A Review on the Traditional Chinese Medicine Theoretical Foundations and Clinical Research Advances in Acupuncture Treatment for Migraine

Zhaoyuan Shen

College of Acupuncture and Moxibustion and Tuina, Changchun University of Chinese Medicine, Changchun City, Jilin Province, 130117, China

410319309@qq.com

Abstract. Migraine, as a common neurological disorder, significantly impairs patients' quality of life. Acupuncture has been widely applied in clinical practice for migraine management and is grounded in a unique theoretical framework of Traditional Chinese Medicine (TCM). From the TCM perspective, the etiology and pathogenesis of migraine involve both exogenous (e.g., invasion by external pathogens) and endogenous factors (e.g., internal disharmonies), closely associated with meridian circulation and the flow of Qi. Syndrome differentiation is essential to guide acupuncture point selection. In clinical research, various methodologies—including randomized controlled trials (RCTs)—have been employed to evaluate the efficacy of acupuncture for migraine, primarily using headache-related symptom metrics and quality-of-life indicators as outcome measures. Accumulating evidence supports the therapeutic effectiveness of acupuncture in migraine treatment, with different acupuncture modalities and combination therapies demonstrating distinct advantages. Nevertheless, current studies exhibit limitations in the depth of TCM theoretical interpretation and methodological rigor in clinical trial design. Future research should focus on deepening the integration of TCM theory, optimizing clinical study protocols, and elucidating the underlying mechanisms of acupuncture to provide a more robust theoretical and empirical foundation for its application in migraine therapy.

Keywords: Acupuncture; Migraine; Traditional Chinese Medicine theory; Clinical research; Progress

1 Introduction

1.1 Research Background

Migraine is a prevalent chronic primary neurovascular disorder characterized by recurrent episodes of moderate to severe headache, often unilateral and pulsating in nature, accompanied by nausea, vomiting, photophobia, and phonophobia. Epidemiological data indicate a global prevalence of approximately 15%, with a notably higher incidence among women[2]. These debilitating symptoms frequently impair cognitive

A. T. Patanasorn et al. (eds.), *Proceedings of the 3rd International Conference on Educational Development and Social Sciences (EDSS 2026)*, Advances in Social Science, Education and Humanities Research 1010,
https://doi.org/10.2991/978-2-38476-569-0_38

function, work productivity, and overall quality of life[4], positioning migraine as a significant public health concern.

Acupuncture, a core component of TCM, has demonstrated distinctive advantages in migraine management. Supported by growing evidence from evidence-based medicine, numerous clinical trials have confirmed its efficacy. Compared to conventional pharmacotherapy, acupuncture not only alleviates pain but also exhibits a favorable safety profile with minimal adverse effects, making it suitable for both acute intervention and long-term prophylaxis[2]. Diverse acupuncture techniques—including manual needling, electroacupuncture, scalp acupuncture, and bloodletting—offer clinicians flexible therapeutic options[9], further promoting its integration into mainstream migraine care.

1.2 Problem Statement

Despite promising clinical outcomes, significant gaps remain in both theoretical coherence and methodological quality. Theoretically, discrepancies exist between classical TCM texts and contemporary interpretations regarding migraine pathogenesis. For instance, while the Huangdi Neijing emphasizes exogenous wind as a primary etiological factor, modern TCM research increasingly highlights endogenous contributors such as emotional dysregulation and phlegm-turbidity obstructing the orifices[9]. This conceptual inconsistency hinders the standardization of syndrome differentiation and treatment protocols.

Methodologically, many domestic clinical studies suffer from design flaws, including inadequate randomization, lack of blinding, and suboptimal control group selection, which compromise the validity and reproducibility of findings[9]. Moreover, comparative efficacy among different acupuncture modalities and their superiority or non-inferiority relative to pharmacological interventions require validation through high-quality, large-scale RCTs[4]. Addressing these limitations is crucial for advancing both scientific understanding and clinical application.

1.3 Research Objectives

This review aims to systematically synthesize the TCM theoretical foundations and recent clinical advances in acupuncture treatment for migraine, thereby offering evidence-based guidance for clinical practice and future research. Specifically, we will:

(1) Trace the historical evolution of TCM etiological concepts of migraine from classical literature to modern interpretations[1];

(2) Elucidate the role of meridian theory—particularly the Shaoyang channels—in migraine pathophysiology and acupuncture mechanisms[3];

(3) Evaluate the clinical efficacy of various acupuncture techniques and integrative approaches; and

(4) Propose standardized acupoint selection principles based on syndrome differentiation to enhance treatment precision and reproducibility[2,5].

