analysis of 60 female patients with cervical spondylosis revealed that both CSET (Chakrasiddh Spine Expert Therapy) and conventional physiotherapy demonstrated significant improvement in outcome scales from baseline ($p<0.05$), however, the results of Group A (CSET) showed greater reduction in pain, disability, flexibility, and enhanced quality of life compared to Group B (physiotherapy). CSET also produced superior gains in cervical ROM across flexion, extension, lateral flexion, and rotation, along with reported improvements in sleep quality, posture, and daily activity endurance. These findings suggest that CSET provides a more comprehensive and effective therapeutic outcome in managing cervical spondylosis than physiotherapy alone.

Table 2: Baseline Demographic and Clinical Characteristics of Study Participants (n = 60).

Parameter	Group A (CSET) (n = 30)	Group B (Physiotherapy) (n = 30)	Total (n = 60)	p-value	Interpretation
Age (years, Mean ± SD)	41.6 ± 7.4	42.3 ± 6.8	41.9 ± 7.1	0.72	Comparable age distribution in both groups
BMI (kg/m², Mean ± SD)	25.8 ± 3.2	26.1 ± 3.5	25.9 ± 3.3	0.64	Participants mostly overweight category
Pain Duration (months, Mean ± SD)	18.4 ± 5.7	17.9 ± 6.1	18.1 ± 5.9	0.81	Chronic duration (>6 months) in all participants
Type of Alternative Medicine used					
Ayurveda (Panchakarma / Oil Massage)	22	25	68%		Temporary relief, relapse after 3-4 months
Homeopathy	05	08	03%		Minimal or no relief
Physiotherapy (Conventional)	26	21	66.7%		Moderate pain reduction, flexibility to some extent
Acupressure	10	05	07%		Short term relief
Chiropractic / Manual Therapy	02	-	01%		Painful and sore experience
Occupation					
Desk/Computer-based (%)	53%	56%	55%	0.77	Predominant sedentary work pattern
Manual/Field work (%)	27%	24%	25%		
Homemakers (%)	20%	20%	20%		
Lifestyle Factors					
Poor posture / prolonged screen use (%)	65%	68%	66.5%	0.83	Major contributing factor
Lack of regular exercise (%)	72%	70%	71%	0.89	Sedentary habits common
Stress / mental strain (%)	58%	61%	59.5%	0.78	Psychological component noted
Reason/Primary Etiology for CS					
Poor posture and prolonged sitting (%)	60%	63%	61.5%	—	Most common cause identified
Degenerative age-related changes (%)	23%	20%	21.5%	—	Secondary common cause
Previous neck injury / whiplash (%)	10%	7%	8.5%	—	
Stress-induced muscular tension (%)	7%	10%	8.5%	—	

Table 3: Comparative Outcomes of CSET vs Physiotherapy in Cervical Spondylosis (n = 60).

Outcome Measure	CSET Gp (n=30)	Physiotherapy gp (n=30)	p-value
VAS (Pain score)	7.9 ± 1.1 → 2.3 ± 0.9 (Δ 5.6 ± 1.2)	7.8 ± 1.0 → 4.0 ± 1.2 (Δ 3.8 ± 1.4)	0.001
NDI(Disability index)	26.8 ± 5.1 → 12.6 ± 3.9 (Δ 14.2 ± 4.8)	27.1 ± 4.9 → 18.1 ± 4.3 (Δ 9.0 ± 3.9)	0.002
Cervical Flexion (°)	+32.1 ± 8.5	+21.4 ± 7.9	0.004
Cervical Extension (°)	+28.6 ± 7.1	+19.5 ± 6.8	0.007
Lateral Flexion (°)	+25.4 ± 6.7	+17.2 ± 6.5	0.006
Rotation (°)	+40.2 ± 9.3	+27.5 ± 8.7	0.003
Sleep Quality Improvement (%)	76%	48%	0.01
Work Efficiency Improvement (%)	82%	56%	0.01

Discussion

Cervical spondylosis (CS), a chronic degenerative disorder of the cervical spine, can be correlated with *Ceganavatham* in the Siddha system of medicine, characterized by *Vali* derangement manifesting as pain, stiffness, and restricted neck movements [19]. Although several clinical studies have been conducted on cervical spondylosis, most have primarily focused on pharmacological interventions, herbal formulations, Ayurvedic modalities, yoga interventions, unani or conventional physiotherapy [10.11]. However, limited exploration has been done on Siddha-based manual and energy therapies. To date, no clinical research has specifically evaluated the efficacy of Chakrasiddh Spine

Expert Therapy (CSET), a composite Siddha-based manual and energy realignment protocol in managing cervical spondylosis. Furthermore, a direct comparative assessment between CSET and conventional physiotherapy approaches has not been reported, establishing the clinical novelty and relevance of the present study.

