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insomnia after stroke

Insomnies post-AVC : Evaluation de l'acupuncture

1. Systematic Reviews and Meta-Analysis

1.1. Acupuncture générique

1.1.1. Yan 2025

Yan M, Yang F, Hou Y, Wang Z, Luo Y, Yang Q. Efficacy and safety of acupuncture in the treatment of poststroke insomnia: A systematic review and meta-analysis. Medicine (Baltimore). 2025 Aug 15;104(33):e43890. https://doi.org/10.1097/MD.0000000000043890

Background	Insomnia is an adverse factor affecting the quality of life of stroke survivors, and acupuncture is widely used in the treatment of poststroke insomnia, but there is a lack of systematic and comprehensive collated analysis of the efficacy of acupuncture. Therefore, this study evaluated the effectiveness of acupuncture in treating poststroke insomnia through a systematic review and meta-analysis of randomized controlled trials.
Methods	The randomized controlled trials of acupuncture for poststroke insomnia in PubMed, Cochrane Library, Embase, Web of Science, China Knowledge Infrastructure, China Science Journal Database, Wanfang Database, and China Biomedical Literature Service System were searched for randomized controlled trials of acupuncture treatment for poststroke insomnia, screened according to the inclusion and exclusion criteria, extracted the relevant data and performed Meta-analysis using RevMan 5.4 software.
Results	A total of **13 studies involving 1046 patients** were included. Meta-analysis showed that acupuncture was more effective in improving pittsburgh sleep quality index (mean difference [MD] = -3.49, 95% CI: -5.09 to -1.89, I2 = 96%, P < .00001), sleep efficiency (MD = 5.03, 95% CI: 1.02-9.04, I2 = 51%, P = .15) and Hamilton depression scale (MD = -3.25, 95% CI: -4.14 to -2.36, I2 = 0%, P = .40) were better. Acupuncture had a nonsignificant advantage in improving norepinephrine (MD = -0.04, 95% CI: -0.12 to -0.04, I2 = 5%, P = .31).
Conclusion	Compared with conventional medications, acupuncture had significant advantages in improving pittsburgh sleep quality index, Hamilton depression scale, and sleep efficiency, but no significant advantage in improving norepinephrine in patients with poststroke insomnia.

1.1.2. Su 2024

Su Q, Wang L, Yu H, Li H, Zou D, Ni X. Chinese herbal medicine and acupuncture for insomnia in stroke patients: A systematic review and meta-analysis of randomised controlled trials. Sleep Med. 2024 Aug;120:65-84. https://doi.org/10.1016/j.sleep.2024.05.006

Backgound	Insomnia is highly prevalent in stroke patients; however, there is no ideal intervention. This systematic review examined the effect and safety of Chinese herbal medicine (CHM) and acupuncture on sleep in adults with stroke.
Methods	Six databases were searched from inception to June 2023 to identify randomised controlled trials (RCTs). The primary outcome was Pittsburgh Sleep Quality Index (PSQI) scores. Risk of bias and evidence quality was assessed. A pairwise random-effect meta-analysis was performed.
Results	A total of **54 RCTs** published in 55 articles were finally included in the systematic review, including 35 of CHM and 19 of acupuncture therapies. Compared with placebo/sham procedure, CHM and acupuncture were more effective in improving PSQI scores. The evidence of moderate quality suggested that CHM outperformed benzodiazepine drugs (BZDs) while it presented an effect similar to that of non-BZDs in improving sleep quality. CHM and acupuncture also provided additional benefits to the patients treated with pharmacological agents alone. However, the evidence specific to individual CHM prescriptions lay in various factors and methodological quality, and the evidence on the comparative effectiveness between acupuncture and other therapies was conflicting or limited.
Conclusions	Overall, CHM and acupuncture used alone or in combination with pharmacotherapy can safely improve sleep in stroke patients with insomnia. In the future, RCTs on outstanding CHM prescriptions and the comparative effectiveness research between acupuncture and other therapies are needed.