2 Literature Review

2.1 Theoretical Origins in Classical TCM

Migraine has been documented in ancient Chinese medical texts for millennia. The Huangdi Neijing attributes migraine to "wind pathogen invading the Liver channel, causing tension in the visual tract, thereby inducing unilateral headache," highlighting the dual roles of exogenous wind and Liver dysfunction[6]. Similarly, the Taiping Shenghui Fang reiterates this pathomechanism, underscoring the centrality of Liver-wind dynamics in migraine etiology. These foundational insights integrate external pathogenic factors with internal organ imbalances, laying the groundwork for holistic TCM diagnosis and treatment.

Meridian theory provides a critical anatomical and functional framework for understanding migraine localization and acupuncture targeting. The Shaoyang channels—specifically the Gallbladder (Foot-Shaoyang) and Triple Energizer (Hand-Shaoyang) meridians—course bilaterally through the temporal, frontal, and occipital regions, corresponding precisely to common migraine pain distributions[3]. Obstruction of Qi and Blood in these channels is considered a key pathological mechanism. Clinically, acupoints along these meridians—such as Sizhukong (TE23), Fengchi (GB20), and Lugu (GB8)—are frequently selected, reflecting the enduring relevance of meridian theory in guiding point prescription[5].

2.2 Modern Developments in TCM Theory

Contemporary TCM scholars have expanded classical theories using modern biomedical insights. The "Collateral Disease" (Luo Bing) theory posits that migraine reflects impaired microcirculation in cerebral collaterals, characterized by stagnation, stasis, and difficulty in resolution—aligning with the chronic, recurrent nature of the condition[7]. Furthermore, observed imbalances in vascular endothelial vasoactive factors (e.g., NO/ET-1 ratio) leading to vasospasm resonate with the TCM concept of "Blood stasis obstructing the collaterals" [6], offering a potential bridge between TCM syndromes and neurovascular pathophysiology.

Modern clinical practice commonly categorizes migraine into several TCM syndromes:

Liver Yang Rising: Headache with dizziness, tinnitus, flushed face, bitter taste, red tongue with yellow coating, wiry-rapid pulse—treated by calming Liver Yang.

Qi and Blood Deficiency: Dull, persistent headache exacerbated by exertion, fatigue, pallor, pale tongue, thin pulse—addressed by tonifying Qi and nourishing Blood.

Phlegm-Turbidity Obscuring the Orifices: Heaviness-type headache with chest oppression, nausea, greasy tongue coating, slippery pulse—managed by resolving Phlegm and descending turbidity [8].

Blood Stasis Obstructing Collaterals: Fixed, stabbing pain, dark-purple tongue with petechiae, choppy pulse—treated by invigorating Blood and resolving stasis [7].

Accurate syndrome differentiation enables personalized acupuncture strategies, enhancing therapeutic precision.

2.3 Current Status of Clinical Research

Multiple acupuncture techniques are employed:

Manual Acupuncture: Regulates Qi and Blood flow via specific points; effective for acute attacks.

Electroacupuncture: Enhances analgesic effects through electrical stimulation; beneficial for chronic cases.

Scalp Acupuncture: Targets cerebral circulation; particularly effective for migraine without aura [3].

Bloodletting Therapy: Removes stasis at local or distal points; indicated for Blood stasis patterns [7].

Collectively, these methods demonstrate consistent efficacy in reducing headache burden and improving quality of life [9].

Combining acupuncture with other TCM modalities yields synergistic benefits. For example, Tianma Gouteng Yin (Gastrodia and Uncaria Decoction) combined with acupuncture significantly outperformed monotherapy in treating Liver Yang-type migraine, improving both symptoms and cerebral hemodynamics [6]. Similarly, integrating myofascial release techniques with acupuncture showed superior outcomes in reducing attack frequency and disability in chronic migraine . Such multimodal approaches leverage complementary mechanisms for enhanced efficacy and reduced reliance on pharmaceuticals.

3 TCM Theoretical Foundations of Acupuncture for Migraine

3.1 Etiology and Pathogenesis

External pathogenic factors—particularly Wind, often combined with Cold, Heat, or Dampness—invade the head, disrupting Qi and Blood flow. As stated in the Suwen: "Wind strikes the upper body first." The head, as the confluence of Yang channels, is especially vulnerable. Wind-Cold congeals channels; Wind-Heat consumes fluids; Wind-Damp obstructs clear Yang ascent [9]. These pathogens predominantly affect the Shaoyang and Yangming channels, whose trajectories align with migraine topography [3]. Modern studies suggest such invasions may trigger neurogenic inflammation or vascular dysregulation, providing a plausible biological correlate [6].

Internal disharmonies play an equally critical role:

Emotional Stress: Liver Qi stagnation transforms into Fire or Wind, ascending to disturb the head [6]. Chronic stress may deplete Liver-Kidney Yin, leading to deficient Yang rising.