Cervical spondylosis predominantly affects middle-aged and older adults, with a higher prevalence among females due to hormonal factors, postural strain, and sedentary occupational habits. The predominant etiological factors observed in this study included poor postural habits, prolonged screen exposure, and a sedentary lifestyle [3]. These factors, particularly prevalent among women engaged in desk-based work, contribute to sustained forward head posture and mechanical strain on the cervical spine. Such repetitive stress accelerates intervertebral disc degeneration and muscular fatigue, leading to early-onset spondylotic changes. Secondary contributors such as age-related degeneration, psychological stress, and lack of regular exercise further compounded disease progression leading to altered quality of life [9]. In our study, all participants were women aged between 30 and 55 years, as men with age-related spondylotic degeneration were excluded. This demographic distribution aligns with existing research, indicating higher susceptibility among working females due to lifestyle-related factors and sedentary lifestyle diminishing their quality of life [4]. 55% of these participants were found to have desk jobs and the forward head posture due to working on laptops was mostly contributing to this Cervical pain. These findings correspond with earlier reports suggesting that ergonomic stressors, reduced muscular endurance, and psychosocial distress are key modifiable risk factors in the pathogenesis of cervical spondylosis [1,5].

Majority of participants presented with chronic neck pain, stiffness, radiating shoulder pain, and sleep disturbances, symptoms consistent with prior clinical observations [2]. Notably, approximately 70% of patients had previously sought alternative therapies [11] such as Ayurveda [12,26], acupuncture [27], yoga [21], or massage-based treatments [28] with signs of relapse but no adverse events. This aligns with a systematic review done by AYUSH department in 2024, which confirmed that people with musculoskeletal diseases have utilized these interventions with minimum adverse reactions but experienced only transient or partial relief [25]. The results emphasize the chronic and relapsing nature of the condition and underscores the necessity for a holistic and sustainable management approach such as CSET.

Siddha medicine, one of the oldest South Indian traditional systems of healing, aims to restore equilibrium among the three fundamental humors, which govern physiological and pathological processes. In the context of *Ceganavatham*, Siddha therapy emphasizes external modalities such as *Varmam* [22] (vital energy point stimulation) and *Thokkanam* [29] (therapeutic manipulation) integrated with yoga and dietary regulation. Activation of specific *Varmam* points such as *Mudicchu Varmam* and *Kakkattai Varmam* is believed to modulate the cervical nerve plexus [19], alleviate muscular spasms, and correct spinal misalignment. These manipulations parallel *Marma* stimulation in Ayurveda [26] and acupressure techniques in Chinese medicine [27], all of which aim to restore neuroenergetic balance and relieve pain by modulating endorphin release and autonomic activity. The mechanism of *Varmam* therapy may, therefore, operate through neurophysiological and reflex-mediated pathways, supporting its therapeutic rationale in cervical disorders.

Thokkanam, the Siddha counterpart of manual manipulation, involves rhythmic kneading, pressing, and circular strokes that enhance blood circulation, relieve stiffness, and promote lymphatic drainage in cervical and upper back with less pressure [30]. Its principles closely resemble modern physiotherapy techniques such as myofascial release, deep tissue massage, and soft tissue mobilization but primarily focuses on pain reduction, muscle strengthening, posture correction, and joint mobility through methods like isometric neck exercises, traction, transcutaneous electrical nerve stimulation (TENS), and mobilization showing moderate improvement in pain and functional outcomes [31]. A study reported that a 4-week spinal stabilization exercise program led to significant reductions in neck pain (VAS score reduction of 35–45%) and modest improvements in cervical flexibility and range of motion (ROM increase of 20–25%) has studied the effect of dynamic exercises in treatment of cervical spondylosis but 30% patients showed signs of pain relapse after 6 months [33]. In another research of CS, 60 participants were divided in randomized order into two groups with group A undergoing the application of physical modalities, deep transverse massages and dynamic exercises were compared to the other group B who were treated with isometric exercises. Both exercise protocols have shown to be very successful treatment strategies for people with cervical spondylosis. However, in group A, the exercises protocol showed to be more effective in increasing mobility and reducing pain due to deep massages which confirms pressure therapies like siddha can be more viable treatment [34].

