Acupuncture Treatment With Dense–Disperse Mode Electrostimulator For Sciatica Patients at The BSA Depok Acupuncture Clinic

Amin Karyaman[1]*, Mayang Wulandari[2], Leny Candra Kurniawan[3], Chantika Mahadini[4]

[1,2,3,4] Institut Teknologi Sains Dan Kesehatan Rs Dr. Soepraoen Malang, Indonesia
*Corresponding Author:
Email: aminkbsa@gmail.com

Abstract.

Sciatica is a lumbosacral radicular pain condition that often leads to functional limitations and decreased quality of life. Acupuncture with electrical stimulation is one of the non-pharmacological therapies used in the management of sciatica. The dense–disperse mode of electroacupuncture is reported to provide a more stable analgesic effect through alternating low- and high-frequency stimulation. This study aimed to describe the benefits of acupuncture care using dense–disperse electrical stimulation in reducing pain among sciatica patients at BSA Acupuncture Clinic, Depok. This study employed a descriptive design involving sciatica patients who received acupuncture therapy with dense–disperse electrical stimulation based on standard acupuncture protocols. Pain reduction was evaluated during the treatment period. The results indicated that acupuncture care with dense–disperse electrical stimulation contributed to improvement in pain complaints among sciatica patients. This therapy may serve as a safe and effective non-pharmacological alternative for pain management in sciatica cases in clinical acupuncture settings.

Keywords: *Sciatica; Acupuncture; Electroacupuncture; Dense–Disperse and Pain.*

I. INTRODUCTION

Sciatica, or lumbosacral radicular pain, is a painful condition that radiates from the lower back through the gluteal region and down the leg, often accompanied by paresthesias, muscle weakness, and functional limitations. This condition can be acute or chronic and significantly impacts the sufferer's quality of life, daily activities, and work productivity. Globally, more than 40% of the world's population experiences low back pain, and approximately 10–15% of these individuals develop sciatica due to compression or irritation of the sciatic nerve (WHO, 2023; Davis, 2024).In Indonesia, musculoskeletal disorders remain a significant health problem. Basic Health Research data shows a prevalence of muscle and joint complaints of 11.9%, with a high proportion in the productive age group. This condition contributes to the increasing burden on healthcare services and reduced community productivity. Regionally, in urban areas such as Depok and Greater Jakarta, lower back pain and sciatica are among the top ten outpatient conditions in primary healthcare facilities, particularly among office workers, online motorcycle taxi drivers, and productive-age housewives (Depok City Health Office, 2022).Sciatica is generally caused by compression and/or irritation of the lumbar or sacral nerve roots, as in herniated nucleus pulposus, spinal stenosis, or intervertebral disc degeneration. This process triggers an inflammatory response and sensitization of the peripheral and central nervous systems, leading to persistent neuropathic pain. If not adequately treated, this condition can cause neuroplastic changes that prolong the duration of pain and decrease the response to conventional therapies. Therefore, a therapeutic approach that focuses not only on mechanical aspects but also on pain and inflammation modulation is crucial (Fairag et al., 2022).

Acupuncture is a non-pharmacological therapy widely used in the management of musculoskeletal pain, including sciatica. Several recent studies and meta-analyses have reported that acupuncture, particularly electroacupuncture, demonstrates greater effectiveness in reducing pain intensity than conventional therapy alone. Electroacupuncture allows for the regulation of electrical stimulation parameters, such as frequency and wave pattern, thus optimizing the analgesic effect through the release of endorphins and enkephalins, and modulation of central pain pathways (Zhang et al., 2023).One frequently used stimulation pattern is the dense-disperse mode, a combination of low and high frequencies delivered alternately. This mode is reported to provide a more stable analgesic effect and prevent neural adaptation to electrical stimulation. Although

several studies have demonstrated the benefits of dense-disperse electroacupuncture for various pain conditions, data on its application in sciatica cases in acupuncture clinics in Indonesia is still limited.Based on a preliminary study conducted at the BSA Depok Acupuncture Clinic from April to June 2025, 47 out of 236 patients underwent acupuncture therapy with sciatica. These findings indicate that sciatica is a dominant complaint requiring effective, evidence-based treatment. Therefore, this study aims to describe the implementation and benefits of acupuncture care with a dense-disperse electrostimulator in reducing pain in sciatica patients at the BSA Depok Acupuncture Clinic.

II. METHODS

Research Design

This study used a clinical descriptive design, aiming to describe the implementation and benefits of acupuncture treatment with a dense-disperse electrostimulator in sciatica patients. This approach was chosen to obtain a realistic picture of the application of electroacupuncture therapy in acupuncture clinical practice.

Place and Time of Research

The research was conducted at the BSA Acupuncture Clinic, Depok, West Java, from April to June 2025.

Research Subjects

The study subjects were patients diagnosed with sciatica who underwent acupuncture therapy at the BSA Acupuncture Clinic in Depok. Inclusion criteria included patients complaining of lower back pain radiating to the legs, willing to undergo a series of acupuncture treatments, and receiving therapy using a dense-disperse electrostimulator. Patients with other medical conditions that could significantly affect pain perception were excluded from this study.

