

Effectiveness of Chakrasiddh Spine Expert Therapy (CSET) in the Management of Sciatica: A Randomized Controlled Study

Research Article

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Abstract

Background: Sciatica characterized by radiating leg pain, is one of the common pain symptoms in the human body, often resulting from lumbar disc herniation, spinal degeneration, nerve root compression, or piriformis dysfunction. Conventional management focuses on symptomatic relief through analgesics, physiotherapy, and surgery in severe cases. Chakrasiddh Spine Expert Therapy (CSET), a Siddha-based integrative therapeutic approach, offers a non-invasive alternative aimed at addressing biomechanical, neuromuscular, and functional impairments associated with sciatica.

Methods: A randomized controlled study was conducted among 60 patients with clinically diagnosed sciatica. Participants were allocated into two groups: CSET intervention group (n=30) and conventional physiotherapy group (n=30). Outcomes were assessed using Visual Analog Scale (VAS), Oswestry Disability Index (ODI), Straight Leg Raise (SLR) test, and lumbar range of motion before and after four weeks of treatment. CSET was administered four days a week; each session lasted 45 min for four weeks and consisted of a structured protocol directed mainly toward muscles of the lumbar spine, pelvis, thigh, and leg regions. The conventional physiotherapy group was given exercise therapy for three days in a week for 40 minutes for four weeks.

Results: The CSET group demonstrated significantly greater improvements in pain, disability, and functional mobility than the control group. VAS scores decreased from 8.1 ± 1.0 to 2.3 ± 1.2 , ODI scores improved from 58.2 ± 8.5 to 18.6 ± 6.4 , and SLR increased from $43^\circ \pm 11^\circ$ to $80^\circ \pm 9^\circ$. Two-way repeated measures ANOVA revealed significant Group and Time interaction effects for all primary outcomes ($p < 0.001$).

Conclusion: CSET demonstrated significant benefits in reducing pain, improving mobility, and enhancing functional capacity among patients with sciatica, supporting its role as a complementary non-invasive therapeutic option.

Keywords

Sciatica; CSET; Manual Pressure Point Therapy; Lumbar Disc Disease; Pain Management

Introduction

Sciatica refers to pain radiating along the course of the sciatic nerve, and is one of the most frequently encountered musculoskeletal and neurological pain conditions affecting the lower back and lower limbs. The condition is characterized by radiating pain, numbness, tingling sensations, or paresthesia extending from the lower back through the buttock and down the leg along the distribution of the sciatic nerve or its associated lumbosacral nerve roots [1,2]. The most common underlying causes for nerve irritation include lumbar disc prolapse [3], degenerative disc disease [4], spinal stenosis [5], spondylolisthesis [6], and piriformis syndrome [7]. According to a survey, 65-80% cases are related to Lumbar disc herniation causing compression or irritation of sciatica nerve. Degenerative lumbar spondylosis and associated foraminal narrowing contribute to approximately 10-25% of cases, while lumbar spinal stenosis is responsible for about 3-10%. Extra-spinal causes such as piriformis syndrome are relatively uncommon, representing approximately 0.3-6% of cases of sciatic nerve irritation [8]. The reported prevalence of sciatica varies considerably across populations, ranging approximately between 1%-40%, reflecting differences in diagnostic criteria, occupational exposures, and demographic factors [9]. Studies also highlight the advancing age, gender and lifestyle habits influencing the development of sciatica. Though, the occurrence of sciatica below 20 years is rare and is typically related to trauma. Common precipitating factors include physical exertion, repetitive movements, prolonged sitting, and poor ergonomic postures in the workplace. Globally, trends show almost 1/4th population of adults are affected by lower back pain during their lifetime and is one of the leading causes of disability, work absenteeism, and reduced quality of life worldwide [10,11].

A variety of treatment options are available for sciatica, including conservative management, exercise therapy, manual therapy, pharmacological interventions, spinal injections, surgical procedures, and postoperative rehabilitation [12]. Among these, conservative treatment remains the preferred first-line approach for most patients, aiming to reduce inflammation, relieve nerve compression, alleviate pain, and improve functional mobility. Although these interventions provide symptomatic relief, recurrence rates remain high and many patients continue to experience persistent disability. Consequently, there is growing interest in non-invasive and integrative therapeutic approaches that target both pain reduction and restoration of normal musculoskeletal function [13,14]. Among various holistic interventions, Siddha medicine is well accepted in Southern India and many parts of South-east Asian countries producing very good results in musculoskeletal disorders.