CSET shares its similarity to chiropractic manipulations, where both systems seek to restore biomechanical alignment and improve the flow of neural and pranic energy, facilitating pain reduction and enhanced mobility [14]. From a modern neurophysiological view, they may influence proprioceptive feedback loops, autonomic regulation, and segmental spinal reflexes—the same pathways targeted in chiropractic spinal manipulation and manual mobilization techniques. In a RCT in 30 patients with neck pain subjected to chiropractic manipulations and mobilization technique, the manipulation group exhibited greater reductions in pain intensity, ROM and disability scores compared to the mobilization group [35]. In siddha, the *Varmam* stimulation of paraspinal energy points like *Uthirakalam*, *Saramudichi*, and *Kaichulukki Varmam*, facilitate reduction in pain, improvement in cervical range of motion, muscle relaxation, and postural correction [22].

Previous studies on Siddha medicine have consistently demonstrated the clinical efficacy of these therapies in various musculoskeletal and degenerative conditions. A case series involving 10 patients with *Ceganavatham* treated with *Varmam*

therapy for 12 sessions reported significant reductions in pain and disability, validating its therapeutic potential [19]. Systematic reviews of different traditional AYUSH systems have also identified Siddha external therapies as among the safest, with good results in cervical spondylosis management [25]. Many siddha herbal formulations and drugs along with Thylam and Varmam Therapy have shown positive effect in CS corresponding to our results [15]. Furthermore, research on related disorders such as lumbar spondylosis [29], ankylosing spondylitis [37], osteoarthritis [36], and fibromyalgia [38] has shown that Siddha-based external therapies lead to improved spinal flexibility, reduced pain, and enhanced muscle strength compared to conventional approaches. For instance, a 22-day Siddha *Varmam* regimen in ankylosing spondylitis markedly improved spinal mobility and reduced stiffness, while *Kaya Karpam* (rejuvenation therapy) with gentle Siddha exercises in fibromyalgia patients significantly enhanced physical endurance and sleep quality.

The present study's findings resonate with these observations, confirming that patients receiving CSET, a comprehensive protocol combining *Varmam*, *Thokkanam*, therapeutic yoga, and dietary regulation achieved greater clinical improvement compared to those undergoing physiotherapy alone just like in other case studies of ACL tear [39] and AVN [16,40] where CSET approach presented with good results. In this study also the CSET group exhibited superior reductions in pain intensity, greater gains in cervical range of motion, and enhanced functional performance, along with improved sleep and emotional well-being. These outcomes highlight the integrated nature of Siddha therapy, which not only addresses musculoskeletal dysfunctions but also targets the subtle neuroenergetic and psychosomatic components underlying chronic pain syndromes.

Overall, the results reaffirm that CSET represents a safe, evidence-based, and holistic intervention for managing chronic cervical spondylosis. The findings suggest that CSET is more effective than conventional physiotherapy in alleviating pain, reducing disability, and improving cervical mobility in patients with cervical spondylosis. By blending Siddha therapeutic principles with modern rehabilitative approaches, CSET offers a comprehensive management model that promotes recovery, minimizes recurrence, and enhances patients' quality of life. Future studies with larger sample sizes and advanced imaging or neurophysiological assessments are warranted to further elucidate the mechanisms underlying its therapeutic efficacy and to position CSET as a validated integrative modality for cervical spine rehabilitation.

Conclusion

CSET may serve as a comprehensive, non-invasive, and integrative therapeutic option for managing cervical spine disorders, especially significant benefits can be achieved in reducing pain, improving cervical mobility, decreasing disability, and enhancing quality of life in patients. Compared to physiotherapy alone, CSET offers a more comprehensive and sustained therapeutic effect, making it a valuable non-surgical treatment modality for cervical spondylosis. Further large-scale randomized controlled trials are recommended to validate these results.

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