1.1.3. Shi 2023

Shi M, Ji Z, Sun T, Hu H, Chen Z, Feng C, Zhang J, Zhao M, Yang F. Efficacy and safety of acupuncture on sleep quality for post-stroke insomnia: a systematic review and meta-analysis. Front Neurol. 2023 Jun 27;14:1164604. https://doi.org/10.3389/fneur.2023.1164604

Background	Stroke is the second leading cause of death worldwide, and improving sleep quality in post-stroke insomnia is beneficial to the recovery of stroke. Acupuncture is widely used for the treatment of post-stroke insomnia in China. Therefore, this systematic review and meta-analysis were performed to explore the efficacy and safety of acupuncture for post-stroke insomnia.
Methods	Eight databases were searched from their inception to 12 September 2022. Two reviewers independently performed the study screening and data extraction. The outcomes include Pittsburgh Sleep Quality Index (PSQI), objective sleep data measured by polysomnography (PSG), long-term efficacy and adverse events. The quality of the trials was assessed by the Cochrane risk of bias tool 2.0. The RevMan 5.4 and Stata 15.1 were used for data synthesis.
Results	Among **3,233 participants from 41 studies** were included. Pooled results indicated that acupuncture was superior to control group (CG) in improving PSQI total score (standardized mean difference (SMD) = -1.03, 95% confidence interval (CI): -1.32, -0.74, $P < 0.00001$), increasing sleep efficiency (SMD = 0.65, 95% CI: 0.37 to 0.92) and total sleep time (SMD = 0.54, 95% CI: 0.22 to 0.86). The favorable results in improving PSQI total score (SMD = 0.65, 95% CI: 0.37 to 0.92), reduced sleep latency (SMD = 1.84, 95% CI: 0.31 to 3.38) and increased total sleep time (SMD = -0.73, 95% CI: -1.15 to -0.31) were also observed in comparisons of acupuncture plus CG vs. CG. As of long-term efficacy and safety, the effects of acupuncture were long-term and robustness, however, due to limited safety information, reliable safety conclusions cannot be drawn. Subgroup analysis showed that acupuncture plus CG was superior to CG for post-infarction patients, but the efficacy of acupuncture alone compared to non-BZDs or other hypnotics needs further research. The GRADE assessment demonstrated that the level of evidence was mostly low or very low given the flaws in the study design and considerable heterogeneity among the included studies.

Conclusion	Acupuncture could improve sleep quality, has long-term efficacy and without serious adverse events. However, the findings should be treated with caution owing to the existence of methodological quality issues. More studies with rigorous designs are warranted for validation and explored the safety of acupuncture.

1.1.4. Lowe 2022 ☆

Lowe A, Bailey M, O'Shaughnessy T, Macavei V. Treatment of sleep disturbance following stroke and traumatic brain injury: a systematic review of conservative interventions. Disabil Rehabil. 2022 Jun;44(13):2975-2987. https://doi.org/10.1080/09638288.2020.1856948

Purpose	Sleep disorders are common following stroke and traumatic brain injury. We present a systematic review of the literature investigating conservative interventions to improve sleep in these populations.
Materials and methods	The PRISMA statement was used. Embase, PubMed, and the Cochrane library were searched for all experimental studies published prior to 28th March 2020 that assessed conservative interventions to improve the sleep or sleep disorders of adults with a history of stroke or traumatic brain injury (TBI). Two authors reviewed publications of interest and risk of bias assessments were performed using the Cochrane Risk of Bias Tool or the Methodological Index for Non-Randomised Studies instrument.
Results	Twenty-three publications were included in this systematic review. Meta-analyses were not performed due to study heterogeneity. Psychotherapy-based approaches might be useful for sleep disturbance after TBI and acupuncture may help improve insomnia or sleep disturbance following stroke or TBI, respectively. The evidence was less clear for morning bright light therapy and exercise. Limitations included a single author performing primary searches, only English publications, the reporting of secondary outcome measures, and sleep disorder diagnoses.
Conclusions	Some conservative interventions might be useful for improving sleep disturbance or disorders in these populations, but further research is required.IMPLICATIONS FOR REHABILITATIONSleep disturbance is common following stroke and traumatic brain injury, with insomnia and obstructive sleep apnoea being the most frequently diagnosed sleep disorders.Psychotherapy-based approaches might be useful for sleep disturbance after TBI and acupuncture may help improve insomnia or sleep disturbance following stroke or TBI, respectively.Morning bright light therapy appeared to be more beneficial for fatigue rather than sleep disturbance after TBI, and the evidence for exercise was less clear.

