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hypertension:

Hypertension artérielle : évaluation de l'acupuncture

Articles connexes: - conduites thérapeutiques - pathologie - qigong - acupuncture expérimentale -

1. Systematic Reviews and Meta-Analysis

1.1. Generic Acupuncture

1.1.1. Li 2026

Li ZH, Gao HW, Shen FF, Lu Y, Chen W. Acupuncture for Primary Hypertension: A Systematic Review and Meta-Analysis of Randomized Controlled Trials. Blood Press. 2026;1-12. https://doi.org/10.1080/08037051.2026.2654103

Background	Primary hypertension is a significant global health burden. While acupuncture is traditionally employed for blood pressure management, robust evidence from high-quality trials is still needed.
Objective	This systematic review and meta-analysis evaluated the efficacy and safety of acupuncture for primary hypertension, based on randomized controlled trials (RCTs) published between 2015 and 2024.
Methods	We searched seven major databases for RCTs comparing acupuncture to control interventions. The primary outcomes were changes in systolic (SBP) and diastolic (DBP) blood pressure. Meta-analyses utilized random-effects models, and the Cochrane Risk of Bias tool assessed study quality.
Results	**Seven RCTs (n = 812)** were included. Acupuncture was associated with lower SBP (MD = -6.73 mmHg, 95% CI: -8.84 to -4.62) and DBP (MD = -6.59 mmHg, 95% CI: -9.42 to -3.76). Heterogeneity was substantial for SBP (I2 = 73.3%) and considerable for DBP (I2 = 90.9%). Notably, the SBP analysis included seven studies whereas the DBP analysis included six studies, and the similar absolute pooled reductions should be interpreted cautiously given the small and not fully overlapping study sets. Exploratory subgroup analyses suggested blood pressure reductions across several acupuncture modalities, though each subgroup contained very few studies. Adverse-event reporting was limited and inconsistent across studies. Formal tests for publication bias were underpowered given the small number of included studies.
Conclusion	Acupuncture may have blood pressure-lowering effects in patients with primary hypertension, but the evidence is limited by substantial heterogeneity, a small number of studies, and considerable variation in intervention type and exposure. Larger, well-designed, multi-center RCTs with standardized protocols and longer follow-up are needed to confirm these findings and establish optimal treatment parameters.

1.1.2. Zhong 2026

Zhong X, Yu C, Guo H. Acupuncture-based interventions for blood pressure control and cardiovascular risk-related outcomes in adults with hypertension: a systematic review and meta-analysis of randomized controlled trials. Front Med (Lausanne). 2026;13:1888399. https://doi.org/10.3389/fmed.2026.1888399

Background	Blood pressure control remains difficult in many adults with hypertension, and safe non-pharmacological strategies that can support conventional care are clinically relevant. This systematic review and meta-analysis evaluated acupuncture-based interventions for blood pressure control and cardiovascular risk-related outcomes in adults with hypertension.
Methods	Randomized studies were identified from major biomedical databases and trial registers from inception to 16 March 2026. The primary synthesis focused on penetrating acupuncture and electroacupuncture, while non-penetrating acupoint stimulation was examined in extended analyses. Risk of bias was assessed using RoB 2, and certainty of evidence was evaluated using GRADE.
Results	**Sixteen study** reports representing 15 independent randomized studies were included. For end-of-treatment office blood pressure, acupuncture-based interventions reduced systolic blood pressure (MD -6.63 mmHg, 95% CI: -11.41 to -1.84) but showed no clear effect on diastolic blood pressure (MD -0.07 mmHg, 95% CI: -9.54 to 9.39). Change-score analyses showed a significant reduction in office diastolic blood pressure (MD -3.97 mmHg, 95% CI: -7.26 to -0.68), while systolic change crossed the null. Ambulatory blood pressure evidence was sparse; 24-h ambulatory diastolic change favored acupuncture-based interventions. No confirmed acupuncture- or stimulation-related serious adverse event was clearly reported.
Conclusion	Overall, acupuncture-based interventions may support blood pressure control, especially systolic office blood pressure and diastolic change outcomes.

1.1.3. Gao 2025

Gao H, Li Z, Zhan W, Shen F, Lu Y, Chen W. The effect of acupuncture on twenty-four-hour ambulatory blood pressure and circadian rhythm in patients with essential hypertension: A systematic review and meta-analysis of randomised controlled trials. Blood Press. 2025 Dec 16:1-19. https://doi.org/10.1080/08037051.2025.2605798

Objective	This study aimed to evaluate the effect of acupuncture on 24-hour ambulatory blood pressure (BP) and its circadian rhythm in patients with essential hypertension (EH).
Methods	A systematic search was conducted across five English databases (PubMed, the Cochrane Library, Embase, Web of Science and The National Library of Medicine) and four Chinese databases (China National Knowledge Infrastructure, Wanfang Database, Chinese Biomedical Literature Database and VIP Chinese Science and Technology Journal Full-Text Database). The search period for each database was from inception to 31 May 2025. A meta-analysis was performed using RevMan 5.4.1 software.
Results	A total of **13 randomised controlled trials involving 1,080 patients** with EH were included. Compared with the control group, the acupuncture group showed significantly lower 24-hour average systolic BP (MD=-3.57, 95% CI -5.04 to -2.10, p<0.001), 24-hour average diastolic BP (MD=-3.61, 95% CI -5.12 to -2.10, p<0.001), 24-hour SBP variability (MD=-1.15, 95% CI -1.57 to -0.73, p<0.001), 24-hour DBP variability (MD=-0.96, 95% CI -1.27 to -0.65, p<0.001), 24-hour SBP load (MD=-3.47, 95% CI -5.76 to -1.17, p=0.003) and 24-hour DBP load (MD=-2.20, 95% CI -4.08 to -0.31, p=0.02).
Conclusion	Compared with Western medication alone, acupuncture combined with Western medication shows significant advantages in improving ambulatory BP parameters, including 24-hour average BP, 24-hour BP variability, 24-hour BP load and BP circadian rhythm.

1.1.4. Chen 2024

Chen Z, Li Q, Xu T, Zhou X, Shu Y, Guo T, Liang F. An updated network meta-analysis of non-pharmacological interventions for primary hypertension in adults: insights from recent studies. Syst Rev. 2024 Dec 31;13(1):318. https://doi.org/10.1186/s13643-024-02744-5

Backgound	Primary hypertension significantly impacts global cardiovascular health, contributing to increased mortality rates and posing a substantial public health challenge. Recognizing the growing evidence supporting non-pharmacological interventions (NPIs) for controlling primary hypertension, our study employs Network Meta-Analysis (NMA) to comprehensively assess their efficacy.
Methods	This review updates a prior systematic review by searching for original literature on NPIs for primary hypertension from 2013 to 2024. We conducted a thorough search in eight databases, including PubMed, Embase, Web of Science, Cochrane Central Register of Controlled Trials, Allied and Complementary Medicine Database, CNKI, WanFang Data, and Chongqing VIP, identifying potential randomized controlled trials (RCTs) from January 1, 2013, to August 1, 2024. Primary outcomes included the mean changes in blood pressure before and after treatment. Analysis was performed using GeMTC package (R 4.2.3), and Stata 17.0. The confidence of evidence was examined using Confidence in Network Meta-Analysis (CINeMA).
Results	Utilizing NMA, we reviewed 9,189 studies, identifying 54 eligible articles with 5,827 participants. Investigating 22 distinct NPIs, the focus was on changes in systolic and diastolic blood pressure pre and post-treatment. Lifestyle intervention + Tai Chi significantly reduced systolic (-21.75 mm Hg; 95% CI -33.25 to -10.02) and diastolic blood pressure (-13.62 mm Hg; 95% CI -23.14 to -3.71) compared to usual care and other NPIs. Consistency and regression analyses did not reveal significant differences.
Conclusion	This review provides a comprehensive evaluation of NPIs for primary hypertension, emphasizing lifestyle + Tai Chi as a preferred NPI. Breathing exercises show potential in lowering systolic blood pressure, and **acupuncture + tuina** demonstrates effectiveness in reducing diastolic blood pressure, outperforming other interventions. The study reinforces the role of NPIs in managing primary hypertension, providing a foundation for future hypertension research.