In Siddha medicine, the clinical manifestations of sciatica closely resemble Thandagavatham, a disorder attributed to the aggravation of Vaatham affecting the lower back, hip, and lower extremities. Chakrasiddh Spine Expert Therapy (CSET) is a non-invasive, integrative therapeutic approach developed for the management of musculoskeletal disorders and chronic pain conditions. While CSET shares certain therapeutic principles with conventional manual therapies, including soft tissue mobilization, muscle relaxation, and improvement of biomechanical function, it incorporates additional Siddha-based interventions. These include stimulation of specific Varmam (vital energy) points, myofascial release techniques, spinal alignment correction, neuromuscular decompression, and energy-balancing procedures [15,16]. The therapeutic protocol is further complemented by individualized corrective exercises, dietary recommendations, and lifestyle modifications aimed at optimizing recovery and functional outcomes. Through targeted manual interventions, CSET seeks to alleviate muscle spasm, enhance local circulation, reduce neural compression, improve nerve conduction, and restore normal movement patterns, thereby promoting pain relief and functional rehabilitation in individuals with sciatica.

This randomized controlled study aimed to investigate the efficacy of CSET as a non-invasive integrative treatment for sciatica by assessing its impact on pain reduction, nerve-related symptoms, lumbar mobility, and functional recovery, in comparison with conventional physiotherapy-based management.

Materials and Methods

Study Design and Setting

This randomized controlled study was conducted at Chakrasiddh Holistic Healing and Research Center, Hyderabad, India, between July 2025 and December 2025. The study aimed to evaluate the effectiveness of Chakrasiddh Spine Expert Therapy (CSET) in the management of patients with chronic sciatica and compare its outcomes with those of conventional physiotherapy.

Participants

A total of 60 participants aged between 25-60 years, diagnosed with sciatica were enrolled in the study and randomly allocated into two groups. The intervention group consisted of 30 participants who received CSET, while the control group comprised 30 participants who underwent conventional physiotherapy. All participants provided written informed consent prior to enrolment. Confidentiality of patient data was strictly maintained throughout the study period.

To ensure equitable access to care and maximize patient benefit, participants in the conventional physiotherapy group were subsequently offered CSET after completion of the study assessments and comparison of outcomes. This post-study intervention was provided as an ethical consideration, allowing all participants the opportunity to receive the integrative therapy.

Inclusion Criteria

Participants were included in the study if they met the following criteria [17]:

1. Age between 25 and 60 years.
2. Clinically diagnosed sciatica suffering from non-specific acute, sub-acute or chronic low back pain.
3. Positive Straight Leg Raise (SLR) test.
4. Radiological evidence of lumbar spine pathology associated with sciatic symptoms.
5. Presence of symptoms for more than six months.

Exclusion Criteria

Participants were excluded from the study if they met any of the following criteria:

1. History of previous spinal surgery.
2. Presence of Rheumatoid Arthritis, Ankylosing spondylitis.
3. Severe neurological deficits requiring urgent medical intervention.
4. Spinal fractures, malignancies, or other serious spinal pathologies.
5. Pregnancy.

Radiological Assessment[18]

All participants underwent a comprehensive clinical and radiological evaluation before enrollment. Plain radiographs (X-rays) of the lumbosacral spine were obtained to assess spinal alignment, degenerative changes, vertebral abnormalities, and other structural conditions that could contribute to sciatic nerve compression. Magnetic resonance imaging (MRI) of the lumbosacral spine was performed in all patients to confirm the underlying pathology and identify conditions such as lumbar disc herniation, spinal stenosis, nerve root compression, and degenerative disc disease. MRI findings were correlated

with clinical symptoms and physical examination findings, including the Straight Leg Raise (SLR) test, to establish the diagnosis of sciatica and determine patient eligibility for inclusion in the study.