1.1.5. Su 2022

Su Q, Zou D, Gai N, Li H, Kuang Z, Ni X. Traditional Chinese Medicine for Post-stroke Sleep Disorders: The Evidence Mapping of Clinical Studies. Front Psychiatry. 2022 Jun 15;13:865630. https://doi.org/10.3389/fpsyt.2022.865630

Background and purpose	Recently, there are a number of clinical studies on traditional Chinese medicine (TCM) for post-stroke sleep disorders (PSSDs). This study aimed to map the current clinical studies and identify gaps to inform future study agendas.
Methods	PubMed, Embase, Cochrane Library, and Chinese databases, including SinoMed, CNKI, and Wanfang, were searched for clinical studies on PSSDs treated with TCM from their inception to September 2021. Evidence sources, number of studies, types of PSSDs, intervention categories, effectiveness, and quality assessment were graphically displayed.

Results	The evidence map involved 810 clinical studies, of which the earliest report was dated back to 1993, and an advanced growth of the whole evidence was observed in 2012. Randomized controlled trials (RCTs) were the most common type of study design (78.15%), and post-stroke insomnia was the most common type of sleep disorders (65.80%). The benefits of Chinese herbal medicine (CHM) and **acupuncture** therapies for post-stroke insomnia have been widely reported in RCTs (81.60% and 75.38%, respectively). However, the benefits of CHM interventions were assessed using a global approach rather than being based on a specific formula, and the highest level of evidence supporting the effectiveness of acupuncture therapies was of low methodological quality. In addition, evidence from primary studies was insufficient in the areas of TCM for post-stroke sleep-related breathing disorders (SBDs) and Chinese mind-body exercises for post-stroke insomnia.
Conclusions	PSSDs treated with TCM have been widely assessed in clinical studies. For better evidence translation, clinical trials on specific CHM interventions and high-quality systematic reviews on acupuncture for post-stroke insomnia should be conducted. For a better solution to clinical questions, TCM on SBDs after stroke and the benefits of Chinese mind-body exercises for post-stroke insomnia should be explored in future clinical studies.

1.1.6. Zhou 2022 ☆

Zhou L, Hu X, Yu Z, Yang L, Wan R, Liu H, Wang Y. Efficacy and Safety of Acupuncture in the Treatment of Poststroke Insomnia: A Systematic Review and Meta-Analysis of Twenty-Six Randomized Controlled Trials. Evid Based Complement Alternat Med. 2022 Mar 19;2022:5188311. https://doi.org/10.1155/2022/5188311

Objective	To evaluate the efficacy and safety of acupuncture in the treatment of poststroke insomnia.
Methods	PubMed, the Cochrane Library, Embase, Web of Science, China Biology Medicine (CBM), CNKI, VIP, and Wanfang databases were searched by computer from their inception to April 29, 2021, for collecting all randomized controlled trials of acupuncture in the treatment of poststroke insomnia. After two reviewers independently screened the literature, extracted the data, and evaluated the risk of bias in the included studies, the data were analyzed by RevMan 5.3 and STATA 16.0. The quality of outcomes was evaluated by the Grading of Recommendations Assessment, Development and Evaluation (GRADE).
Results	A total of **26 studies with 1874 cases** were included, which had 942 cases in the treatment group and 932 cases in the control group. Meta-analysis results showed that, compared with oral medications alone, acupuncture alone or acupuncture combined with oral medications could improve the clinical effective rate and the sleep quality of patients, and the combined effects were RR = 1.21; 95% CI: 1.15, 1.27; P < 0.00001 and MD = 3.41; 95% CI: 2.40, 4.41; P < 0.00001, respectively. As for adverse reactions, the incidence of acupuncture alone or acupuncture combined with oral drugs was lower than that of oral drugs alone, which was safer and the combined effect was RR = 0.21; 95% CI: 0.09, 0.48; P=0.0002. Sensitivity analysis showed that the results were stable. We evaluated the quality of evidence with the GRADE system; the clinical effective rate was rated as “LOW,” the evidence grade of PSQI score was “LOW,” and the evidence grade of adverse reactions was “Very LOW.”
Conclusion	Acupuncture alone or acupuncture combined with oral drugs is more effective and safer than oral drugs alone in the treatment of poststroke insomnia, which is suitable to promote in clinical practice.

