Nature and Science of Sleep

Elevate Series

Open Access Full Text Article

LETTER

Is Acupuncture Clinically Ready for Post-Stroke Sleep Disorders? A Critical Commentary on a Recent Network Meta-Analysis [Letter]

Fei-Yi Zhao[1–4], Qiang-Qiang Fu[5], Yuen-Shan Ho[6]

[1]Department of Nursing, School of International Medical Technology, Shanghai Sanda University, Shanghai, 201209, People's Republic of China; [2]School of Health and Biomedical Sciences, RMIT University, Bundoora, VIC, 3083, Australia; [3]Sydney School of Health Sciences, Faculty of Medicine and Health, The University of Sydney, Camperdown, NSW, 2050, Australia; [4]Shanghai Municipal Hospital of Traditional Chinese Medicine, Shanghai University of Traditional Chinese Medicine, Shanghai, 200071, People's Republic of China; [5]Yangpu Hospital, School of Medicine, Tongji University, Shanghai, 200090, People's Republic of China; [6]School of Nursing, Faculty of Health and Social Sciences, The Hong Kong Polytechnic University, Hong Kong SAR, People's Republic of China

Correspondence: Qiang-Qiang Fu, Yangpu Hospital, School of Medicine, Tongji University, Shanghai, 200090, People's Republic of China, Tel +86 021-6569 0520, Fax +86 021-6569 6249, Email qiangqiang.fu@tongji.edu.cn; Yuen-Shan Ho, School of Nursing, Faculty of Health and Social Sciences, The Hong Kong Polytechnic University, Hong Kong SAR, People's Republic of China, Tel +852 2766-6410, Fax +852 2364-9663, Email janice.ys.ho@polyu.edu.hk

Dear editor

We read with interest the article by Lian et al[1] on acupuncture-related therapies for post-stroke sleep disorders (PSSD). While valuable, several methodological concerns merit discussion.

First, the study's definition of PSSD requires scrutiny, as it did not adequately account for the distinct clinical entities encompassed by PSSD, which include post-stroke insomnia, hypersomnia,[2] obstructive sleep apnea (OSA),[3] and restless legs syndrome (RLS),[4] each with unique pathophysiology. Lian et al excluded OSA and RLS, asserting that these conditions are unrelated to stroke. However, both are prevalent among post-stroke patients and significantly impact sleep quality and recovery.[3,4]

While the omission of continuous positive airway pressure therapy and dopaminergic agents likely stems from this exclusion, the claim that "Current Western medical treatments primarily rely on pharmacotherapy, including benzodiazepines…" remains misleading. Benzodiazepines are generally not recommended for post-stroke insomnia due to adverse effects and risk of motor deficits recurrence.[2] Instead, CBT-i is considered the first-line treatment for stroke-related insomnia.[2] The failure to acknowledge these established therapeutic approaches undermines the clinical relevance of the study's framework.

Second, the classification of acupuncture therapies requires further clarification. Electro-acupuncture was treated as a standalone intervention rather than a needling technique under the broader acupuncture umbrella. Moxibustion, which uses heat from burning *Artemisia vulgaris*, was grouped under acupuncture, despite being fundamentally different from needle-based methods.[5] These conceptual inconsistencies may have biased the analysis.

Third, the exclusive use of the PSQI as the primary outcome is problematic. PSQI is a general sleep quality measure and does not capture features specific to PSSD subtypes such as post-stroke OSA or post-stroke RLS. Objective metrics like apnea-hypopnea index or RLS questionnaires like International RLS Study Group Rating Scale would be more appropriate. Additionally, two included RCTs measured only serotonin and norepinephrine levels without PSQI data, and employed transcutaneous electrical acupoint stimulation which does not involve needle penetration. Including studies that do not meet predefined eligibility criteria may bias the meta-synthesis, potentially over- or underestimating acupuncture's true therapeutic effect.

Fourth, Lian et al's study pooled clinically heterogeneous PSSD conditions but lacked subtype-stratified analyses, obscuring potential treatment response variations across subtypes. By aggregating mechanistically distinct conditions under a single diagnostic category and applying non-specific outcome measures, the study limited clinically meaningful conclusions regarding acupuncture's efficacy for specific PSSD presentations.