1.1.5. Shao 2023 (network meta-analysis)

Shao T, Liang L, Zhou C, Tang Y, Gao W, Tu Y, Yin Y, Malone DC, Tang W. Short-term efficacy of non-pharmacological interventions for global population with elevated blood pressure: A network meta-analysis. Front Public Health. 2023 Jan 13;10:1051581. https://doi.org/10.3389/fpubh.2022.1051581

Background	This study aims to compare the potential short-term effects of non-pharmacological interventions (NPIs) on prehypertensive people, and provide evidence for intervention models with potential in future community-based management.
Methods	In this Bayesian network meta-analysis, Pubmed, Embase, and Web of science were screened up to 16 October 2021. Prehypertensive patients (systolic blood pressure, SBP 120-139 mmHg/diastolic blood pressure, DBP 80-89 mmHg) with a follow-up period longer than 4 weeks were targeted. Sixteen NPIs were identified during the scope review and categorized into five groups. Reduction in SBP and DBP was selected as outcome variables and the effect sizes were compared using consistency models among interventions and intervention groups. Grade approach was used to assess the certainty of evidence.

Results	Thirty-nine studies with 8,279 participants were included. For SBP, strengthen exercises were the most advantageous intervention group when compared with usual care (mean difference = -6.02 mmHg, 95% CI -8.16 to -3.87), and combination exercise, isometric exercise, and aerobic exercise were the three most effective specific interventions. For DBP, relaxation was the most advantageous intervention group when compared with usual care (mean difference = -4.99 mmHg, 95% CI -7.03 to -2.96), and **acupuncture**, meditation, and combination exercise were the three most effective specific interventions. No inconsistency was found between indirect and direct evidence. However, heterogeneity was detected in some studies.
Conclusion	NPIs can bring short-term BP reduction benefits for prehypertensive patients, especially exercise and relaxation. NPIs could potentially be included in community-based disease management for prehypertensive population once long-term real-world effectiveness and cost-effectiveness are proven.

1.1.6. Tan 2019 (network meta-analysis)

Tan X, Pan Y, Su W, Gong S, Zhu H, Chen H, Lu S. Acupuncture therapy for essential hypertension: a network meta-analysis. Ann Transl Med. 2019;7(12):266. [200566].

Background	To evaluate the efficacy and safety of acupuncture therapies for the treatment of essential hypertension.
Methods	We performed a systematic electronic search of PubMed, Embase, the Cochrane Library, Chinese Biomedical Literature Database (CBM), Chinese National Knowledge Infrastructure (CNKI), and Wan-fang Data Database. The main outcome indicators measured were the amount of major adverse cardiovascular events (MACE), a change of blood pressure, and the response rate. STATA15.0 software was used for the network meta-analysis.
Results	A total of **31 trials with 2,649 patients** were included. Patients were allocated to 15 kinds of interventions. These including acupuncture types were electroacupuncture, moxibustion, warm needle therapy, sham acupuncture, behavioral therapy, angiotensin-converting enzyme inhibitors (ACEIs), angiotensin receptor blockers (ARBs), calcium channel blocker (CCB), beta-blocker, acupuncture combined ACEI, acupuncture combined CCB, acupuncture combined behavior, electroacupuncture combined CCB, and non-treatment. The results of the network meta-analysis showed that there was no significant clinical or statistic difference in systolic blood pressure (SBP) change magnitude between acupuncture treatment and the other 14 therapies. Moxibustion may be better than acupuncture in reducing diastolic blood pressure (DBP) [mean difference (MD): 15.9, 95% confidence interval (CI): 5.96-25.85]. There was no significant difference in reducing DBP between acupuncture and the other 13 interventions. The effective rate of acupuncture combined with AECI [odds ratio (OR) =7.96, 95% CI: 1.11-56.92] and acupuncture combined with behavioral therapy (OR =3.53, 95% CI: 1.08-11.51) in treating hypertension was better than that of acupuncture alone, and there was no statistically significant difference in the effective rate between acupuncture and the other therapies.
Conclusions	The existing evidence shows that acupuncture could be used for treating hypertension, and it may have the same effects as common medication. However, due to the low qualities of the original studies, the quality of this evidence is poor. Therefore, it is recommended that more scientific research be performed to confirm the efficacy of acupuncture.

1.1.7. Yang 2018 Ø

Yang J , Chen J, Yang M, Yu S, Ying L, Liu GJ, Ren YL, Wright JM, Liang FR. Acupuncture for

hypertension. Cochrane Database Syst Rev. 2018. [196366].

Background	Elevated blood pressure (hypertension) affects about one billion people worldwide. It is important as it is a major risk factor for stroke and myocardial infarction. However, it remains a challenge for the medical profession as many people with hypertension have blood pressure (BP) that is not well controlled. According to Traditional Chinese Medicine theory, acupuncture has the potential to lower BP.
Objectives	To assess the effectiveness and safety of acupuncture for lowering blood pressure in adults with primary hypertension.
Methods	SEARCH METHODS: We searched the Hypertension Group Specialised Register (February 2017); the Cochrane Central Register of Controlled Trials (CENTRAL) 2017, Issue 2; MEDLINE (February 2017); Embase (February 2017), China National Knowledge Infrastructure (CNKI) (January 2015), VIP Database (January 2015), the World Health Organisation Clinical Trials Registry Platform (February 2017)and ClinicalTrials.gov (February 2017). There were no language restrictions. SELECTION CRITERIA: We included all randomized controlled trials (RCTs) that compared the clinical effects of an acupuncture intervention (acupuncture used alone or add-on) with no treatment, a sham acupuncture or an antihypertensive drug in adults with primary hypertension. DATA COLLECTION AND ANALYSIS: Two review authors independently selected studies according to inclusion and exclusion criteria. They extracted data and assessed the risk of bias of each trial, and telephoned or emailed the authors of the studies to ask for missing information. A third review author resolved disagreements. Outcomes included change in systolic blood pressure (SBP), change in diastolic blood pressure (DBP), withdrawal due to adverse effects, and any adverse events. We calculated pooled mean differences (MD) with 95% confidence intervals (CI) for continuous outcomes using a fixed-effect or random-effects model where appropriate.
Main results	**Twenty-two RCTs (1744 people)** met our inclusion criteria. The RCTs were of variable methodological quality (most at high risk of bias because of lack of blinding). There was no evidence for a sustained BP lowering effect of acupuncture; only one trial investigated a sustained effect and found no BP lowering effect at three and six months after acupuncture. Four sham acupuncture controlled trials provided very low quality evidence that acupuncture had a short-term (one to 24 hours) effect on SBP (change) -3.4 mmHg (-6.0 to -0.9) and DBP -1.9 mmHg (95% CI -3.6 to -0.3). Pooled analysis of eight trials comparing acupuncture with angiotensin-converting enzyme inhibitors and seven trials comparing acupuncture to calcium antagonists suggested that acupuncture lowered short-term BP better than the antihypertensive drugs. However, because of the very high risk of bias in these trials, we think that this is most likely a reflection of bias and not a true effect. As a result, we did not report these results in the 'Summary of findings' table. Safety of acupuncture could not be assessed as only eight trials reported adverse events.
Authors' conclusions	At present, there is no evidence for the sustained BP lowering effect of acupuncture that is required for the management of chronically elevated BP. The short-term effects of acupuncture are uncertain due to the very low quality of evidence. The larger effect shown in non-sham acupuncture controlled trials most likely reflects bias and is not a true effect. Future RCTs must use sham acupuncture controls and assess whether there is a BP lowering effect of acupuncture that lasts at least seven days.