1.1.7. Nie 2020 ☆

Nie Fenfen. [A Meta-analysis on effectiveness of acupuncture on post-stroke insomnia]. Shaanxi Journal of TCM. 2020. [212960].

Objective	To evaluate the effectiveness of acupuncture post-stroke insomnia synthetically with Meta-analysis.
Methods	Clinical randomized controlled trials of post-stroke insomnia were searched from database of CNKI, VIP and WanFang, PubMed, Cochrane library, according to literature inclusion and exclusion criteria, choosed documents that met the criteria, entering the data into an Excel, and performing Meta-analysis by Cochrane Revman 5. 3.
Results	A total of **19 studies**, including simple-acupuncture 12 studies and joint acupuncture 7 studies, **1535 cases** were included in the studies. The simple-acupuncture could be considered to be with higher effectiveness compared with drugs, the funnel plot of it showed an asymmetry distribution, there was little potential bias;In addition, acupuncture combined with other treatments, like ear acupoint, cognitive treatment, drugs and so on, more attention should be on complex effect or the addictive effect of acupuncture.
Conclusion	Acupuncture treatment for post-stroke insomnia was effective, acupuncture combined with other methods may synergically. However, more high-quality researches in order to increase the strength of the evidence are still needed.

1.1.8. Lee 2016 ☆

Lee SH, Lim SM. Acupuncture for insomnia after stroke: a systematic review and meta-analysis. BMC Complement Altern Med. 2016;16:228. [165322].

Objectives	Insomnia is the common complaint among patients with stroke. Acupuncture has increasingly been used for insomnia relief after stroke. The aim of the present study was to summarize and evaluate evidence on the effectiveness of acupuncture in relieving insomnia after stroke.
Methods	Seven databases were searched from inception through October 2014 without language restrictions. Randomized controlled trials (RCTs) were included if acupuncture was compared to placebo or other conventional therapy for treatment of insomnia after stroke. Assessments were performed using the Pittsburgh sleep quality index (PSQI), the insomnia severity index (ISI), the Athens insomnia scale (AIS), and the efficacy standards of Chinese medicine.
Results	A total of 165 studies were identified; **13 RCTs met our inclusion criteria**. Meta-analysis showed that acupuncture appeared to be more effective than drugs for treatment of insomnia after stroke, as assessed by the PSQI (weighted mean difference, 4.31; 95 % confidence interval [CI], 1.67-6.95; $P = 0.001$) and by the efficacy standards of Chinese medicine (risk ratio, 1.25; 95 % CI, 1.12-1.40; $P < 0.001$). Intradermal acupuncture had significant effects compared with sham acupuncture, as assessed by the ISI (weighted mean difference, 4.44; 95 % CI, 2.75-6.13; $P < 0.001$) and the AIS (weighted mean difference, 3.64; 95 % CI, 2.28-5.00; $P < 0.001$).
Conclusions	Our results suggest that **acupuncture could be effective for treating insomnia after stroke**. However, further studies are needed to confirm the role of acupuncture in the treatment of this disorder

1.2. Special Acupuncture Techniques

1.2.1. Comparison of Acupuncture techniques

1.2.1.1. Tang 2026

Tang J, Tan H, Xiao L, Zeng S, Wang S, Liu Q, Xie Y, Jiang J, Xie L, Wu D. Effectiveness of acupuncture and related therapies for post-stroke insomnia: A systematic review and Bayesian network analysis. Medicine (Baltimore). 2026;105(32):e50081. https://doi.org/10.1097/MD.0000000000050081

