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Tic Disorders

Troubles de tics

1. Systematic Reviews and Meta-Analysis

1.1. Generic Acupuncture

1.1.1. Pu 2023

Pu T, Liu Y, Wang J, Zhang J, Zhang J, Ran Z, Sheng Q, Yi Z, Ye J, Li Y, Wang X, Chi H, Luo W. Acupuncture and other traditional Chinese medicine therapies in the treatment of children's tic syndrome: A network meta-analysis. Front Neurosci. 2023 Apr 17;17:1156308. https://doi.org/10.3389/fnins.2023.1156308

Background	Tic disorders (TD) are a kind of neuropsychiatric disease that frequently occur among preschool and school-age children, mainly characterized by motor tics or sometimes accompanied by vocal tics, and its pathogenesis is still unclear. The clinical manifestations are mainly characterized by chronic multiple movements, rapid muscle twitching, involuntary occurrence, and language disorder. Acupuncture, tuina, traditional Chinese medicine, and other methods are commonly used in clinical treatments, which have unique therapeutic advantages but have not been recognized and accepted by the international community. This study conducted a quality evaluation and meta-analysis of the currently published randomized controlled trials (RCTs) of acupuncture for TD in children in order to provide reliable evidence-based medical evidence for acupuncture for TD.
Methods	All the randomized controlled trials (RCTs) using the intervention methods acupuncture + traditional Chinese medical herbs, acupuncture + tuina, and acupuncture, and the control group using Western medicine were included in the analysis. The main outcomes were obtained by using the Yale Global Tic Severity Scale (YGTSS), the Traditional Chinese medicine (TCM) syndrome score scale, and clinical treatment efficiency. Secondary outcomes included adverse events. The risk of bias in the included studies was assessed according to the tool recommended by Cochrane 5.3. The risk of bias assessment chart, risk of bias summary chart, and evidence chart in this study will be produced using R and Stata software.
Results	There were **39 studies** that met the inclusion criteria, including **3,038 patients**. In terms of YGTSS, the TCM syndrome score scale changes and shows a clinically effective rate, and we found that acupuncture combined with Chinese medicine is the best treatment.
Conclusion	Acupuncture + traditional Chinese medical herbs may be the best therapy to improve TD in children. At the same time, compared with Western medicine commonly used in clinical practice, acupuncture and acupuncture combined with tuina therapy have better effects on improving TD in children.

1.1.2. Lu 2021

Lu C, Wu LQ, Hao H, Kimberly Leow X, Xu FW, Li PP, Wang DS. Clinical efficacy and safety of acupuncture treatment of TIC disorder in children: A systematic review and meta-analysis of 22 randomized controlled trials. Complement Ther Med. 2021 Jun;59:102734. https://doi.org/10.1016/j.ctim.2021.102734

Objective	To systematically evaluate the clinical efficacy and safety of acupuncture in the treatment of Tic Disorders (TD) in children, and to clarify the current evidence regarding the clinical application of acupuncture in the treatment of TD.
Methods	Randomized controlled trials (RCTs) comparing acupuncture treatment with pharmaceutical treatment for TD were included in this review. A comprehensive search of 6 electronic literature databases was conducted, and the retrieval date was from the establishment of the database to April 2020. The Cochrane Collaboration's bias risk assessment tool was used to evaluate the bias risk of the included literature, and adopted the Review Manager 5.3 was used for statistical analysis of the data in the included literature.
Results	A total of **22 RCTs (1668 participants)** were included in this review. Meta-analysis indicated that acupuncture showed superior effects in the following aspects, including higher overall effective rate [RR = 1.20,95 % CI(1.09,1.20),P□0.00001], significant reduction in Yale Global Tic Severity Scale (YGTSS) scores [MD=-2.79,95 %CI(-4.75,-0.82),P = 0.005], lower incidence of adverse effects [RR = 0.26,95 %CI(0.17,0.41),P□0.00001], and reduced recurrence rate [RR = 0.28,95 %CI(0.17,0.46),P □0.00001].
Conclusion	Acupuncture treatment alone is more effective in the treatment of TD than pharmaceutical treatment, as seen in the reduction of YGTSS scores, fewer adverse effects and lower recurrence rates.

1.1.3. Yang 2020

Yang C, Cheng X, Zhang Q, Yu D, Li J, Zhang L. Interventions for tic disorders: An updated overview of systematic reviews and meta analyses. Psychiatry Res. 2020. [212878]. doi

Aim	To conduct an updated overview of systematic reviews (SRs) summarizing the efficacy and safety of various strategies used to treat tic disorders (TDs) in children.
Methods	We searched the Cochrane Library, PubMed, EMBASE, and relevant reference lists for articles published between the search deadline from our last overview and April 2019 and included 16 SRs.
Results	The results presented that antipsychotics, a2-adrenergic receptor agonists, and HRT/CBIT still appeared to be the most robust evidence-based options for the treatment of TDs. Compared with our last overview, more robust evidence showed that aripiprazole and **acupuncture was effective treatment** in treating children TDs, and DBS for medication-refractory and severely affected patients. In addition, physical activity or exercise may be promising treatments, and the clonidine adhesive patch is an effective, safe, and convenient treatment option for TDs. Moreover, methylphenidate, guanfacine, and desipramine appeared to reduce ADHD symptoms in children with tics. However, no research studies have examined HRT/CBIT alone compared with HRT/CBIT in combination with medication.
Conclusions	More high-quality clinical trials comparing different interventions for TDs including economic evaluations should be encouraged.