1.1.8. Chen 2018 ∅

Chen H, Shen FE, Tan XD, Jiang WB, Gu YH. Efficacy and Safety of Acupuncture for Essential Hypertension: A Meta-Analysis. Med Sci Monit. 2018;:2946-2969. [147462].

Background	The aim of this study was to assess the efficacy and safety of acupuncture therapy for patients with hypertension.
Material and methods	We searched PubMed, Embase, the Cochrane Library, the Chinese Biomedical Literature Database, the Chinese National Knowledge Infrastructure, and the Wan-fang Data Database from inception through 29 April 2017. Randomized controlled trials investigating acupuncture therapy for hypertension were included. Review Manager 5.3 software was used for the data analysis.
Results	A total of **30 RCTs involving 2107 patients** were included. The overall methodological quality of the included studies was low. Pooled results demonstrate that acupuncture plus anti-hypertensive drugs is better than anti-hypertensive drugs alone at reducing systolic and diastolic blood pressure (SBP and DBP). The same result was observed for pooled data from experiments that compared acupuncture plus medication to sham acupuncture plus medication at reducing SBP and DBP. However, studies reveal that using acupuncture alone or anti-hypertensive drugs alone do not differ in the effect on lowering blood pressure. Similarly, acupuncture alone also did not differ from sham acupuncture alone, and electroacupuncture versus anti-hypertensive drugs was not significantly different at reducing SBP and DBP.
Conclusions	Our systematic review indicates **there is inadequate high quality evidence that acupuncture therapy is useful in treating hypertension**, as the exact effect and safety of acupuncture therapy for hypertension is still unclear. Therefore, research with larger sample sizes and higher-quality RCTs is still needed.

1.1.9. Zhang 2018 (Combined with Lifestyle Modification)

Zhang Lei, Zeng Xian-Tao, Zhang Hua-Min, Yin Ren-Fang, Yin Xiao-Hong, Tian Guo-Xiang, Yang Shuo. [Systematic Review on Effects of Acupuncture Combined with Lifestyle Modification on Essential Hypertension]. Chinese Journal of Information on Traditional Chinese Medicine. 2018;6:99-103. [201784].

Objective	To evaluate the effects of acupuncture combined with lifestyle modification for essential hypertension by Meta-analysis.
Methods	Clinical randomized controlled trial literature about acupuncture combined with lifestyle modification for essential hypertension in CNKI, WanFang Data, CBM, VIP, PubMed, Embase, and Web of Science since establishment to February 20, 2017 were retrieved. Data extraction and quality assessment of studies were conducted by two researchers independently, and the Meta-analysis was performed by the software of RevMan5.3.
Results	**5 articles involving 467 patients** were included. The results of Meta-analysis showed that acupuncture combined with lifestyle modification had more significant effect than lifestyle modification alone in lowing SBP [SMD=-1.52(-2.40,-0.64)], in lowing DBP [SMD=-1.02(-2.01,-0.03)], total effective rates [RR=1.27(1.13, 1.43)].
Conclusion	Compared with lifestyle modification alone, acupuncture combined with lifestyle modification have significant effects for patients with essential hypertension, but because of the fewer studies included, bigger heterogeneity between studies and the lower quality of included studies still exist, the results should be further verified, and clinical applications should be treated with caution.

1.1.10. Zhao 2015

Zhao XF, Hu HT, Li JS, Shang HC, Zheng HZ, Niu JF, Shi XM, Wang S. Is Acupuncture Effective for Hypertension? A Systematic Review and Meta-Analysis. PLoS One. 2015 Jul 24;10(7):e0127019. [185588].

Objective	To determine the efficacy of acupuncture for hypertension.
Method	Seven electronic databases were searched on April 13, 2014 to include eligible randomized controlled trials (RCTs). Data were extracted and risk of bias was assessed. Subgroup analyses and meta- analysis were performed.
Results	23 RCTs involving 1788 patients were included. Most trials had an unclear risk of bias regarding allocation concealment, blinding, incomplete outcome data and selective reporting. Compared with sham acupuncture plus medication, a meta-analysis of 2 trials revealed that acupuncture as an adjunct to medication was more effective on systolic (SBP) and diastolic (DBP) blood pressure change magnitude (n=170, SBP: mean difference (MD)= -7.47,95% confidence intervals (CI):-10.43 to -4.51,I2 =0%; DBP: -4.22,-6.26 to -2.18, 0%).A subgroup analysis of 4 trials also showed acupuncture combined with medication was superior to medication on efficacy rate (n=230, odds ratio (OR)=4.19, 95%CI: 1.65 to 10.67, I2 =0%). By contrast, compared with medication, acupuncture alone showed no significant effect on SBP /DBP after intervention and efficacy rate in the subgroup analysis. (7 trials with 510 patients, SBP: MD=-0.56, 95%CI:-3.02 to 1.89,I2 =60%; DBP: -1.01,-2.26 to 0.24, 23%; efficacy rate: 10 trials with 963 patients, OR=1.14, 95% CI: 0.70 to 1.85, I2 =54%).Adverse events were inadequately reported in most RCTs.
Conclusion	Our review provided evidence of acupuncture as an adjunctive therapy to medication for treating hypertension, while the evidence for acupuncture alone lowing BP is insufficient. The safety of acupuncture is uncertain due to the inadequate reporting of it. However, the current evidence might not be sufficiently robust against methodological flaws and significant heterogeneity of the included RCTs. Larger high-quality trials are required.

1.1.11. Li 2014

Li DZ, Zhou Y, Yang YN, Ma YT, Li XM, Yu J, Zhao Y, Zhai H, Lao L. Acupuncture for essential hypertension: a meta-analysis of randomized sham-controlled clinical trials. Evid Based Complement Alternat Med. 2014;2014:279478 [170701].

