# Therapeutic effects of electroacupuncture and Three – character scripture school massage in patients with nonorganic insomnia

Khuc Thi Song Huong[1]*, Nguyen Thi Khanh[2]

**ABSTRACT**

***Objectives:*** To evaluate the effectiveness of electroacupuncture combined with Three – character scripture school massage in treating non-organic insomnia at the Hospital of Traditional Medicine (November 2024–May 2025). ***Subjects and methods:*** A clinical intervention with a single-group, before–after comparison was conducted. 35 patients with non-organic insomnia were enrolled by convenient sampling and received 15 consecutive days of treatment. ***Results:*** After treatment, sleep duration increased by 1.31 ± 0.92 hours, sleep onset latency decreased by 27.86 ± 9.48 minutes, and sleep efficiency improved by 17.47 ± 0.92% (all $p < 0.05$). The mean of Pittsburgh Sleep Quality Index (PSQI) score significantly decreased from 13.00 ± 2.36 to 6.91 ± 1.58. Secondary insomnia-related symptoms also improved. Mild bleeding at needle sites occurred in a few cases but resolved spontaneously; no serious adverse events were reported. ***Conclusion:*** Electroacupuncture combined with Three – character scripture school massage is a safe, feasible, and effective intervention for non-organic insomnia, providing evidence to support its broader clinical application.

***Keywords****: Three – character scripture school massage, nonorganic insomnia.*

[1] *Hai Phong University of Medicine and Pharmacy, Vietnam*
[2] *5th-grade student, K5 of the Faculty of Traditional Medicine, HaiPhong University of Medicine and Pharmacy*

* **Corresponding author**
Khuc Thi Song Huong
Email: ktshuong@hpmu.edu.vn

Received: May 25, 2025
Reviewed: May 27, 2025
Accepted: June 20, 2025

## INTRODUCTION

Non-organic insomnia is the most common sleep disorder in the general population and is frequently encountered in clinical practice. According to the American Academy of Sleep Medicine (2022), approximately 10–30% of the global population experience symptoms of insomnia, with 6–10% meeting the criteria for chronic insomnia [1]. In Vietnam, Bui Quang Huy reported that 30–45% of adults suffer from insomnia annually [2]. Insomnia imposes a substantial burden, including functional impairment, increased health care costs, and a higher risk of developing depression [3,4]. Three – character scripture school massage, originating from traditional Chinese medicine, appearared in 1877, founded by Xu QianGuang, applied to treat a variety of diseases such as neurological, digestive, respiratory...[5] The biggest difference of this method compared to the traditional method is the use of pushing, pressing, rubbing, separating... movements on the acupoints on the forearm, wrist, and hand of the patient. Another major contribution of this book is that it expands pediatric massage techniques to adults, thus enriching adult massage techniques. This method has been gradually introduced into clinical settings in recent years, but not many Vietnamese medical staff and students of traditional medicine know about this method

well. Electroacupuncture, which involves electrical stimulation of acupoints via acupuncture needles or surface electrodes, has been shown to be effective in supporting insomnia treatment, this method is common in clinical practicing. In the treating insomnia, electroacupuncture combined with conventional massage has been studied before, but there has been no research conducted on the application of electroacupuncture combined with Three – character scripture school massage in Hai Phong. This study was therefore conducted to evaluate the therapeutic effects of electroacupuncture combined with Three – character scripture school massage in patients with non-organic insomnia at the HaiPhong Hospital of Traditional Medicine from November 2024 to May 2025.

## SUBJECT AND METHODS

This was a clinical intervention study with a single-group, before–after comparison design. Convenient sampling was applied, with a minimum target of 30 participants. Eligible participants were patients diagnosed with non-organic insomnia according to DSM-IV criteria [6], regardless of sex, aged ≥18 years, who provided informed consent and complied with treatment instructions. Exclusion criteria included insomnia due to organic causes (neurological or systemic diseases), psychiatric disorders (psychosis, schizophrenia, depression, mania), pregnancy, or treatment interruption for more than two days. In total, 35 patients were enrolled.

The electroacupuncture protocol followed the Traditional Medicine Geriatric Pathology Textbook (Hai Phong University of Medicine and Pharmacy, 2024), with 25 minutes of stimulation daily [7]. The Three – character scripture school massage regimen comprised eight techniques: Pushing sanguan point, Clearing manipulation on heaven – river – water point, Parting and meeting yin-yang point, Clearing manipulation on liver meridian point, Clearing manipulation on large intestine meridian point, Arc – pushing bagua point, Kneading erma point, and Kneading yangchi point [8]. Massage was performed once daily on one hand, alternating between hands across sessions. Each movement was repeated 150–180 times per minute for 33–36 minutes. Treatment lasted 15 consecutive days, excluding weekends.