1.2. Special Acupuncture Techniques

1.2.1. Scalp acupuncture

1.2.1.1. Lin 2025

Lin H, Chen X, Wang Z, Sun L. Efficacy and safety of scalp acupuncture in the treatment of Tic disorders in children: A meta-analysis based on randomized controlled trials. Explore (NY). 2025 Sep 1;21(6):103242. https://doi.org/10.1016/j.explore.2025.103242

Objective	This study evaluates the efficacy and safety of scalp acupuncture in treating tic disorders.
Methods	We conducted a meta-analysis using data from **19 randomized controlled trials (RCTs) involving 1463 patients**, sourced from various databases up to May 16, 2023. Stata15.0 was used to assess clinical efficacy rate, YGTSS score, TCM syndrome score, adverse reactions, and long-term efficacy.
Results	Scalp acupuncture significantly reduced YGTSS and TCM syndrome scores and improved clinical efficacy rates compared to controls [YGTSS: RR=-3.54, 95 % CI (-5.16, -1.93), P < 0.05; TCM: RR=-1.86, 95 % CI (-2.60, -1.13), P < 0.05; Efficacy: RR=1.14, 95 % CI (1.06, 1.23), P < 0.05]. Adverse reaction rates were lower in the treatment group (7.29 % vs. 12.61 % in controls), but not statistically significant [OR=0.69, 95 % CI (0.40, 1.18), P > 0.005]. Long-term efficacy was also stable [RR=-1.98, 95 % CI (-3.57, -0.39), P < 0.05].
Conclusion	Scalp acupuncture is effective in improving tic disorder symptoms, increasing treatment efficacy, and maintaining long-term benefits. However, due to the low quality of included RCTs and potential publication bias, further high-quality, large-sample, multicenter RCTs are needed for a more robust evaluation.

1.3. Mechanistic systematic reviews

1.3.1. Liu 2026

Liu X, Li Y. Multimodal brain imaging neurotransmitter marker study of TD: a review of TCM effect mechanisms and precise diagnosis and treatment combining traditional Chinese and western medicine. Am J Transl Res. 2026;18(7):6264-6283. https://doi.org/10.62347/KION8631

Objective	To systematically summarize findings from multimodal brain imaging and neurotransmitter marker studies in Tic disorders (TD), to explore potential neurobiological mechanisms underlying Traditional Chinese Medicine (TCM) interventions, and to propose a precision diagnosis framework integrating TCM and Western medicine.
Methods	This is a critical narrative review. A systematic literature search was conducted in PubMed, CNKI, and Wanfang databases up to October 2025 using keywords including “TD”, “Tourette syndrome”, “multimodal imaging”, “neurotransmitter”, and “TCM”, ensuring comprehensive coverage. However, data synthesis followed a narrative, hypothesis-generating approach rather than a formal systematic review or meta-analysis framework.

Results	Structural MRI reveals basal ganglia volume reductions and cortical thickness abnormalities; functional MRI shows disrupted cortico-striato-thalamo-cortical (CSTC) connectivity and compensatory activation; DTI demonstrates white matter microstructural alterations; PET/SPECT identifies dopaminergic hyperactivity and serotonergic dysfunction; MRS indicates GABA-glutamate imbalance. TCM interventions (herbal formulas, acupuncture) modulate these imaging phenotypes with good safety profiles. However, most human imaging evidence for TCM remains correlational and preliminary, with animal models providing mechanistic hypotheses that require cautious translation.
Conclusions	Multimodal biomarkers enable objective subtyping and treatment monitoring. Limitations include small sample sizes, cross-sectional designs, comorbidity confounding, and TCM-specific challenges (herbal quality control, blinding difficulties). Future research should prioritize large-scale longitudinal cohorts, standardized TCM randomized controlled trials, and low-cost biomarker translation for primary care implementation.

2. Overviews of systematic reviews

2.1. Li 2025

Li X, Xu L, Liang H, Peng J, Qin G, Wan L. Application of acupuncture and moxibustion for tic disorders: An overview of systematic reviews and meta-analysis. Medicine (Baltimore). 2025;104(50):e46506. https://doi.org/10.1097/MD.0000000000046506

Background	Tic disorder (TD) is a neuropsychiatric disorder that often begins in childhood or adolescence. Acupuncture and moxibustion are alternative therapies that have been demonstrated to be effective in the treatment of TD. Over the past few decades, several systematic reviews (SRs) and meta-analyses have reported the effectiveness of acupuncture and moxibustion in treating patients with TD. However, the quality of these SRs varies.
Methods	Ten electronic databases were searched. Two researchers performed independently in study selection, data extraction, and evaluation. Methodological quality was assessed by A Measurement Tool to Assess Systematic Reviews-2. Evidence levels were assessed using the Grading of Recommendations Assessment, Development, and Evaluation approaches.
Results	In total, **12 studies were included, comprising 106 randomized controlled trials and 7973 patients**. In A Measurement Tool to Assess Systematic Reviews-2, most of the SRs were of low or critically low levels since they had more than 1 critical deficiency. In the Grading of Recommendations Assessment, Development, and Evaluation system, 10 outcomes were valued as very low level, 30 as low, 24 as moderate level, and 0 as high level. Most SRs meet the potential benefits of acupuncture and moxibustion for TD. Interestingly, no serious events were shown in these studies.
Conclusion	This overview, through analysis of 12 studies, shows that acupuncture and moxibustion were more effective than the conventional Western medicine treatment for TD. Nevertheless, given the subpar methodological quality of the reviews, we cannot draw a more definitive conclusion. Hence, we need more research to improve methodological and reporting quality to yield more robust evidence.

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