Background	Acupuncture is frequently advocated as an adjunct treatment for essential hypertension. The aim of this review was to assess its adjunct effectiveness in treating hypertension.
Methods	We searched PubMed, the Cochrane Library, EMBASE, and the Chinese databases Sino-Med, CNKI, WanFang, and VIP through November, 2012, for eligible randomized controlled trials that compared acupuncture with sham acupuncture. Outcome measures were changes in diastolic (DBP) and systolic blood pressure (SBP).
Results	A total of 4 randomized controlled trials were included. We found no evidence of an improvement with the fact that acupuncture relative to sham acupuncture in SBP change (n = 386; mean difference = -3.80 mmHg, 95% CI = -10.03-2.44 mmHg; I 2 = 99%), and an insignificant improvement in DBP change (n = 386; mean difference = -2.82 mmHg, 95% CI = -5.22-(-0.43) mmHg; I 2 = 97%). In subgroup analyses, acupuncture significantly improved both SBP and DBP in patients taking antihypertensive medications. Only minor acupuncture-related adverse events were reported.
Conclusions	Our results are consistent with acupuncture significantly lowers blood pressure in patients taking antihypertensive medications. We did not find that acupuncture without antihypertensive medications significantly improves blood pressure in those hypertensive patients.

1.1.12. Zhang 2014

Zhang Y, Li Z, Gao Y, Du Y. [Meta-analysis on efficacy of acupuncture and acupuncture combined with medicine in treatment for mild to moderate essential hypertension]. Liaoning Journal of Traditional Chinese Medicine. 2014;9:1802-18. [187032]

Background	To evaluate the clinical efficacy and safety of acupuncture and acupuncture combined with medicine in the treatment for mild-to-moderate essential hypertension.
Methods	The literature relating to acupuncture and acupuncture in the treatment for hypertension were searched from the databases of VIP□CNKI and Wanfang data by electronic retrieval. Meta-analysis was conducted in according to the requirements of evidence-based- medicine.
Results	**Thirteen researches meeting the standards were included with a total of 1, 066 patients**. Meta-analysis indicated that: Comparing between the acupuncture trail and Western medicine trail in terms of the total effective rate, SBP, DBP after treatment, no differences could be found on effect of acupuncture in the treatment for mild-to-moderate essential hypertension. There existed a same therapeutic efficacy between Acupuncture combined with Western medicine trail and Western medicine trail in lowering DBP, but the former was superior to the latter in terms of the total effective rate and SBP. The evaluation of symptom score showed that acupuncture treatment displayed a higher superiority versus western medicine in improving subjective symptoms of patients including dizziness, headache, heart palpitations, etc. Assessment of the adverse reactions reported acupuncture trail had a lower incidence.
Conclusions	**Acupuncture is an alternative therapy which is safe green beneficial therapy to western medicine**, to a certain extent, it can be used as a valuable medical means to control hypertension.

1.1.13. Wang 2013

Wang J, Xiong X. Evidence-based chinese medicine for hypertension. Evid Based Complement Alternat Med. 2013 2013:978398. [166782]

> Hypertension is an important worldwide public -health challenge with high mortality and disability. Due to the limitations and concerns with current available hypertension treatments, many hypertensive patients, especially in Asia, have turned to Chinese medicine (CM). Although hypertension is not a CM term, physicians who practice CM in China attempt to treat the disease using CM principles. A variety of approaches for treating hypertension have been taken in CM. For seeking the best evidence of CM in making decisions for hypertensive patients, a number of clinical studies have been conducted in China, which has paved the evidence-based way. After literature searching and analyzing, it appeared that **CM was effective for hypertension in clinical use, such as Chinese herbal medicine, acupuncture, moxibustion, cupping, qigong, and Tai Chi**. However, due to the poor quality of primary studies, clinical evidence is still weak. The potential benefits and safety of CM for hypertension still need to be confirmed in the future with well-designed RCTs of more persuasive primary endpoints and high-quality SRs. Evidence-based Chinese medicine for hypertension still has a long way to go.

1.1.14. Wang 2013

Wang J, Xiong X, Liu W.. Acupuncture for essential hypertension. Int J Cardiol. 2013;169(5):317-26.[125744]

Methods	SEARCH STRATEGY: The PubMed, EMBASE, Chinese Biomedical Literature Database (CBM), Chinese National Knowledge Infrastructure (CNKI), Chinese Scientific Journal Database (VIP), and Wan-fang Data in the Cochrane Library were searched until January, 2013. All the randomized controlled trials (RCTs) based on acupuncture compared with western medicine, sham acupuncture or lifestyle intervention in patients with hypertension were included. RCTs were included as well as combined acupuncture with western medicine compared with western medicine. In addition, RCTs based on acupuncture compared with sham acupuncture combined with western medicine in patients with essential hypertension were included. No language restriction was used. Review Manager 5.1 software was used for data analysis. Study selection, data extraction, quality assessment, and data analyses were conducted according to the Cochrane standards.
Results	**35 randomized trials (involving 2539 patients)** were included. The methodological quality of the included trials was evaluated as generally low. Two trials reported the effect of acupuncture compared with sham acupuncture in combinations of western medicine. Acupuncture significantly reduced SBP (-7.47 mmHg, 95% CI - 10.43 to -4.5, P<0.00001) and DBP (-4.22 mmHg, 95% CI - 6.26 to -2.18, P<0.0001) and no heterogeneity between studies was detected. However, other studies had substantial heterogeneity due to the quality of them was poor, and their sample sizes were not satisfactory as an equivalence study. Five trials described the adverse effects.
Conclusions	While there are **some evidences that suggest potential effectiveness of acupuncture for hypertension**, the results were limited by the methodological flaws of the studies. Therefore, further thorough investigation, large-scale, proper study designed, randomized trials of acupuncture for hypertension will be required to justify the effects reported here.

1.1.15. Yu 2013 ☆

Yu Hui, Han Jing, Tan Qi-Wen. [A meta - analysis on the effect of acupuncture therapy on essential hypertension] Journal of Clinical Acupuncture and Moxibustion. 2013;29(2):39. (chi). [175250] .

> Objective: To evaluate the effects of acupuncture therapy on essential hypertension in domestic. Methods: We retrieved from database of CNKI ,VIP, WF and CBM, and retrieval time span from 1989 to May 1 St ,2012 . All relevant Randomized Controlled Trials (RCTs) of acupuncture operation for essential hypertension therapy were included and literatures which met the criteria were performed a meta - analysis. Results: This study was originally retrieved 372 documents, but only **18 documents witl1 a total of 1462 cases of patients** met the criteria after screening. Meta - analysis results showed that the final total effective rate of improvement of blood pressure [RR = 1. 036,95% CI (0. 946,1. 135) , P =0. 447] , the final SBP [SMD = - 0. 12,95% CI (- O.378,0.129),P=0.335],the final DBP[SMD= - 0.051,95%CI(- O.l95,O.O92),P=0.483]comparing in two trials, there were no significant differences between the acupuncture group and the medical group. Conclusion: The data indicate that **acupuncture and drugs have the same therapeutic effect on essential hypertension**. But in the grade of EH, adverse reaction, the control rate, stable rate, relapse rate and cost - effectiveness, they was no exact comparison between the acupuncture treatment and western medicine. Therefore, in future clinical trials , they need more rigorous , comprehensive clinical randomized controlled trials, which would provide more valuable basis for the acupuncture prevention and treatment of hypertension.