Outcome measures included sleep duration, sleep onset latency, sleep efficiency, sleep disturbance, Pittsburgh Sleep Quality Index (PSQI) score, secondary insomnia-related symptoms, and adverse events. Assessments were performed at baseline (D0), after 7 days (D7), and after 15 days of treatment (D15). Data were analyzed using SPSS 20.0. Chi-square ($\chi^2$) tests were applied to compare proportions and associations between categorical variables, while paired t-tests were used to compare means ($\bar{X}$ ± SD). Statistical significance was set at $p < 0.05$.

***Figure 1.*** *Pushing sanguan point*

***Figure 2.*** *Clearing manipulation on heaven – river – water point*

***Figure 3**. Parting and meeting yin-yang point*

***Figure 4.** Clearing manipulation on liver meridian point*

***Figure 5**. Clearing manipulation on large intestine meridian point*

***Figure 6.** Arc – pushing bagua point*

***Figure 7.** Kneading erma point*

***Figure 8.** Kneading yangchi point (Photograph: Nguyen Thi Khanh)*

**Research ethics:** This research has been approved by the Scientific Council of Hai Phong University of Medicine and Pharmacy, with implementation permission from Hai Phong Traditional Medicine Hospital. The results are intended solely for scientific purposes to enhance the quality of treatment and patient care, with no other objectives. Patients are fully informed about the research content and objectives and have the right to choose whether to participate.

## RESULTS

***Table 1.** General information of patients*

| Variable | Categories | Frequency | Percent (%) |
|---|---|---|---|
| **Age** | < 50 | 1 | 2.9 |
| | 50-59 | 4 | 11.4 |
| | 60-69 | 12 | 34.3 |
| | ≥70 | 18 | 51.4 |
| | Average ($\bar{X}$ ± SD) | 68.91 ± 9.42 | |
| **Sex** | Male | 10 | 28.6 |
| | Female | 25 | 71.4 |
| **Duration of insomia** | 1 year | 3 | 8.57 |
| | 2 – 5 years | 31 | 88.57 |

| | | |
|---|---|---|
| > 5 years | 1 | 2.86 |
| Average ($\bar{X}$ ± SD) | 4.17 ± 1.65 | |

The highest rate of insomnia was in the age group ≥ 70 years old with 18 patients accounting for 51.4%, the age group 60-69 had 12 patients accounting for 34.3%, the lowest rate was in the age group < 50 with 1 patient accounting for 2.9%. The average age of insomnia in the study was 68.91 ± 9.42 (years). Male patients account for 28.6% while female patients were 71.4%. The rate of patients with insomnia for 2-5 years is the highest 88.57%. The average duration of insomnia in the study group was 4.17 ± 1.65 (years).

***Table 2.*** *Result of sleep duration*

| **Variable** | **Time** | **Mean ($\bar{X}$ ± SD)** | **p** |
|---|---|---|---|
| Sleep duration (hours) | D0 | 3.88 ± 0.92 | |
| | D7 | 4.31 ± 0.87 | |
| | D15 | 5.22 ± 0.81 | |
| Increased sleep duration (hours) | ΔD7 – D0 | 0.43 ± 0.80 | <0.05 |
| | ΔD15 – D0 | 1.31 ± 0.92 | <0.05 |

Before treatment, the mean sleep duration was 3.88 ± 0.92 hours. After 7 days of treatment, it increased to 4.31 ± 0.87 hours, representing an improvement of 0.43 ± 0.05 hours. By day 15, mean sleep duration further increased to 5.22 ± 0.81 hours, corresponding to a total gain of 1.31 ± 0.92 hours compared with baseline. The differences observed before and after treatment were statistically significant (p < 0.05).

***Table 3.*** *Result of fall sleep onset time*

| **Variable** | **Time** | **Mean ($\bar{X}$ ± SD)** | **p** |
|---|---|---|---|
| Time to fall asleep (minutes) | D0 | 55.00 ± 21.73 | |
| | D7 | 40.29 ± 21.89 | |
| | D15 | 27.14 ± 17.12 | |
| Decreased time to fall asleep (minutes) | ΔD7 – D0 | 14.71 ± 8.48 | <0.05 |
| | ΔD15 – D0 | 27.86 ± 9.48 | <0.05 |

Before treatment, the average time to fall asleep of patients was 55.00 ± 21.73 (minutes), after 07 days of treatment it was 40.29 ± 21.89 (minutes), a decrease of 14.71 ± 8.48 (minutes). After 15 days of treatment it was 27.14 ± 17.12 (minutes), a decrease of 27.86 ± 9.48 (minutes). The difference was statistically significant (p < 0.05).