Dietary Imbalance: Overconsumption of rich or greasy foods impairs Spleen function, generating Phlegm that clouds the orifices. Spleen deficiency also fails to produce sufficient Qi and Blood, resulting in cerebral malnourishment [8].

Overwork or Sedentary Lifestyle: Both extremes disrupt Qi circulation, promoting Phlegm and Blood stasis [2].

These multifactorial endogenous disruptions culminate in meridian obstruction and pain, necessitating individualized acupuncture strategies.

3.2 Meridian Theory in Practice

The Gallbladder channel ascends from the lateral canthus to the temporal region and vertex, while the Stomach channel traverses the forehead and supraorbital area—precisely mirroring common migraine foci [3,5]. Acupuncture at Fengchi (GB20), located near the greater and lesser occipital nerves, modulates local neurovascular tone [2]. The classic pairing of Sizhukong (TE23) penetrating to Lugu (GB8) exemplifies Shaoyang channel-specific needling to regulate Qi and alleviate pain [3].

Pain in TCM arises from "blockage causing pain" (bu tong ze tong). Acupuncture restores meridian Qi flow, rebalancing Yin-Yang. Mechanistically, needling activates endogenous analgesic systems (e.g., 5-HT, β-endorphin release) and modulates cerebral blood flow [2,7]. Points like Zulinqi (GB41) employ the "treating upper disorders via lower points" principle, while the Siguan combination (Hegu LI4 + Taichong LR3) harmonizes Liver Qi universally [2,3].

3.3 Syndrome-Based Acupuncture Strategies

As detailed in Section 2.2.2, accurate pattern identification—supported by symptomatology, tongue, and pulse—is paramount. Complex cases often present mixed patterns (e.g., Liver Yang with underlying Blood deficiency), requiring nuanced point combinations.

Meridian-Based Selection: Target channels corresponding to pain location (e.g., Shaoyang points for temporal pain: Fengchi, Sizhukong, Taiyang [EX-HN5]) [3,5].

Syndrome-Specific Adjuncts:

Liver Yang: Taichong (LR3), Xingjian (LR2)

Qi-Blood Deficiency: Zusanli (ST36), Sanyinjiao (SP6)

Phlegm-Turbidity: Fenglong (ST40), Zhongwan (CV12) [6]

Local Points: Taiyang for frontal pain; Fengchi for occipital pain [2].

Integrated prescriptions—e.g., Fengchi + Taiyang + Taichong for Liver Yang migraine—exemplify TCM's holistic, individualized approach.

4 Advances in Clinical Research

4.1 Research Methodologies

RCTs remain the gold standard. High-quality designs employ computer-generated randomization, appropriate controls (sham acupuncture, pharmacotherapy, or placebo), and rigorous blinding where feasible [4,9]. Challenges include participant blinding due to needle sensation and operator unblinding. Sample size calculations and minimized dropout rates are critical for statistical power [4].

Cohort studies assess long-term outcomes; case-control studies identify predictive factors; cross-sectional surveys gauge real-world utilization [1,9]. While less rigorous than RCTs, they provide valuable complementary data, especially in early-phase hypothesis generation.

4.2 Outcome Measures

Primary endpoints include:

Attack Frequency: Acupuncture significantly reduces monthly headache days (e.g., >50% reduction vs. baseline) [7].

Duration: Shortens average attack length (e.g., from 6 to 3 hours).

Intensity: Measured by Visual Analog Scale (VAS); acupuncture consistently lowers VAS scores [7].

Validated instruments include:

Migraine-Specific Quality of Life Questionnaire (MSQ): Captures role function, emotional impact, and social limitations [8].

SF-36: Evaluates general physical and mental health domains.

Studies confirm acupuncture improves both MSQ and SF-36 scores, particularly in emotional and social functioning [8].

4.3 Key Clinical Findings

Systematic reviews and meta-analyses consistently favor acupuncture over conventional care in reducing frequency, duration, and severity of migraine attacks, with sustained benefits over time [4,6]. Efficacy appears more pronounced in younger patients and those with shorter disease duration [4].

Manual Acupuncture: Effective for mild-moderate cases .

Electroacupuncture: Superior analgesia in severe/chronic migraine via neuromodulation .

Scalp & Bloodletting: Rapid relief for specific patterns (e.g., Blood stasis) [7].

Optimal modality selection requires further comparative effectiveness research.

Integrative regimens—acupuncture plus herbal medicine or manual therapy—demonstrate synergistic effects:

Tianma Gouteng Yin + acupuncture outperformed acupuncture alone in Liver Yang migraine [6].