Randomization

A randomized controlled study was conducted among 60 patients and participants were allocated into two groups: CSET intervention group (n=30) and conventional physiotherapy group (n=30). For fair participation, the participants were randomly assigned to either the CSET group or the conventional physiotherapy group in a 1:1 ratio using a simple randomization method. Baseline demographic and clinical characteristics were recorded before initiation of treatment. No significant baseline differences were observed between both groups ($P>0.05$). [Table-2]

Outcome Measures [19,20]

Outcome assessments were performed at baseline and at the completion of the intervention period to determine changes in pain, functional capacity, mobility, and overall clinical status.

The primary and secondary outcomes were assessed using validated clinical and functional assessment tools. The primary outcomes included pain intensity and functional disability, assessed using the Visual Analog Scale (VAS), a widely accepted measure of subjective pain severity and the Oswestry Disability Index (ODI), which measures the impact of low back pain on daily activities and quality of life respectively. The secondary outcomes including lumbar and lower-limb functional mobility was evaluated through range of motion (ROM) assessments using standardized clinical procedures, neurological status was assessed through the Straight Leg Raise (SLR) test and clinical examination. In addition, patient-reported outcomes, including perceived symptom improvement, ease of movement, sleep quality, and overall satisfaction with treatment, were documented.

Therapeutic Interventions

The participants (n=30) allocated to the CSET group received a comprehensive integrative treatment protocol comprising Siddha manual therapies, marma point stimulation, spinal alignment correction, and therapeutic exercises [Table-1]. The intervention therapy was administered four days a week; each session lasted 45 min for four weeks (16 days) and consisted of a structured protocol directed mainly toward muscles of the lumbar spine, pelvis, thigh, and leg regions. The protocol included 15 minutes of customized exercise therapy for each participant for enhanced mobility and prevent recurrence.

Table 1: Components of the CSET and Physiotherapy Intervention Protocol.

Intervention Component	Procedure	Therapeutic Objective	Duration per Session
CSET (n=30) Intervention			
Therapeutic Manual Pressure (Thokkanam)	Application of controlled manual pressure over lumbar paraspinal muscles, gluteal muscles, hamstrings, and piriformis muscle	Reduce muscle spasm, improve circulation, release soft tissue restrictions, and alleviate pain	20 minutes
Siddha Varmam Therapy	Stimulation of selected Varmam points including Nattell Varmam, Kallidai Varmam, Mooladhara region, and Kaalam Varmam	Pain modulation, nerve decompression, enhancement of lower limb circulation, and restoration of energy flow	15 minutes
Spinal Alignment Correction	Pelvic balancing, lumbar decompression, and postural correction techniques	Improve spinal biomechanics, reduce nerve root compression, and restore functional alignment	10 minutes
Exercise Therapy	McKenzie extension exercises, pelvic tilts, core strengthening exercises, hamstring stretching, and supervised walking program	Improve flexibility, strengthen supporting musculature, enhance mobility, and prevent recurrence	15 minutes
Conventional Physiotherapy (n=30) Intervention			
Transcutaneous Electrical Nerve Stimulation (TENS)	Electrical stimulation applied to the lumbar region using standard clinical parameters	Pain modulation through stimulation of peripheral nerves and reduction of pain perception	40 minutes
Hot Fomentation	Application of moist heat packs to the lumbar region	Promote muscle relaxation, increase local blood circulation, and reduce stiffness	
Lumbar Strengthening Exercises	Supervised exercises targeting lumbar extensor muscles, abdominal muscles, and core stabilizers	Improve spinal stability, enhance muscular strength, and support functional recovery	
Standard Medications	Prescribed analgesics and non-steroidal anti-inflammatory drugs (NSAIDs) as per clinical requirements	Control pain and inflammation associated with sciatica	Adv if needed

Participants (n=30) assigned to the control group received conventional physiotherapy, which consisted of Transcutaneous Electrical Nerve Stimulation (TENS), hot fomentation, lumbar strengthening exercises, and standard pharmacological management (Table-1). Standard medications, including analgesics and non-steroidal anti-inflammatory drugs, were prescribed according to clinical requirements. The intervention was delivered over the same treatment period as the CSET group to ensure comparability between groups.

Statistical Analysis [21]

Statistical analyses were performed using IBM SPSS Statistics version 25.0. Data were expressed as mean ±

standard deviation (SD) for continuous variables and frequencies and percentages for categorical variables. Normality was assessed using the Shapiro–Wilk test. To evaluate treatment effectiveness, a two-way repeated measures ANOVA was conducted with Time (baseline and post-treatment) as the within-subject factor and Group (CSET and conventional physiotherapy) as the between-subject factor. The analysis assessed the main effects of time, group, and the Group × Time interaction.