Background	Poststroke insomnia is often associated with poor recovery. Acupuncture (Acu) and related therapies offer have notable advantages as effective and safe treatment for poststroke insomnia. This systematic review evaluated the therapeutic effect of various Acu interventions on poststroke insomnia.
Methods	Two researchers independently screened literature and extracted data from 8 databases for randomized controlled trials of Acu and related therapies for poststroke insomnia. The risk of bias was assessed using the “bias risk assessment tool” recommended by the Cochrane Library. R version 4.4.1 and Stata 18.0 were used to conduct a network meta-analysis of relevant outcomes.
Results	A total of **107 articles were included, involving 8062 patients and 14 Acu related therapies**. Network meta-analysis revealed that in terms of Pittsburgh Sleep Quality Index total score, Acu related therapies were superior to western medicine and conventional rehabilitation therapy. The combined therapy, Acu + auriculotherapy + electroacupuncture had the best outcomes. Acu alone, Acu + auriculotherapy + point embedding and Acu + western medicine had better effects on prolonging sleep duration and shortening sleep latency. For subjective sleep quality, point embedding achieved the best outcomes. Warm acupuncture demonstrated the best results in improving daily functional dysfunction, while Acu ranked the as the best in reducing the degree of sleep disorder.
Conclusion	Acu and related therapies have a positive effect in ameliorating poststroke insomnia, with the combined therapy having a more significant effect. However, different Acu regimens should be considered for poststroke insomnia patients with different clinical manifestations. More standardized clinical trials are needed to provide higher quality evidence and optimal treatment regimen.

1.2.1.2. Lian 2025

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 Jun 9;17:1217-1229. https://doi.org/10.2147/NSS.S507392

Background	Post-stroke sleep disorders (PSSD) are among the most prevalent complications of stroke, significantly impeding neurological recovery and increasing the risk of recurrence. While Western medicine primarily relies on pharmacological treatments, these often come with side effects and inconsistent outcomes. Recent evidence supports the effectiveness of various acupuncture therapies for PSSD, but the optimal treatment strategy remains unclear.
Objective	To compare the efficacy of different acupuncture therapies for PSSD using a network meta-analysis.

Methods	We conducted systematic searches in multiple databases, including CNKI (since 1994), VIP (since 1989), CBM (since 1978), WanFang (since 1998), the Chinese Clinical Trial Registry (since 2005), PubMed (since 1966), EMBASE (since 1974), The Cochrane Library (since 1993), Web of Science (since 1900), and ClinicalTrials (since 2000). Randomized controlled trials (RCTs) on acupuncture therapies for PSSD were included up to May 31, 2024. Studies were screened based on predefined inclusion and exclusion criteria, and their quality was assessed using the Cochrane Handbook for Systematic Reviews of Interventions. Data were analyzed using RevMan 5.3 and Stata 14.
Results	A total of **53 RCTs involving 3973 patients** were included. The network meta-analysis evaluated 12 interventions. Auricular acupressure combined with Western medicine ranked highest for improving PSQI scores (surface under the cumulative ranking curve [SUCRA]: 96.2%), followed by acupuncture (68.5%) and moxibustion combined with Western medicine (63.6%). For increasing serum 5-HT levels, moxibustion combined with Western medicine ranked highest (SUCRA: 89.3%), followed by acupuncture combined with Western medicine (79.1%). Acupuncture combined with Western medicine was most effective in reducing serum NE levels (SUCRA: 97%).
Conclusion	Acupuncture therapies are effective for PSSD and it is more effective when used in combination with western medicine. These effects may be mediated by modulating neurotransmitter levels. However, further large-scale, multi-center RCTs are needed to confirm these findings. This study followed PRISMA guidelines and was registered with PROSPERO (CRD42023470398).

1.2.1.3. Liu 2025

Liu W, Jing R. Efficacy and safety of TCM non-pharmacologic therapy for post-stroke insomnia: a systematic review and network meta-analysis. Sleep Breath. 2025 May 31;29(3):199. https://doi.org/10.1007/s11325-025-03357-5