***Table 4.*** *Result of sleep efficiency*

| **Variable** | **Time** | **Mean ($\bar{X}$ ± SD)** | **p** |
|---|---|---|---|
| **Sleep efficiency** (%) | D0 | 45.06 ± 10.15 | |
| | D7 | 51.28 ± 10.37 | |
| | D15 | 62.53 ± 9.23 | |
| **Sleep efficiency enhancement** (%) | ΔD7 – D0 | 6.23 ± 9.57 | <0.05 |
| | ΔD15 – D0 | 17.48 ± 10.42 | <0.05 |

Before treatment, the average sleep efficiency of patients was 45.06 ± 10.15 (%), after 7 days of treatment it was 51.28 ± 10.37 (%). And after 15 days of treatment it was 62.53 ± 9.23 (%). The difference was statistically significant (p < 0.05).

**Table 5. Result of PSQI score**

| Variable | Time | Mean ($\bar{X}$ ± SD) | p |
|---|---|---|---|
| PSQI (points) | D0 | 13.00 ± 2.36 | |
| | D7 | 10.37 ± 1.11 | |
| | D15 | 6.91 ± 1.58 | |
| PSQI score reduction (points) | ΔD7 – D0 | 2.63 ± 1.72 | <0.05 |
| | ΔD15 – D0 | 6.09 ± 1.90 | <0.05 |

Before treatment, the average PSQI score of the NC group was 13.00 ± 2.36 (points). After 7 days of treatment, it was 10.37 ± 1.11, a decrease of 2.63 ± 1.72 (points). And after 15 days of treatment, it was 6.91 ± 1.58, a decrease of 6.09 ± 1.90 (points). The difference before and after treatment was statistically significant ($p < 0.05$).

***Table 6.*** *Secondary symptoms of insomnia*

| Symptoms | D0 | | D7 | | D15 | | pD0 – D7 | pD0 – D15 |
|---|---|---|---|---|---|---|---|---|
| | Number | % | Number | % | Number | % | | |
| Decreased concentration | 7 | 9.59 | 5 | 11.62 | 2 | 10 | < 0.05 | < 0.05 |
| Forgetful | 15 | 20.55 | 8 | 18.60 | 3 | 15 | < 0.05 | < 0.05 |
| Headache | 18 | 24.66 | 10 | 23.56 | 4 | 20 | < 0.05 | < 0.05 |
| Tired | 10 | 13.69 | 8 | 18.60 | 4 | 20 | < 0.05 | < 0.05 |
| Dizziness | 14 | 19.18 | 8 | 18.60 | 5 | 25 | < 0.05 | < 0.05 |
| Irritable | 9 | 12.33 | 4 | 9.30 | 2 | 10 | < 0.05 | < 0.05 |

Before treatment, most patients in the study sample had secondary symptoms such as headache, fatigue, decreased concentration, forgetfulness, dizziness. After 15 days of treatment, the accompanying symptoms were reduced and there was a difference compared to before treatment ($p < 0.05$).

***Table 7.*** *Adverse events*

| Adverse events | D0 - D7 | | D8 - D15 | |
|---|---|---|---|---|
| | Frequency | % | Frequency | % |
| Acupuncture dizziness | 0 | 0 | 0 | 0 |
| Bleeding | 5 | 14.2 | 1 | 2.86 |
| Broken needle | 0 | 0 | 0 | 0 |
| Infection | 0 | 0 | 0 | 0 |
| Skin irritation | 0 | 0 | 0 | 0 |

During the first week of treatment, 5 patients had bleeding after acupuncture: mainly small amounts of bleeding at the Baihui and Shenmen acupoints right after the needle was removed. Using a clean, dry cotton pad to press on the bleeding site for about 30 seconds stopped the bleeding and the patient had no further abnormal symptoms. During the period from the 8th to the 15th day of treatment, only 1 patient had small amounts of bleeding at the Sanyinjiao acupoint right after the acupuncture needle was removed. Using a clean, dry cotton pad to press on the bleeding site for about 30 seconds stopped the bleeding and the patient had no further abnormal symptoms. There were no patients with dizziness, broken needles, infections, or skin irritation.