Reliability of the assessment instruments was evaluated using Cronbach’s alpha coefficient. A p-value <0.05 was considered statistically significant, and 95% confidence intervals were reported where appropriate.

Table 2: Baseline Demographic Characteristics of patients.

Parameter	CSET Gp (n=30)	Control Gp (n=30)
Mean age (in yrs)	48.6 ± 10.2	49.1 ± 9.8
Male	17	18
Female	13	12
Symptom duration (in mths)	11.2 ± 4.8	10.9 ± 5.1
Disc Herniation	16	15
Lumbar Spondylosis	8	9
Spinal Stenosis	4	4
Piriformis Syndrome	2	2

Results

Patients were reviewed periodically during the intervention period (16 days) to evaluate clinical outcomes and treatment response. Progressive improvements were observed in both groups across the study duration, with the CSET group showing significantly greater improvements in pain scores, functional status, range of motion, and overall recovery compared with conventional physiotherapy.

Baseline demographic and clinical characteristics were comparable between the CSET and control groups. The mean age of participants was 48.6 ± 10.2 years in the CSET group and 49.1 ± 9.8 years in the control group, with a similar gender distribution across both groups. The mean duration of symptoms was 11.2 ± 4.8 months and 10.9 ± 5.1 months in the CSET and control groups, respectively. Furthermore, the distribution of underlying aetiologies, including disc herniation, lumbar spondylosis, spinal stenosis, and piriformis syndrome, was comparable between groups. No statistically significant differences were observed in baseline characteristics (p > 0.05), indicating that the groups were well matched prior to intervention and suitable for subsequent comparative analysis. (Table-2)

The CSET group demonstrated a substantial reduction in pain intensity, with mean VAS scores decreasing from 8.1 ± 1.0 at baseline to 2.3 ± 1.2 after treatment, representing approximately a 71.6% reduction in pain as compared to control group who demonstrated improvement from 8.0 ± 1.1 to 5.1 ± 1.4, corresponding to a 36.3% reduction. The ODI score in the CSET group improved from 58.2 ± 8.5% to 18.6 ± 6.4%, indicating a 68% reduction in disability while the control group improved from 57.4 ± 9.1% to 38.5 ± 7.2%, representing a 33% reduction. This suggests

that participants receiving CSET experienced substantially greater restoration of daily functional abilities. SLR angle improved from 43° ± 11° to 80° ± 9° in the CSET group, indicating marked improvement in neural mobility and reduction of sciatic nerve tension. On the other hand, though control group improved from 44° ± 10° to 60° ± 11°, which although is beneficial, but considerably less pronounced compared to intervention group. In CSET group, lumbar flexion increased from 38 ± 7 cm to 67 ± 6 cm, reflecting improved spinal mobility and flexibility and the control group improved from 39 ± 8 cm to 52 ± 7 cm [Table-3]. ANOVA revealed significant effects for VAS, ODI, SLR, and lumbar flexion outcomes (p < 0.001), indicating that improvements over time were significantly greater in the CSET group compared with the control group (Table-3).

The functional recovery outcomes further support the clinical effectiveness of CSET. The number of patients capable of walking > 30 minutes increased from 4 to 25, while those restricted to less than 15 minutes decreased from 24 to 3. A considerable reduction in dependence on pain medications by patients following treatment was seen. Sleep disturbances decreased from 22 patients to 4 patients, indicating improved nocturnal comfort and reduced pain-related sleep disruption. The number of participants reporting work limitations declined from 25 to 6, suggesting improved occupational functioning and quality of life (Table-4).

Reliability analysis

Reliability analysis demonstrated excellent internal consistency of the outcome measures. Cronbach’s alpha coefficients were 0.91 for VAS, 0.89 for ODI, and 0.90 for the overall assessment battery, indicating high reliability and consistency of the study instruments.

Table 3: Changes in Clinical Outcome Measures.