Acupuncture Care Procedure

Acupuncture treatment is performed according to the principles of Traditional Chinese Medicine (TCM). Acupuncture points are selected based on the syndrome diagnosis and meridian pathways associated with the sciatica. Following needle insertion, electrical stimulation is performed using a dense-disperse electrostimulator, a combination of low and high frequencies delivered alternately. Therapy is administered according to clinical protocol and the patient's condition.

Research Variables

The main variable in this study was the level of pain in sciatica patients after receiving acupuncture treatment with a dense-disperse mode electrostimulator.

Data collection technique

Data were collected through clinical observation and evaluation of patient responses to therapy, particularly regarding changes in pain before and after a series of acupuncture treatments. Pain assessments were conducted subjectively based on patient complaints recorded in the clinic's medical record.

Data analysis

The data obtained were analyzed descriptively, presenting a picture of the patient's pain reduction response after receiving acupuncture treatment with a dense-disperse electrostimulator. The analysis results are presented in narrative form to illustrate the benefits of the therapy in clinical practice.

II. RESULT AND DISCUSSION

Results

This study involved a 45-year-old male patient diagnosed with sciatica who underwent acupuncture treatment using a dense-disperse electrostimulator at the BSA Acupuncture Clinic in Depok. The patient's primary complaint was lower back pain radiating to the left lower leg, accompanied by limb weakness and limited mobility. His initial pain score, measured using the Numeric Rating Scale (NRS), was 7, which is considered severe pain.Acupuncture care was provided in seven sessions during the period of June 2025. Acupuncture points were selected based on the diagnosis of Kidney and Spleen Qi and Yin Deficiency syndrome (BL23, KI3, GV4, ST36 and SP6) with dampness blockage in the lower meridians (GB30 and GB34), with therapeutic principles including tonification of related organs, smoothing Qi and Xue, and

relieving pain (Hua Tuo Jiaji L2, L3 L4 and L5). After needling, electrical stimulation was performed using a dense-disperse mode electrostimulator.Evaluation results showed a progressive reduction in pain throughout the therapy series. In the first session, the patient reported a reduction in pain of approximately 30%. After the second session, the pain reduction reached approximately 50%, accompanied by reduced stiffness and increased range of motion. In the third to fifth sessions, the patient demonstrated improved motor function, characterized by gradual bending ability and reduced dependence on walking aids.By the sixth session, the patient was able to bend to a 90-degree angle, and by the seventh session, her lower back pain was reported to have resolved, and she was able to walk without a cane. No significant side effects were observed during the series of treatments, and the patient tolerated the acupuncture well.

Discussion

The results of this study indicate that acupuncture treatment with a dense-disperse electrostimulator provides clinical benefits in reducing pain and improving motor function in patients with sciatica. The gradual reduction in pain is consistent with the mechanism of electroacupuncture, which modulates the nervous system through electrical stimulation of acupuncture points.The dense-disperse mode, which alternates low and high frequencies, is known to increase the release of endorphins and enkephalins and inhibit the transmission of pain impulses at the spinal and supraspinal levels. This stimulation pattern also plays a role in preventing neural adaptation to electrical stimulation, allowing the analgesic effect to be maintained throughout the course of therapy.From a Traditional Chinese Medicine perspective, sciatica is associated with Qi and Xue stagnation in the Bladder and Gallbladder meridians, which is exacerbated by Kidney and Spleen deficiencies. Acupuncture with electrical stimulation at the appropriate points contributes to the smooth flow of Qi and blood, strengthening muscle and bone tissue, and reducing pain. The clinical improvements experienced by patients in this study support this concept.Although this study involved only one case and was descriptive in nature, the findings suggest that dense-disperse electroacupuncture has the potential to be an effective and safe non-pharmacological therapy for managing sciatica pain in acupuncture clinics. Further research with a larger number of subjects and objective measurement instruments is recommended to strengthen the existing scientific evidence.

Table 1. Summary of Pain and Function Development in Sciatica Patients During Acupuncture Therapy with Dense–Disperse Mode Electrostimulator

Therapy Session	Date	Pain Rating Scale (NRS)	Major Clinical Changes
1	June 16, 2025	7 → 5	Pain reduced by ±30%, face fresher, still using a stick
2	June 18, 2025	5 → 4	Pain reduced by ±50%, stiffness reduced, pain when bending started to decrease
3	June 20, 2025	4	Starting to be able to bend ±50°, the pain spreading is reduced
4	June 22, 2025	3	Still walking with a stick but without support
5	June 25, 2025	2	Starting to let go of the stick, minimal pain
6	June 28, 2025	1	Able to bend perfectly (±90°)
7	June 30, 2025	0	Back pain gone, walking without aids

Information:

NRS = Numeric Rating Scale (0 = no pain, 10 = very severe pain)

IV. CONCLUSION

Acupuncture treatment using a dense-disperse electrostimulator provided clinical benefits in reducing pain and improving motor function in sciatica patients at the BSA Depok Acupuncture Clinic. Gradual therapy administration showed a progressive decrease in pain intensity, accompanied by an increase in functional abilities such as bending and walking without aids. This therapy was well-tolerated by patients and did not cause significant side effects. Based on these findings, acupuncture with a dense-disperse electrostimulator has the potential to be a safe and applicable non-pharmacological therapy alternative in sciatica pain management in acupuncture clinics.

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