## DISCUSSION

The National Sleep Foundation (2023) believes that the elderly often experience insomnia due to many physiological causes and related to the aging process. As age increases, the sleep cycle changes, the time of deep sleep decreases significantly, while the time of waking up in the middle of the night and waking up early increases. In addition, the biological rhythm regulation function in the brain (especially the suprachiasmatic nucleus) is weakened, causing unstable sleep-wake rhythms [9]. Our gender classification results are similar to the study of Nguyen Thi Hang (2019) [10]. In women, there are hormonal changes during the menstrual cycle, pregnancy, and menopause, when the decline in estrogen and progesterone causes sleep disorders, or psychological factors, stress, fatigue, social pressure and family care responsibilities. The early symptoms of insomnia do not have much impact on the patient's daily life. It is not until insomnia is accompanied by other physical disorders and affects daily activities that they go to the hospital.

The result of average sleep duration is similar to the study of Nguyen Gia Anh (2019), in which electroacupuncture of the Neiguan, Shenmen, and Sanyinjiao acupoints helped 68.3% of patients no longer have sleep disorders after 20 days of treatment [11], the study of Nguyen Duc Minh (2018) evaluated the effect of electroacupuncture of the Neiguan and Taichong acupoints in the treatment of sleep disorders with liver and gallbladder fire[12]. However, our study achieved significant improvement in a shorter period of time (15 days), possibly due to the combination of Three – character scripture school massage that brought about the statistically significant effect ($p < 0.05$). Electroacupuncture is proved to stimulates the release of neurotransmitters such as serotonin and endorphins, which contribute to stress reduction and improved sleep, as demonstrated by Zhou and Benharash (2008) [13]. Three – character scripture school massage according to Wang et al. (2023) also increases serotonin levels and improves blood circulation, supporting prolonged sleep duration [14].

This result of time to fall asleep is superior to the study of Nguyen Gia Anh (2019) reporting that the time to fall asleep decreased from 55 minutes to 35 minutes after 20 days of electroacupuncture treatment of the Neiguan, Shenmen, and Sanyinjiao acupoints [11], the study of Tran Thi Hong Ngai and Nguyen Quang Huy (2025) showed that the time to fall asleep decreased from 58 minutes to 30 minutes after 20 days of auricular acupuncture combined with acupressure massage [15].

The above results show that the electroacupuncture method combined with Three – character scripture school massage has the effect of improving the time to fall asleep for patients. The combination of electroacupuncture and Three – character scripture school massage can simultaneously affect the sedative acupoints and regulate the meridians, reducing the state of restlessness and anxiety. The study by Wang et al. (2024) also noted that TCM massage improves blood circulation and increases serotonin levels, contributing to shortening the time to sleep onset [14].

Before treatment, 100% of patients had poor sleep efficiency, similar to the study by Dinh Danh Sang (2016) where patients had poor sleep efficiency before treatment at a rate of 100% [16]. The explanation for this result is that the patients in our study had a high average age (68.91 ± 9.42 years old), in addition to the high rate of comorbidities,

high stress factors, low sleep time and sleep duration. Patients were worried about sleep quality, so they often tried to go to bed early but could not fall asleep immediately, leading to prolonged time in bed and short sleep duration, resulting in poor sleep quality according to the formula sleep efficiency = actual sleep hours/ hours in bed * 100%. This shows that sleep efficiency improved quite well after treatment. Our results are similar to the study of DIAN Yingbin (2024), in which the massage therapy to calm the liver and calm the mind achieved an effective rate of 100% [17].

The results of PSQI are similar to the study of Nguyen Thi Hang (2019) after 30 days of implanting the average PSQI score of 5.02 (points) [10], Nguyen Duc Minh (2018) the total PSQI score before treatment was about 18.69 ± 0.71 points, reduced to 3.89 ± 0.51 points after 20 electroacupuncture sessions [12].

Because these are secondary symptoms after insomnia, when we are tense, muscle tension also increases. These two factors make the body waste a lot of energy in vain, on the contrary, if we are in a relaxed, comfortable state, it will help accumulate energy. This is also the process of generating yin and nourishing yin, or in other words, "When the spirit is calm, yin is born". Therefore, when sleep quality and sleep efficiency are improved, secondary symptoms will not exist.

During the study, we recorded some mild side effects, mainly bleeding at the acupuncture point after acupuncture. Mild adverse effects such as bleeding at the needle puncture site are common in clinical practice and are considered normal physiological reactions that do not affect the patient's health. This result is consistent with some previous studies such as Le Van An (2021) and Tran Minh Duc (2019), both of which showed that acupuncture is a safe method, with a low complication rate and is usually only mild, without requiring special medical intervention [18,19].