Backgound	Post-stroke insomnia is a common and frequently occurring disease that has a significant impact on the quality of life of patients. TCM (traditional Chinese medicine) non-pharmacologic therapy is increasingly being used for patients with post-stroke insomnia. The purpose of this study is to evaluate the efficacy and safety of the TCM non-pharmacologic therapy for post-stroke insomnia.
Methods	English and Chinese databases, including PubMed, Web of Science, Cochrane Library, Embase, CNKI, Wanfang, VIP, and SinoMed were retrieved to collect randomized controlled trials (RCTs) comparing the TCM non-pharmacologic therapy with Western medicine in the treatment of post-stroke insomnia. The search was conducted until March 26, 2024. Data analysis was conducted using Stata15.0.
Results	This study included a total of 60 RCTs, involving 5 TCM non-pharmacologic therapies and 4,587 patients. The results of the network meta-analysis unveiled that Western medicine combined with massage (SUCRA93.8), Western medicine combined with auricular point sticking (SUCRA80.5), and needle embedding (SUCRA71.5) were the top three measures in clinical efficacy. For improving the Pittsburgh Sleep Quality Index (PSQI), massage (SUCRA86.1) was the most effective, followed by Western medicine combined with auricular point sticking (SUCRA85.4), and Western medicine combined with needle embedding (SUCRA66.4). Regarding adverse reactions, the top three interventions were traditional acupuncture (SUCRA87.7), moxibustion (SUCRA63.2), and Western medicine combined with traditional acupuncture (SUCRA46.0).

Conclusions	TCM non-pharmacologic therapy and Western medicine combined with TCM non-pharmacologic therapy can improve clinical efficacy in post-stroke insomnia, enhance sleep quality, and reduce adverse reactions. Due to the limitations of the included studies, the methodological quality is generally not high, and multicenter, large sample, high-quality RCTs are still needed for validation in the future.

1.2.2. Points du vaisseau gouverneur

1.2.2.1. Dong 2019

Dong Longcong, Deng Luda, Wang Gang, Fu Yingyue, Xiang Kaiwei. [Meta-analysis of the Clinical Efficacy of Treating Insomnia Disorder with Acupuncture of Tongtiao Governor Meridian Compared with Estazolam]. Journal of Guiyang University of Chinese Medicine. 2019;1:90-95. [201738].

Objective	To evaluate the effect of acupuncture of Tongtiao Governor Meridian compared with oxazolam in the treatment of insomnia disorder.
Methods	PubMed, Embase, CNKI, VIP and WANFANG were searched to collect randomized controlled trials(RCTs)on the treatment of insomnia disorder with Tongtiao Governor Meridian compared with oxazolam from inception to April,2018. Two reviewers independently screened the literature, extracted data, assessed the risk of bias of included studies and analyzed date by using RevMan 5. 3 software.
Results	Eleven Rcts involving 792 cases were included. Among them,399 cases were belonged to the test group and 393 cases for match group. The results of Meta-analysis indicated that the efficiency rate[OR = 3. 92,95% CI(2. 52,6. 11),P < 0. 00001] and PSQI [WMD =-3. 94,95% CI(-5. 55,-2. 32), P < 0. 00001], acupuncture of Tongtiao Governor Meridian group were better thanoxazolam group.
Conclusions	The acupuncture of Tongtiao Governor Meridian for insomnia disorder has distinct advantage comparing with oxazolam. However, the less clinical studies and low-quality clinical studies in this field were carried out, the more high quality, large samples, multi-center randomized double-blind clinical studies are needed to verify its efficacy.

1.2.3. Electroacupuncture

1.2.4. Moxibustion

1.2.4.1. Ren 2022

Jia-Jun Ren, Hui-Chuan Tian, Yun-Fan Wang, Yun-Ting Li, Qian Xu, Lu Tian. Effectiveness and safety of moxibustion for poststroke insomnia: A systematic review and meta-analysis. World Journal of TCM. 2022 ;8(2) :199-209. https://doi.org/10.4103/2311-8571.335136

Objective	This study aimed to systematically evaluate the clinical efficiency and safety of moxibustion for the treatment of poststroke insomnia (PSI).