1.1.16. Liu 2012

Liu FS , Guo CQ, Jin XF. [Acupuncture or mild-to-moderate essential hypertension: a meta-analysis of randomized clinical trials]. Chinese Journal of Basic Medicine in Traditional Chinese Medicine. 2012;18(4):421-3. (chi).[165522].

Objectifs	To evaluate the clinical efficacy and safety of acupuncture versus anti-hypertensive western medicine for mild-to-moderate essential hypertension by Meta-analysis.
Méthodes	Randomized controlled trials (RCTs) of acupuncture versus anti-hypertensive western medicine in the treatment of mild-to-moderate essential hypertension were searched. Qualified researches were selected and evaluated. The RevMan5. 1 software was used for meta-analyses.
Résultats	**10 trials involving 782 patients** were included. The results of meta-analyses showed that: (1) acupuncture was similar to western medicine in anti-hypertensive effect;(2)there were significant differences between acupuncture plus western medicine versus western medicine in anti-hypertensive effect, indicating the effect of acupuncture plus western medicine is superior to western medicine alone. Total effect rate of both acupuncture alone or acupuncture plus western medicine were higher than western medicine in improving symptoms. No adverse events were reported in included RCTs.
Conclusions	**Acupuncture is safe and effective for mild-to-moderate essential hypertension**. However, due to low qua1ity of included studies, rigorously designed RCTs are needed to confirm the conclusions.

1.1.17. Zhao 2011 ☆

Zhao Ran, Fu Li-Xin, Xiong Juri. [The effect of acupuncture therapy on essential hypertension: a systematic review of long term effect].. Journal of Clinical Acupuncture and Moxibustion. 2011;27(3):46. [174415]

Objectifs	To evaluate the long - term effects of domestic acupuncture on essential hypertension.
Méthodes	We searched CNKI (1979 to May31 ,2010) , VIP (1989 to May31 ,2010) , WF (1995 to May31, 2010) ,CBM(1978 to May31 ,2010) ,and handsearched relevant journals and conference proceedings. We included all the relevant Randomized Controlled Trials (RCTs) and quasi - RCTs of acupuncture for treatment of essential hypertension. We evaluated the internal validity of the RCTs and quasi - RCTs. if all included trials were of high quality and homogeneity ,then the meta - analysis was conducted.
Résultats	**1460 patients being included 18 papers** met the enrolled criteria. However, the methodological quality of 17 papers was relatively poor. Meta - analysis of 18 trials indicated that the final total effective rate of improvement of blood pressure in two trail,山e final total effective rate'controlling of symptoms in one trail□the final SBP comparing in two trail and the final DBP comparing in two trail were better in the treatment groups than those of control groups.
Conclusions	A reliable conclusion can not he drawn from the present data because of the defects in methodological quality and insufficient numbers of trials, although it shows a **tendency that acupuncture can improve the conditions of essential hypertension**. Therefore, it is necessary to perform more multi - central RCTs of high quality in the future.

1.1.18. Kim 2010

Kim Lw, Zhu J. Acupuncture for essential hypertension. Altern Ther Health Med. 2010;16(2):18-29. [155285]

Objectifs	To assess the efficacy of acupuncture for treatment of essential hypertension and the efficacy of acupuncture using prescription adhering to the principles of “syndrome differentiation.” DATA SOURCES: Medline, Embase, Cochrane Central Register, and China National Knowledge Infrastructure (September 2008).

Méthodes	STUDY SELECTION: Randomized, controlled trials comparing acupuncture with sham acupuncture, antihypertensive drugs, Chinese herbal medicine, or exercise in essential hypertension. DATA EXTRACTION: Two reviewers independently assessed trials for inclusion, extracted data, assessed methodological quality, and extracted outcome data on blood pressure.
Résultats	Treatment effects were summarized as mean differences with 95% confidence intervals. Twenty trials were included: three trials were relatively rigorous while others were methodologically suboptimal. Acupuncture arms achieved significant effect modification on blood pressure compared with control arms (19 comparisons: systolic blood pressure [SBP]: mean difference -4.23 mmHg, 95% confidence intervals -6.47 to -1.99; diastolic blood pressure [DBP]: -2.53, -3.99 to -1.08), with significant heterogeneity. In high-quality trials, blood pressure was significantly lower in treatments of acupuncture plus antihypertensive drug arms than in sham-acupuncture plus hypertensive drug arms (two comparisons: SBP: -5.72 mmHg, -8.77 to -2.68; DBP: -2.80, -5.07 to -0.54), with no significant heterogeneity. As for trials using prescription adhering to the principles of syndrome differentiation, we found a significant blood pressure reduction with acupuncture arms in comparison with control arms (11 comparisons: SBP: -6.46 mmHg, -8.04 to -4.87; DBP: -3.07, -4.17 to -1.96) with no significant heterogeneity. In contrast, in trials not using prescription adhering to the principles of syndrome differentiation, we found no significant reduction in blood pressure with acupuncture arms in comparison with control arms (eight comparisons: SBP: -1.55 mmHg, -5.39 to 2.29; DBP: -2.12, -4.97 to 0.73) with significant heterogeneity.
Conclusions	Because of the paucity of rigorous trials and the mixed results, **these findings result in limited conclusions**. More rigorously designed and powered studies are needed.

1.1.19. Lee 2009

Lee H, Kim SY, Park J, Kim YJ, Lee H, Park HJ. Acupuncture for lowering blood pressure: systematic review and meta-analysis. Am J Hypertens. 2009;22(1):122-8. [153116].

Objective	We conducted a systematic review to estimate the effect of acupuncture on blood pressure (BP) in hypertensive patients.
Methods	Electronic literature searches for randomized controlled trials (RCTs) of acupuncture were performed in six electronic databases to June 2007 without language restrictions.
Results	Eleven RCTs testing acupuncture either as an adjunct or an alternative met our inclusion criteria and they showed a wide variety of methodological quality, mainly due to poor reporting. Three sham-controlled trials out of 11 studies were statistically pooled: systolic BP (SBP) change was not statistically significant (mean difference -5 mm Hg, 95% CI (-12, 1), P = 0.12) and acupuncture only marginally reduced diastolic BP (DBP) by 3 mm Hg (95% CI (-6, 0), P = 0.05), but substantial heterogeneity was observed (I(2) = 92% for SBP, I(2) = 79% for DBP). When given with antihypertensive medication, acupuncture significantly reduced SBP (-8 mm Hg, 95% CI (-10, -5), P < 0.00001) and DBP (-4 mm Hg, 95% CI (-6, -2), P < 0.0001) and no heterogeneity between studies was detected. Four studies that investigated acupuncture against antihypertensive medication indicated noninferiority of acupuncture in lowering BP, albeit the quality of them was poor, and their sample sizes were not satisfactory as an equivalence study. Other studies comparing acupuncture with various control procedures had inconsistent findings and most of them were of low methodological quality.
Conclusions	Considering the limitation of the four positive noninferiority studies and the results of the meta-analysis of the three sham-controlled studies, the notion that acupuncture may lower high BP is inconclusive. More rigorous trials are warranted.