Received: 17 June 2025
Accepted: 24 June 2025
Published: 2 July 2025

Fifth, the article failed to assess the safety of acupuncture, despite existing evidence indicating a 3–6% incidence of adverse events in post-stroke insomnia treatment.[6] This omission hinders understanding of acupuncture's risk-benefit balance.

Sixth, although inconsistency testing was unnecessary due to the absence of closed loops, Lian et al neither assessed between-trial heterogeneity nor performed subgroup analysis, meta-regression, or sensitivity analysis to explore its sources, which likely produced artificially narrow confidence intervals, masking the true uncertainty around the estimated treatment effects.[7]

Seventh, the outdated 2008 Cochrane RoB tool was used instead of the updated RoB 2.0 tool which was developed to improve assessment reliability.[8] Furthermore, the article did not grade the strength of evidence for outcomes derived from the network meta-analysis. Following the *PRISMA for Network Meta-Analyses* statement[9] would enhance methodological rigor and transparency.

In conclusion, while Lian et al's study offers preliminary insights into the role of acupuncture therapies in managing PSSD, the methodological limitations outlined above must be addressed to ensure more robust and clinically translatable findings. Future studies should prioritize (1) delineating which PSSD subtypes respond to acupuncture—whether as monotherapy or adjunctive therapy—and (2) characterizing its safety profile in this vulnerable population. These constructive critiques aim to guide subsequent investigations and foster scholarly discourse to enhance methodological quality in this field.

Abbreviations

CBT-i, Cognitive-Behavioral Therapy for Insomnia; OSA, Obstructive Sleep Apnea; PSQI, Pittsburgh Sleep Quality Index; PSSD, Post-Stroke Sleep Disorders; RCT(s), Randomized Controlled Trial(s); RLS, Restless Legs Syndrome; RoB, Risk of Bias; RoB 2.0 tool, Revised Cochrane Risk-of-Bias Tool for Randomized Trials.

Data Sharing Statement

Data sharing is not applicable to this article as no datasets were generated or analyzed for this communication.

Author Contributions

Fei-Yi Zhao: Conceptualization, Investigation, Formal analysis, Writing - original draft. Qiang-Qiang Fu: Methodology, Formal analysis, Writing - review & editing. Yuen-Shan Ho: Conceptualization, Formal analysis, Writing - review & editing.

All authors gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

Funding

No funding was received.

Disclosure

The authors declare no competing interests in this communication.

References

1. Lian J, Jiang Y, Kong L, Zhou M. Comparative efficacy of various acupuncture-related therapies for post-stroke sleep disorders: a network meta-analysis of randomized controlled trials. *Nat Sci Sleep*. 2025;17:1217–1229. doi:10.2147/NSS.S507392
2. Cai H, Wang XP, Yang GY. Sleep disorders in stroke: an update on management. *Aging Dis*. 2021;12(2):570–585. doi:10.14336/AD.2020.0707
3. Das P, Wang Y, Angom RS, et al. Changes in plasma concentrations of novel vascular and inflammatory biomarkers in obstructive sleep apnea patients pre- and post-stroke. *Sleep Med*. 2024;119:518–525. doi:10.1016/j.sleep.2024.05.034
4. Zorgor G, Kabeloglu V, Soysal A. Restless legs syndrome after acute ıschemic stroke and ıts relation to lesion location. *Sleep Biol Rhythms*. 2022;20(4):551–560. doi:10.1007/s41105-022-00401-9
5. Chiu JH. How does moxibustion possibly work? *Evid Based Complement Alternat Med*. 2013;2013:198584. doi:10.1155/2013/198584
6. Yang J. Acupuncture treatment for post-stroke insomnia: a systematic review and meta-analysis of randomized controlled trials. *Complement Ther Clin Pract*. 2021;44:101396. doi:10.1016/j.ctcp.2021.101396
7. Thompson SG. Why sources of heterogeneity in meta-analysis should be investigated. *BMJ*. 1994;309(6965):1351–1355. doi:10.1136/bmj.309.6965.1351

8. Sterne JAC, Savović J, Page MJ, et al. RoB 2: a revised tool for assessing risk of bias in randomised trials. *BMJ*. 2019;366:l4898. doi:10.1136/bmj.l4898
9. Hutton B, Salanti G, Caldwell DM, et al. The PRISMA extension statement for reporting of systematic reviews incorporating network meta-analyses of health care interventions: checklist and explanations. *Ann Intern Med*. 2015;162(11):777–784. doi:10.7326/M14-2385