Methods	We searched PubMed, the Cochrane Library, Embase, China National Knowledge Infrastructure (CNKI), Wanfang Data Knowledge Service platform (Wanfang Data), Chinese Scientific Journal Database (VIP), and clinical rial for trandomized controlled trials on moxibustion as a treatment for PSI, including results from the creation of all databases until December 12, 2020. The functional languages used were Chinese and English. Two reviewers independently performed the literature search, data extraction, and quality evaluation. The primary and secondary outcome measures were the effective rate and adverse events, respectively. The meta-analysis was carried out using RevMan5.4 software and Stata15.
Results	Of the **11 trials, 996 patients** in mainland China were included. Compared to the control group, the combination of single moxibustion therapy or moxibustion combined with acupuncture in the treatment of DN could reduce the sleep quality score (SQS) (mean difference [MD] = −0.50, 95% confidence interval [CI] [− 0.89, −0.11], Z = 2.51, P = 0.01), time to falling asleep score (MD = −0.39, 95% CI [−0.49, −0.29], Z = 7.79, P < 0.00001), sleep time score (MD = −0.34, 95% CI [−0.59, −0.09], Z = 2.64, P = 0.008), sleep efficiency score (MD = −0.30, 95% CI [−0.52, −0.08], Z = 2.69, P = 0.007), sleep disorder score (MD = −0.29, 95% CI [−0.49, −0.09], Z = 2.85, P = 0.004), daily function disturbance score (MD = −0.54, 95% CI [−0.82, −0.26], Z = 3.78, P = 0.0002), Pittsburgh Sleep Quality Index aggregate score (MD = −2.30, 95% CI [−2.97, −1.63], Z = 6.71, P < 0.00001), SPIEGEL aggregate score (MD = −7.62, 95% CI [−8.12, −7.12], Z = 29.75, P < 0.00001), and stroke-specific quality of life aggregate score (MD = 12.68, 95% CI [0.92, 24.44], Z = 2.11, P = 0.03).
Conclusion	This study indicates that moxibustion contributes to the treatment of PSI. Nevertheless, more extensive trials are required to validate the results due to the small sample sizes, few reports on adverse effects, and high risk of bias in the included studies.

1.2.5. Auricular Acupuncture

1.2.5.1. Zhang 2019

Zhang Shuangmei, Ji Jing, Hu Lizhu, Liu Hongyu, Qiu Zhaoyang, Zhu Weifeng. [Meta-analysis of auricular acupuncture in the treatment of post- stroke insomnia]. Academic Journal of Shanghai University of Traditional Chinese Medicine. 2019;3:10-18+23. [201719].

Objective	To systematically evaluate the clinical efficacy of auricular acupuncture therapy in the treatment of post-stroke insomnia.
Methods	The Chinese and English databases were searched and the clinical randomized controlled trials(RCTs)of auricular acupuncture therapy compared with western medicine alone in the treatment of post-stroke insomnia were included. The methodological quality of the included researches was evaluated by the risk bias assessment tool provided by Cochrane, and the meta-analysis was carried out by Review Manager 5.3 software provided by Cochrane.
Results	A total of 18 RCTs including 1 443 patients were included in the study. The results of Meta-analysis showed that compared with western medicine alone, the auricular acupuncture therapy(including auricular acupuncture therapy alone, auricular acupuncture therapy combined with western medicine and auricular acupuncture therapy combined with other therapies)could enhance the clinical effective rate [RR=1.64,95%CI(1.45,1.85),P<0.01] and the cure rate [RR=1.73, 95%CI(1.41, 2.13),P<0.01], and improve the scores of Pittsburgh sleep quality index(PSQI)[SMD=1.23, 95%CI(0.69, 1.76), P<0.01].
Conclusion	Compared with western medicine, the auricular acupoint related therapy shows better clinical efficacy in the treatment of post-stroke insomnia, which is suitable for clinical promotion.

1.3. Special Clinical Forms

1.3.1. Post-stroke sleep apnea syndrome

1.3.1.1. Gao 2023

Gao H, Kan Z, Fang Y, Wang N, Yan W, Yang M, Song Y. Efficacy and safety of acupuncture in the treatment of stroke complicated with sleep apnea syndrome: A systematic review and meta-analysis of randomized controlled trials. Medicine (Baltimore). 2023 Apr 14;102(15):e33241. https://doi.org/10.1097/MD.0000000000033241