1.2. Special Acupuncture Techniques

1.2.1. Comparison of Acupuncture techniques

1.2.1.1. Zhang 2024

Zhang H, Xia Z, Liu Y, Yu S, Shi H, Meng Y, Wu X. Intervention of hypertension by acupuncture-related therapies: A network meta-analysis. Int J Older People Nurs. 2024 May;19(3):e12613. https://doi.org/10.1111/opn.12613

Backgound	The prevalence of essential hypertension contributed significantly to morbidity and mortality rates. Acupuncture-related therapies were commonly employed in hypertension treatment. Nevertheless, a lack of conclusive evidence left uncertainties regarding the optimal strategies for managing hypertensive populations.
Objectives	Conduct a comprehensive systematic review to evaluate the existing clinical evidence about the effectiveness of acupuncture and moxibustion-related therapies in managing hypertension, by employing network meta-analysis techniques.
Methods	A comprehensive electronic search was conducted across n of databases. This search covered studies available up to October 2022. Randomized controlled trials assessing acupuncture and moxibustion-related therapies in managing hypertension based on traditional Chinese medicine were screened. Primary outcome measures included the antihypertensive effectiveness rate, variations in blood pressure and the incorporation of Traditional Chinese Medicine (TCM) syndrome manifestations. The review follows the guidelines outlined in the PRISMA statement.
Results	We identified a total of **24 trials with 1867 patients**, which evaluated the efficacy of various acupuncture-related therapies for hypertension management. Network meta-analysis showed that moxibustion and auricular point sticking combined with medication therapy had the best effect in terms of antihypertensive effective rate (medication + moxibustion + auricular pressure vs. medication = 1.29 [1.09, 1.54]; sucra = 85.9, $p < .05$) and hypertension symptom improvement (medication + moxibustion + auricular pressure vs. medication = -1.55 [-2.98, -0.13]; sucra = 96.1, $p < .05$). Acupuncture combined with moxibustion combined with medication therapy had the best effect in reducing systolic pressure (medication + moxibustion + acupuncture vs. medication = -8.50 [-10.19, -6.80]; sucra = 100, $p < .05$) and diastolic blood pressure (medication + moxibustion + acupuncture versus medication = -4.72 [-6.71, -2.72]; sucra = 99.71, $p < 0.05$).
Conclusions	Network meta-analysis suggested that the combined use of moxibustion and auricular point application in conjunction with drug therapy showed the highest likelihood of being the most effective treatment in terms of antihypertensive efficiency rates and improvement in hypertension symptoms. Furthermore, the combination of acupuncture and moxibustion alongside drug treatment emerged as the most promising approach for reducing systolic blood pressure and diastolic blood pressure. Limited by the methodological quality and quantity of the included studies, the results need to be interpreted with caution. It is necessary to conduct more high-quality randomized controlled trials of acupuncture-related therapies for the adjuvant treatment of hypertension in the future.
Implications for practice	Clinicians can use acupuncture-related therapies to inform their treatment decisions and potentially incorporate acupuncture-related therapies into their hypertension management protocols.

1.2.2. Acupuncture on Fengchi and Quchi Acupoint

1.2.2.1. Zhu 2018

Zhu Tao, Ding Li. [Meta-Analysis of Acupuncture on Fengchi and Quchi Acupoint in the Treatment of Primary Hypertension]. Clinical Journal of Anhui Traditional Chinese Medicine. 2018;3:461-465. [201790].

Objective	Analysis of clinical efficacy of acupuncture Fengchi and Quchi acupoint in the treatment of primary hypertension.
Methods	the databases of Pubmed, Wanfang database, CNKI, VIP database from inception to2017, all the test and treatment of hypertension by acupuncture Quchi, according to the inclusion and exclusion criteria,22 studies were included, 1758 cases of patients, the clinical total efficiency, systolic blood pressure, diastolic blood pressure as effect indicators, meta analysis was carried out using RevMan5.3 software.
Results	(1)the total clinical efficiency of the OR value of 2.49, 95% CI [1.92, 4.24], P<0.00001, with a significant difference in the experimental group than the control group.(2)the decrease in SBP of [WMD=-4.50, 95% the CI(-6.45,-2.55), P<0.00001],with a significant difference in experimental group than in control group.(3)decreased diastolic blood pressure value of[WMD=-3.14, 95% CI(-4.61,-1.66), P<0.0001], with a significant difference in experimental group than in control group.
Conclusion	The efficacy of acupuncture Fengchi and Quchi acupoint in the treatment of primary hypertension is effective, high security.

1.2.3. Moxibustion

1.2.3.1. Zhou 2021

Zhou X, Wu Q, Liu M, Zhu W, Ren Q, Wang Y, Sun X, Chen J. Moxibustion for Essential Hypertension and Hypertensive Symptoms: A Systematic Review of 18 Randomized Controlled Trials. Complement Med Res. 2021;28(5):435-445. [223074]. https://doi.org/10.1159/000513701

Introduction	This systematic review aims to update the evidence for moxibustion for essential hypertension.
Methods	Randomized controlled trials (RCTs) comparing moxibustion versus lifestyle intervention or moxibustion plus antihypertensive drugs versus antihypertensive drugs alone were searched in 9 databases up to March 29, 2020. In meta-analyses, mean difference (MD) and proportional odds ratio (pOR) with 95% confidence intervals (CIs) was pooled for continuous and ordinal outcomes, respectively.
Results	**Eighteen RCTs** were included, involving **1,460 patients**. Moxibustion decreased systolic (MD -7.85 mm Hg, 95% CI -9.69 to -6.00, p < 0.00001, I2 = 46%) and diastolic (MD -4.09 mm Hg, 95% CI -5.45 to -2.73, p < 0.0001, I2 = 56%) blood pressures and improved the response to hypotensive treatment (pOR 2.37, 95% CI 1.49-3.75, p = 0.0003, I2 = 57%) significantly more than did the control treatment. Moxibustion also significantly relieved headache and dizziness but the effects changed to be statistically nonsignificant after excluding RCTs with a high risk of bias. Moxibustion did not significantly relieve insomnia and anxiety. No adverse events were reported.

Conclusions	Based on the current low to moderate quality evidence, our study suggests that moxibustion may have effects on reducing blood pressure. The effects of moxibustion on typical hypertension symptoms and the long-term safety of moxibustion remain uncertain.

1.2.3.2. Yang 2014 (moxibustion at Ki1)

Yang X, Xiong X, Yang G, Wang J. Effectiveness of stimulation of acupoint Ki 1 by artemisia vulgaris (moxa) for the treatment of essential hypertension: a systematic review of randomized controlled trials. Evid Based Complement Alternat Med. 2014. [170909].

Objective	A systematic review of randomized controlled trials has been performed to assess the effectiveness of stimulation of acupoint KI 1 by Artemisia vulgaris (the Japanese name is moxa) to lower blood pressure compared to antihypertensive drugs.
Methods and Findings	Articles published from 1980 to August 2013 in databases of CENTRAL, Pubmed, CBM, CNKI, VIP, and online clinical trial registry websites were searched. Studies included were randomized controlled trials (RCTs); moxibustion-type intervention on KI 1 compared with antihypertensive drugs; meta-analysis showed superior effects of moxibustion plus antihypertensive drugs on systolic blood pressure (WMD: -4.91 [-7.54, -2.28]; P = 0.0003) but no superior effects on diastolic blood pressure (WMD: -6.38 [-17.17, 4.41]; P = 0.25).
Conclusions	Our systematic review of the current literature shows a beneficial effect of using moxibustion interventions on KI 1 to lower blood pressure compared to antihypertensive drugs. However, the results are influenced by the existing differences in design of the current trials.