**Limitations subsection:** small size, convenience sampling and the lack of control group are limitations in methodology.

## CONCLUSION

Electroacupuncture combined with Three – character scripture school massage is a safe, feasible, and effective intervention for non-organic insomnia, providing evidence to support its broader clinical application.

## RECOMMENDATIONS

It is a simple, easy-to-apply and effective non-drug treatment method, so it can be applied at traditional medicine clinics, thus enriching adult massage techniques. We should do future randomized trials and long-term follow-up.

## REFERENCES

1. Morin CM, Jarrin DC. Epidemiology of Insomnia: Prevalence, Course, Risk Factors, and Public Health Burden. Sleep Med Clin. 2022; 17(2): 173-191.
2. Bui Quang Huy. Normal sleep, Sleep disorders. Medical Publishing House, Hanoi, 2016: 7-194. (in Vietnamese).
3. Schutte-Rodin S, Broch L, Buysse D, et al. Clinical guideline for the evaluation and management of chronic insomnia in adults, J Clin Sleep Med. 2008; 4(5):487-504.
4. Nguyen Nhuoc Kim. Internal Medicine of Traditional Medicine (Postgraduate Training Book), That Mien. Medical Publishing House, Hanoi,2016: 170-176. (in Vietnamese).
5. Ge MeiFei (2004), Introducing Xu Qianguang's Three-Character scpriture school Massage, Chinese Journal Medical History. 2004; 34 (1) (in Chinese).
6. DSM – IV. Primary Insomnia. 2000: 553.

7. Nguyen Thi Thu Hien. Traditional medicine geriatrics, Insomnia. Medical Publishing House, Hanoi, 2024: 55- 64. (in Vietnamese)
8. Wang Jing, Three-Character scpriture school Massage, China Traditional Chinese Medicine Press. (2021) (in Chinese).
9. National Sleep Foundation, Aging and Sleep, Washington, DC: National Sleep Foundation. 2023.
10. Nguyen Thi Hang. Study on the effect of acupuncture in treating sleep disorders according to the Pittsburgh scale. Master's thesis in Medicine. Hanoi Medical University, 2019. (in Vietnamese).
11. Nguyen Gia Anh. Evaluation of the effect of acupuncture combined with electroacupuncture on Neiguan, Shenmen, and Sanyinjiao acupoints in the treatment of patients with sleep disorders, Master's thesis in medicine, Hanoi Medical University, 2019. (in Vietnamese)
12. Nguyen Duc Minh. Evaluating the effects of electromagnetic acupuncturing Noi Quan and Thai Xung acupuncture point method in the treatment of sleeping disorder type liver – gall bladder strong fire. Journal of 108 – Clinical Medicine and Pharmacy, 2018: 13(2). (in Vietnamese)
13. Zhou, W., Benharash, P. Effects and mechanisms of acupuncture based on the principle of meridians. The Journal of Acupuncture and Meridian Studies, 2008; 1(1): 29–35.
14. Wang Z, Xu H, Wang Z, et al. Effect of tuina on sleep quality, psychological state and neurotransmitter level in patients with insomnia: a systematic review and meta-analysis. Front Neurol. 2024; 15: 1273194.
15. Tran Thi Hong Ngai, Nguyen Quang Huy. Researching on the effectiveness of restoring sleep quality in patients with non – organic insomnia by auricular acupuncture combined with acupressure, Vietnam Medical Journal, 2025; 547(3). (in Vietnamese)
16. Dinh Danh Sang. Evaluation of the sleep-improving effect of auricular acupuncture in the treatment of patients with sleep disorders according to the Pittsburgh scale, Master's thesis in medicine, Hanoi Medical University, 2016. (in Vietnamese)
17. DIAN Yingbin, HU Yanli, JIA Huimin et al. Clinical Observation of Liver-Calming and Mind-Soothing Massage Therapy in the Treatment of Insomnia with Syndrome of Liver Fire Disturbing the Heart, Henan Traditional Chinese Medicine, 2024; (12).
18. Le Van An. Evaluation of the efficacy and safety of acupuncture in the treatment of some neurological disorders. Vietnam Journal of Traditional Medicine, 2021; (5):45-50. (in Vietnamese)
19. Tran Minh Duc. Study on the adverse effects of acupuncture in the treatment of insomnia in the elderly. Master's thesis in medicine. VietNam University of Tradional Medicine, 2019. (in Vietnamese).