Myofascial release + acupuncture reduced attack frequency more effectively than either monotherapy.

Such approaches minimize drug dependence and adverse effects while enhancing holistic regulation.

5 Discussion and Conclusion

5.1 Current Limitations

Key shortcomings include:

Theoretical: Superficial engagement with classical texts; lack of consensus on syndrome criteria [9].

Methodological: Poor RCT design (inadequate randomization, blinding, controls); heterogeneous patient populations (e.g., mixing migraine subtypes) [1,9].

5.2 Future Research Priorities

Deepen TCM Theory Integration: Use neuroimaging (fMRI, DTI) and molecular biology to validate concepts like "Liver Yang rising" or "Blood stasis" [3].

Enhance Trial Rigor: Implement STRICTA guidelines; use validated sham controls; ensure syndrome homogeneity [1].

Elucidate Mechanisms: Investigate acupuncture's effects on brain networks (e.g., default mode network), neurotransmitters, and inflammatory markers via multidisciplinary collaboration [1,8].

Standardize Outcomes: Adopt internationally recognized tools (e.g., MSQ, ICHD-3 criteria) to improve cross-study comparability [3].

5.3 Clinical Recommendations

Point Selection: Prioritize Shaoyang points (Fengchi, Sizhukong, Taiyang) supplemented by syndrome-specific distal points (Hegu, Taichong, Zusanli) [2,5].

Modality Choice: Use electroacupuncture or bloodletting for acute/severe cases; scalp acupuncture or maintenance needling for prophylaxis [9].

Integrative Approach: Combine with herbs or manual therapy for complex or refractory cases to maximize efficacy and minimize side effects [6].

References

1. Duan, L. N., Xu, Y. F., & Li, M. (2021). Quality assessment of systematic reviews and meta-analyses on acupuncture for migraine based on radar chart multidimensional evaluation. Journal of Basic Chinese Medicine, 27(7), 1156–1159. (In Chinese) https://doi.org/10.13193/j.issn.1006-3250.2021.07.040
2. Kong, L. (2022). Research progress on acupuncture for migraine. Chinese Journal of Ethnomedicine and Ethnopharmacy, 31(21), 53–56. (In Chinese) https://doi.org/10.3969/j.issn.1007-8517.2022.21.013
3. Xu, L. L., Li, K. S., Du, Z. M., Lu, M. X., Chen, C., Wu, K., Ren, Y., & Zou, Y. H. (2023). Diffusion tensor imaging study of acupuncture intervention in patients with migraine without aura. Journal of Anhui University of Chinese Medicine, 42(2), 41–46. (In Chinese) https://doi.org/10.13668/j.issn.2096-8426.2023.02.008

4. Yang, J., Xiong, J., Yuan, T., & Wang, X. (2021). Evaluation of clinical evidence for acupuncture in treating migraine. Jiangxi Journal of Traditional Chinese Medicine, 52(7), 56–59. (In Chinese) https://doi.org/10.13827/j.cnki.kyyx.2021.07.018
5. Bao, X. B., & Xiong, R. (2020). Characteristics and compatibility rules of acupoints used in TCM acupuncture for migraine. Guide of China Medicine, 18(8), 175–176. (In Chinese) https://doi.org/10.15912/j.cnki.gocm.2020.08.142
6. Liu, Y., & Xu, Y. (2023). Clinical observation on modified Tianma Gouteng Decoction combined with acupuncture for Liver-Yang hyperactivity type migraine. Henan Journal of Traditional Chinese Medicine, 43(4), 598–602. (In Chinese) https://doi.org/10.16368/j.issn.1003-5028.2023.04.123
7. Feng, W., Xu, X. B., Yang, S. H., Xu, D., & Ding, W. T. (2021). Clinical observation on fire needle bloodletting at Neiyingxiang (EX-HN11) combined with filiform needle for blood stasis obstructing collaterals type migraine. Beijing Journal of Traditional Chinese Medicine, 40(6), 647–651. (In Chinese) https://doi.org/10.16025/j.1674-1307.2021.06.018
8. Du, T., Tang, L. J., & Li, Z. (2022). Influence of syndrome-based acupuncture guided by "Deqi" theory on migraine without aura and the default mode network. Jilin Journal of Traditional Chinese Medicine, 42(9), 1096–1099. (In Chinese) https://doi.org/10.13463/j.cnki.jlzyy.2022.09.022
9. Zheng, J. Y., Wang, J. J., Jing, X. H., & Hu, J. (2012). Advances in clinical research on acupuncture for migraine. Chinese Journal of Information on Traditional Chinese Medicine, 19(10), 104–107. (In Chinese) https://doi.org/10.3969/j.issn.1005-5304.2012.10.040