1.2.3.3. Xiong 2014

Xiong X, Liu W, Yang X, Feng B, Wang J. Moxibustion for essential hypertension. Complement Ther Med. 2014;22(1):187-95. [181713].

Objective	The objective of this review was to assess the current clinical evidence of moxibustion for essential hypertension (EH).
Methods	7 electronic databases were searched until March 2013. Randomized clinical trials testing moxibustion, or combined with antihypertensive drugs, against antihypertensive drugs alone were included. Study selection, data extraction, quality assessment, and data analyses were conducted according to the Cochrane standards. Finally, 5 randomized trials were included. The methodological quality of the included trials was evaluated as generally low.
Results	As compared to antihypertensive drugs, no positive results in BP (RR: 1.19 [0.50, 2.81]; P=0.70), was found about moxibustion. However, when combined with antihypertensive drugs, positive results in SBP (WMD: -9.57 [-10.80, -8.34]; P<0.00001), DBP (WMD: -4.08 [-4.60, -3.56]; P<0.00001), and BP (RR: 3.35 [1.03, 10.89]; P=0.04) were found about moxibustion plus antihypertensive drugs. Most of the trials did not report adverse events, and the safety of moxibustion is still uncertain.
Conclusions	Therefore, no confirm conclusion about the effectiveness and safety of moxibustion as adjunctive treatment for EH could be made. Rigorously designed trials are needed to confirm the evidence.

1.2.3.4. Kim 2010

Kim JI, Choi JY, Lee H, Lee MS, Ernst E. Moxibustion for hypertension: a systematic review. BMC Cardiovasc Disord. 2010;5;10:33.[65347].

Objective	Moxibustion is a traditional East Asian medical therapy that uses the heat generated by burning herbal preparations containing Artemisia vulgaris to stimulate acupuncture points. The aim of this review was to evaluate previously published clinical evidence for the use of moxibustion as a treatment for hypertension.
Methods and Findings	We searched 15 databases without language restrictions from their respective dates of inception until March 2010. We included randomized controlled trials (RCTs) comparing moxibustion to either antihypertensive drugs or no treatment. The risk of bias was assessed for each RCT. During the course of our search, we identified 519 relevant articles. A total of **4 RCTs** met all the inclusion criteria, two of which failed to report favorable effects of moxibustion on blood pressure (BP) compared to the control (antihypertensive drug treatment alone). However, a third RCT showed significant effects of moxibustion as an adjunct treatment to antihypertensive drug therapy for lowering BP compared to antihypertensive drug therapy alone. The fourth RCT included in this review addressed the immediate BP-lowering effects of moxibustion compared to no treatment. None of the included RCTs reported the sequence generation, allocation concealment and evaluator blinding.
Conclusions	There is **insufficient evidence to suggest that moxibustion is an effective treatment for hypertension**. Rigorously designed trials are warranted to answer the many remaining questions.

1.2.4. Cupping

1.2.4.1. Lu 2019

Lu S , Du S , Fish A , Tang C , Lou Q , Zhang X. Wet cupping for hypertension: a systematic review and meta-analysis. Clin Exp Hypertens. 2019;41(5):474-480. [200409].

Objective and methods	To assess the efficacy and safety of wet cupping in adults with hypertension, we conducted a systematic review and meta-analysis using 13 databases. Wet cupping alone or in combination with antihypertensive medication or acupuncture was used.
Results	**Seven randomized trials** were included, most not of high methodological quality. A few small studies suggested that wet cupping alone versus antihypertensive medication significantly reduced blood pressure and Traditional Chinese Medicine syndrome (hypertension-related symptoms).
Conclusions	However based on current evidence, no firm conclusions can be drawn and no clinical recommendations made. Research projects included need validation. Studies indicate that wet cupping is a safe therapy.

1.2.4.2. Lee MS 2010 ø

Lee MS, Choi TY, Shin BC, Kim JI, Nam SS. Cupping for hypertension: a systematic review. Clin Exp Hypertens. 2010;32(7):423-5. [156077].

> The objective of this review is to assess the clinical evidence for or against cupping as a treatment for hypertension. We searched the literature using 15 databases from their inception to 30 June 2009, without language restrictions. We included all clinical trials (CTs) of cupping to treat hypertension in human patients. Risk of bias was assessed using the Cochrane criteria. Two CTs met all inclusion criteria. One RCT (randomized CT)

assessed the effectiveness of dry cupping on changes in cerebral vascular function compared with drug therapy. Their results suggested significant effect in favor of cupping on vascular compliance and degree of vascular filling. One uncontrolled observational study (UOS) tested wet cupping for acute hypertension and found that a one-time treatment reduced blood pressure. In conclusion, the evidence is not significantly convincing to suggest cupping is effective for treating hypertension. Further research is required to investigate whether it generates any specific effects for that condition.

1.2.5. Bloodletting on ear apex

1.2.5.1. Kwon 2018

Kwon Chan-Young, Lee Boram , Lee Ju Ah. Efficacy and safety of bloodletting on ear apex for primary hypertension: A systematic review and meta-analysis. European Journal of Integrative Medicine. 2018;23: 90-100. [206353]. doi

Introduction	Conventional pharmacotherapy on hypertension has some issues including its side effects, resistant hypertension, withdrawal, and polypharmacy. Bloodletting on ear apex (BEA) is a non-pharmacological treatment known to be useful in lowering high blood pressure in oriental medicine. This study was conducted to explore the evidence base to investigate whether this technique could help in the treatment of hypertension.
Methods	We conducted a systematic review and meta-analysis for randomized controlled trials (RCTs) evaluating the antihypertensive effect of BEA. The methodological quality of included studies was assessed by using Cochrane Collaboration's risk of bias tool.
Results	**Eight RCTs comprising 543 participants** were included. Compared with pharmacotherapy alone, BEA as a monotherapy or adjunctive therapy to pharmacotherapy showed significant results at 5 min to 1 h after intervention in lowering systolic blood pressure, but not for diastolic blood pressure. BEA as a monotherapy showed no favorable long-term antihypertensive effects compared with pharmacotherapy. However, the long-term antihypertensive effect of combination therapy was better than the pharmacotherapy alone. Only one study reported adverse events and these were not serious. The methodological quality of included studies was generally low.
Conclusion	BEA as monotherapy or adjuvant therapy might have benefits in treating primary hypertension. Therefore, this treatment has the potential of non-pharmacological methods that can be used in patients attempting to withdraw antihypertensives or not responding to the conventional pharmacotherapy. However, since the number of studies included and the sample sizes were small, and the methodological quality was poor, these findings should be interpreted with great caution. Further well-designed studies need to be conducted to confirm these results.