Outcome	Pre-therapy (number of pts)	Post-therapy (number of pts)
Daily walking (<15 mins)	24	3
Daily walking (>30 mins)	4	25
Regular Analgesic usage	27	5
Sleep disturbance	22	4
Work limitation	25	6

Table 4: Functional Recovery and Medication Usage

Outcome	Pre-therapy (number of pts)	Post-therapy (number of pts)
Daily walking (<15 mins)	24	3
Daily walking (>30 mins)	4	25
Regular Analgesic usage	27	5
Sleep disturbance	22	4
Work limitation	25	6

Discussions

Sciatica is commonly associated with mechanical nerve root irritation, inflammation, muscular spasm, and altered spinal biomechanics, resulting in pain, restricted mobility, and impaired quality of life [2]. Effective management therefore requires a multidimensional therapeutic approach that addresses both symptoms and the underlying functional disturbances. The present randomized controlled study evaluated the effectiveness of Chakrasiddh Spine Expert Therapy (CSET) compared with conventional physiotherapy in patients with sciatica arising from diverse etiologies, including lumbar disc herniation, lumbar spondylosis, spinal stenosis, and piriformis syndrome [3,5,6]. Although both interventions resulted in clinical improvement, the magnitude of change was significantly greater in the CSET group, as demonstrated by significant Group × Time interaction effects for pain intensity, functional disability, straight leg raise (SLR), and lumbar flexion. These findings indicate that CSET may provide superior therapeutic benefits in the management of sciatica when compared with standard

physiotherapy approaches.

One of the most important findings of the present study was the substantial reduction in pain intensity observed in the CSET group. The mean VAS score decreased from 8.1 ± 1.0 at baseline to 2.3 ± 1.2 following treatment, whereas the physiotherapy group showed a comparatively smaller reduction from 8.0 ± 1.1 to 5.1 ± 1.4 . This suggests that CSET may offer enhanced symptomatic relief by simultaneously addressing biomechanical dysfunction, neuromuscular imbalance, and postural abnormalities that contribute to sciatic pain. The therapeutic manual pressure techniques and Siddha Varmam stimulation incorporated within CSET may reduce muscle spasm, improve local blood circulation, enhance neural mobility, and modulate nociceptive signaling pathways, thereby contributing to superior pain control [15]. In contrast, conventional physiotherapy primarily focuses on symptom management through physical modalities and exercise-based rehabilitation, whereas CSET adopts a more comprehensive approach targeting structural, neurological, and functional aspects of the disorder.

The significant improvement observed in functional disability further supports the effectiveness of CSET. Restoration of functional independence remains a primary objective in sciatica management because chronic pain frequently leads to reduced mobility, occupational limitations, sleep disturbances, and diminished quality of life [10,13]. The marked reduction in Oswestry Disability Index (ODI) scores observed in the CSET group indicates substantial improvement in daily functioning and overall physical capability. Similarly, improvements in SLR and lumbar flexion suggest restoration of neuromuscular function and spinal mobility. Patients with sciatica often experience nerve root compression, muscular tightness, and movement restrictions due to underlying spinal pathology [4,5]. The spinal alignment correction techniques employed in CSET may have facilitated decompression of affected neural structures, improved postural balance, and enhanced flexibility, resulting in greater functional recovery than that achieved through conventional physiotherapy alone.

It is noteworthy that patients in the conventional physiotherapy group also demonstrated significant clinical improvement from baseline, indicating the effectiveness of physiotherapy as a standard conservative treatment for sciatica [23]. The observed reductions in pain and disability, along with improvements in lumbar mobility and SLR, may be attributed to the combined effects of therapeutic exercises, transcutaneous electrical nerve stimulation (TENS), thermal therapy, and muscle strengthening protocols. Physiotherapy has been widely recognized for its ability to reduce pain, improve spinal stability, enhance muscle function, and facilitate recovery through

progressive rehabilitation. Previous studies have reported that structured physiotherapy programs can effectively improve functional capacity and reduce symptoms in patients with lumbar radiculopathy and chronic low back pain [22]. The positive outcomes observed in the control group of the present study are therefore consistent with the established evidence supporting physiotherapy as an important component of sciatica management. However, the significantly greater improvements observed in the CSET group suggest that the integrative and multidimensional nature of CSET may provide additional therapeutic benefits beyond those achieved through conventional physiotherapy alone.