Background	stroke patients often have a combination of sleep apnea syndrome, which is an important and modifiable risk factor for stroke prognosis. Acupuncture is one of the measures for sleep apnea syndrome, and it is also widely used in stroke. However, we are concerned that its efficacy and safety in the treatment of stroke with sleep apnea syndrome are not yet clear.
Methods	This systematic review and meta-analysis was performed in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses schema and was registered with INPLASY (registration number: INPLASY202250113). The following 8 databases were searched: PubMed, Cochrane Library (CENTRAL), Embase, Web of Science, China National Knowledge Infrastructure, Chongqing VIP Information, WanFang Data, and China Biomedical Literature Database limited from the establishment of each database to May 4, 2022. Subject headings, free words, and keywords were used for retrieval. Relevant literature was supplemented by consulting other resources. We assessed the risk of bias in the included studies using the Cochrane risk of bias tool. RevMan 5.4 software (The Cochrane Collaboration, 2020) was used to perform the meta-analysis.
Results	Six records were included, including a total of 513 participants: 256 in the experimental group and 257 in the control group. The results showed that the total effective rate (relative risk = 1.23, 95% confidence interval (CI): 1.13, 1.34, P < .00001), apnea-hypopnea index (mean difference (MD) = -8.39, 95% CI: -9.19, -7.59, P < .00001), Epworth Sleepiness Scale score (MD = -1.59, 95% CI: -2.66, -0.52, P = .004), minimal oxygen saturation (MD = 4.99, 95% CI: 3.5, 6.47, P < .00001), longest duration of apnea (MD = -7.47, 95% CI: -8.97, -5.97, P < .00001), longest duration of apnea (MD = -6.48, 95% CI: -8.60, -4.35, P < .00001), and S100β levels (standard mean difference = -1.52, 95% CI: -1.87, -1.18, P < .00001) were better in the experimental group than in the control group. Simultaneously, the effect of reducing the neuron-specific enolase level in the experimental group was comparable to that in the control group (MD = -3.40, 95% CI: -9.08, 2.29, P = .24).
Conclusions	Acupuncture can improve the clinical symptoms and related laboratory indicators for sleep apnea syndrome in patients with stroke. More high-quality trials remain urgently needed.

2. Overviews of Systematic Reviews

2.1. Huang 2020

Huang J, Wu M, Liang S, Qin X, Shen M, Li J, Huang Y. A Critical Overview of Systematic Reviews and Meta-Analyses on Acupuncture for Poststroke Insomnia. Evid Based Complement Alternat Med. 2020.

[212876]. doi

Objectives	Acupuncture has increasingly been used for insomnia relief after stroke. We aimed to evaluate the methodological quality and summarize the evidence regarding the effectiveness of acupuncture for poststroke insomnia (PSI) from systematic reviews/meta-analyses (SRs/MAs).
Methods	Eight databases were searched from inception through August 23, 2020. SRs/MAs on acupuncture treatment for PSI were included. Methodological quality assessment was performed using Assessing the Methodological Quality of Systematic Reviews 2 (AMSTAR-2), and evidence quality assessment was performed using the Grading of Recommendations, Assessment, Development, and Evaluation (GRADE).
Results	**Six SRs/Mas** on acupuncture treatment for PSI were included. The AMSTAR-2 showed that the methodological quality of all included SRs/MAs was rated as critically low. According to the evaluation results of GRADE, 38.9% (7/18) of outcomes were rated as very low-quality evidence, 22.2% (4/18) were low-quality evidence, and 8.9% (7/18) were moderate-quality evidence. Descriptive analysis results showed that acupuncture was an effective treatment modality for PSI.
Conclusions	All included reviews indicated that acupuncture was more effective than the control group for the treatment of PSI, but the credibility of the results is limited owing to the generally low methodological and evidence quality of the included SRs/MAs. More high-quality evidence is needed to determine whether acupuncture is more effective than other treatments.

3. Guidelines / Recommandations de bonne pratique

⊕ positive recommendation (regardless of the level of evidence reported)
Ø negative recommendation, (or lack of evidence)

3.1. Canadian Partnership for Stroke Recovery (CPSR, Canada) 2018 ⊕

Evidence-based review of stroke rehabilitation: 18th edition, Canadian Partnership for Stroke Recovery (CPSR). 2018. [197578]. URL/

Insomnia. There is Level 1a evidence that intradermal acupuncture reduces insomnia when compared to sham acupuncture. There is Level 1b that acupuncture combined with music therapy reduces insomnia when compared to acupuncture alone.

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