The present findings are consistent with traditional Siddha concepts and previously reported clinical observations in the management of Thandagavatham, a condition that shares several clinical characteristics with sciatica. A case report with patient having severe low back pain support Varmam point stimulation served as an effective non-invasive intervention for Thandagavatham producing reductions in pain and improvements in functional mobility through targeted stimulation of vital energy points [24]. Additional Siddha studies have demonstrated that Varmam therapy combined with Kombarakku Ottradam contributes to pain reduction in Thandagavatham by restoring the balance of Vaatham in the lumbar region [25]. Furthermore, efforts toward standardization of Varmam points and treatment techniques have highlighted the potential role of Siddha interventions in patients presenting with radiating lower-limb pain [26]. Observational studies have also reported improvements in quality of life and pain reduction when Varmam therapy was administered alongside conventional anti-inflammatory treatment, supporting the potential therapeutic value of this traditional modality [27].

The outcomes observed in the present study are also supported by evidence from other complementary and integrative medical systems. Studies investigating acupuncture and Traditional Chinese Medicine have demonstrated significant reductions in pain and disability among patients with chronic low back pain and sciatica. These effects have been attributed to modulation of nociceptive pathways, endogenous opioid release, and enhancement of local microcirculation [28]. Siddha Varmam therapy shares certain conceptual similarities with acupuncture, as both systems involve stimulation of specific therapeutic points to influence physiological and neurological function. The substantial improvements observed in pain and mobility in the current study may therefore be partially explained by comparable neurophysiological mechanisms. Likewise, Ayurvedic Panchakarma therapies such as Abhyanga, Kati Basti, and Basti have been reported to improve pain, stiffness,

gait, and functional capacity in patients with Gridhrasi (sciatica) [29]. The beneficial outcomes observed in that study support the potential role of manual and traditional therapeutic interventions in managing sciatic nerve pain, similar to, the therapeutic manual pressure techniques employed in CSET may contribute to pain reduction, muscle relaxation, improved circulation, and enhanced functional recovery in patients with sciatica.

Although several forms of massage therapy, including Swedish massage, Thai massage, Shiatsu, reflexology, myofascial release, and deep tissue techniques, have demonstrated benefits in reducing muscular tension and providing symptomatic relief, having the potential to minimize pain and speed return to normal function [30-33]. In contrast, CSET integrates Siddha Varmam therapy, therapeutic manual pressure, spinal alignment correction, corrective exercises, dietary modifications, and lifestyle interventions within a single treatment framework. This holistic approach is designed not only to relieve symptoms but also to optimize spinal biomechanics, reduce neural compression, improve posture, restore functional movement patterns, and support the body's intrinsic healing mechanisms. Such a multidimensional strategy may explain the superior clinical outcomes observed in the present study.

A notable strength of this investigation is the inclusion of patients with multiple underlying causes of sciatica. The favorable outcomes observed across different etiological categories suggest that the benefits of CSET are not restricted to a single pathological condition but may be applicable to a broader spectrum of sciatic disorders. Furthermore, the improvements observed in walking endurance, sleep quality, work performance, and reduced analgesic consumption emphasize that successful treatment extends beyond pain reduction and encompasses restoration of overall functional well-being and quality of life.

Overall, the present study demonstrates that Chakrasiddh Spine Expert Therapy is a safe, non-invasive, and effective intervention for sciatica, producing significantly greater improvements in pain, disability, mobility, and functional recovery than conventional physiotherapy. The integration of Siddha Varmam therapy, manual techniques, spinal alignment correction, therapeutic exercises, and lifestyle modifications may offer a comprehensive and clinically valuable treatment strategy for patients with chronic sciatic pain. Despite these encouraging findings, certain limitations should be acknowledged. The study was conducted at a single center with a relatively modest sample size, and long-term follow-up assessments were not performed. In future, bigger sample size and long-term study is to be performed for consistent results.

Conclusion

Chakrasiddh Spine Expert Therapy (CSET) demonstrated significant effectiveness in reducing pain, improving functional disability, increasing mobility, and enhancing quality of life among patients with sciatica. Compared with conventional physiotherapy, CSET produced superior improvements across multiple outcome measures while reducing analgesic dependency. These findings suggest that CSET may serve as a safe, non-invasive, and holistic therapeutic option for the management of chronic sciatica and related lumbar radiculopathy conditions.

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