1.2.6. Auricular Acupuncture

1.2.6.1. Hua 2023

Hua K, Cummings M, Bernatik M, Brinkhaus B, Usichenko T, Dietzel J. Cardiovascular effects of auricular stimulation -a systematic review and meta-analysis of randomized controlled clinical trials. Front Neurosci. 2023 Sep 1;17:1227858. https://doi.org/10.3389/fnins.2023.1227858

Background	The number of randomized controlled trials using auricular stimulation (AS) such as transauricular vagus nerve stimulation, or other auricular electrostimulation or auricular acupuncture or acupressure, in experimental and clinical settings, has increased markedly over the last three decades. This systematic review focusses on cardiovascular effects of auricular stimulation.
Methods and analysis	The following databases were searched: MEDLINE (PubMed), EMBASE, Cochrane Central Register of Controlled Trials (CENTRAL), ISI Web of Science, and Scopus Database. RCTs were reviewed that had been published in English and European languages. Data collection and analysis was conducted by two reviewers independently. Quality and risk assessment of included studies was performed and the meta-analysis of the effect of the most frequently assessed biomarkers.
Results	Altogether, 78 trials were included. 38 studies assessed heart rate (HR), 19 studies analyzed heart rate variability (HRV), **31 studies analyzed blood pressure (BP)** and 7 studies were identified that measured oxygen saturation (O2), 2 studies on baroreflex sensitivity and 2 studies on skin conductance were evaluated in this review. 26 studies contained continuous data and were eligible for meta-analysis, 50 trials reported non continuous data and were evaluated descriptively. The overall quality of the studies was moderate to low. AS leads to a significant reduction of HR, the changes though were not considered an adverse reaction. Furthermore, when looking at HRV, AS was able to reduce the LF/HF ratio significantly compared to control procedures. No other cardiovascular parameters (blood pressure, oxygen saturation, baroreflex sensitivity) were changed significantly. AS produced only minor side effects in all trials.
Conclusion	AS can lead to clinically safe reduction of HR and changes in the LF/HF ratio of the HRV, which is presumably via an increase in vagal activity. More research is needed to clarify whether AS can be used to modulate tachycardia or indications with autonomic imbalance.

1.2.6.2. Gao 2020

Gao J, Chen G, He H, Liu C, He Q, Li J, Wang J. The effect of auricular therapy on blood pressure: A systematic review and meta-analysis. Eur J Cardiovasc Nurs. 2020;19(1):20-30. [216799]. doi

Background	Although a number of clinical studies have investigated the effectiveness and safety of auricular therapy for treating hypertension, the overall evidence remains uncertain.
Aims	We aimed to evaluate the evidence for the effect of auricular therapy on blood pressure using meta-analysis methodology.
Methods	We searched PubMed, Embase, Cochrane Library databases, Clinicalkey, China National Knowledge Infrastructure, China Scientific Journal Database and Wanfang Database and Chinese Biomedicine for trials that compared the effects of auricular therapy to that of sham auricular therapy, antihypertensive drugs, or no intervention on blood pressure. Blood pressure values before and after treatment, magnitude of blood pressure change between baseline and post-intervention, and the efficacy rate, as outcomes, were synthesized by RevMan 5.3. Continuous outcomes were expressed as weighted mean differences, and dichotomous data were expressed as relative risks with 95% confidence intervals.

Results	We systematically reviewed 44 randomized controlled trials (involving 5022 patients through June 2018). Auricular acupressure plus antihypertensive drugs might be more effective than antihypertensive drugs alone in both reducing systolic blood pressure value after treatment (n=464 patients; mean difference, -5.06 mm Hg; 95% confidence interval, -6.76- -3.36, p<0.00001; I2=32%), decreasing diastolic blood pressure after treatment (n=464 patients; mean difference, -5.30 mm Hg; 95% confidence interval, -6.27- -4.33, p<0.00001; I2=0%) and the efficacy rate (relative risk, 1.22; 95% confidence interval, 1.17-1.26; p<0.00001; I2=0%).
Conclusion	Auricular therapy could be provided to patients with hypertension as an adjunct to antihypertensive drugs for lowering blood pressure value and achieving blood pressure targets.

1.2.6.3. Liu 2016

Liu Qiongqiong, Liu Xuechao, Liu Jian, Wang Yanguo, . [Auricular acupuncture for Essential hypertension: A Systematic Review]. Asia-Pacific Traditional Medicine. 2016;21:38-43. [193264].

Objective	To evaluate the curative effect, safety and application criterions of the auricular acupuncture for essential hypertension.
Methods	We included all the relevant Randomized Controlled Trials(RCTs)and quasi-RCTs of auricular acupuncture for essential hypertension, using NoteExpress 3.1.0.6915 rechecking software, using Revman 5.2software for Meta analysis.
Results	**1535patients being included 16 papers** met the enrolled criteria. Auricular acupuncture treatment of essential hypertension with less adverse effects; Auricular acupuncture combine with drugs, it may improve the total effective rate, increase the effects of lower systolic blood pressure(SBP); Auricular acupuncture alone is better than drugs reduced systolic blood pressure ; Auricular acupuncture for essential hypertension of main point in turn choose Shenmen, Endocrine, heart, Jiangyagou, liver, kidney, others could be selected by syndrome differentiation. Operating time and treatment have been found without significant difference.
Conclusion	The auricular acupuncture for essential hypertension was high security and has a certain curative effect, especially auricular acupuncture separately for systolic blood pressure, and auricular acupuncture combine with drugs to lower blood pressure as a whole. But there are still a certain limitations, it is necessary to perform more RCTs of high quality in the future

1.2.7. Auricular acupression

1.2.7.1. Zhang 2019

Zhang HL, Chen QL, Zhang M, Cao C, Yan X. [bloodletting on ear apex therapy for mild-to-moderate essential hypertension: a meta-analysis trials]. Chi. J. Integr. Med. Cardio/Cerebrovascular Dis. 2016;14:1966-70. [189527].

目的：采用Meta分析系统评价耳穴贴压与西药调节轻、中度原发性高血压的临床疗效和安全性差异。方法全面检索耳穴贴压与西药比较治疗轻、中度原发性高血压的随机对照试验文献, 选择合格研究并进行质量评价, 采用RevMan5.3软件进Meta分析。结果共纳入14篇RCT文献, 共1683例病人, 但其方法学质量普遍不高□Meta分析结果, ①降压疗效：单用耳穴贴压与单用西药比较, 两组降压疗效差异无统计学意义；耳穴贴压+西药与单用西药比较, 耳穴贴压+西药组明显优于单用西药组；②症状疗效：耳穴贴压+西药优于单用西药, 纳入试验中未见不良反应报道。结论耳穴贴压治疗轻、中度原发性高血压是安全有效的. Traduction automatique: OBJECTIF: Evaluer l'efficacité clinique et l'innocuité du pressage auriculaire auriculaire et de la médecine occidentale dans la régulation de l'hypertension essentielle légère à modérée à l'aide d'un système de méta-analyse. Méthodes Un essai complet randomisé et contrôlé du pressage

auriculaire et de la médecine occidentale pour le traitement de l'hypertension essentielle légère à modérée a été mené. L'étude qualifiée a été sélectionnée et sa qualité a été évaluée. La méta-analyse a été réalisée à l'aide du logiciel RevMan5.3. Résultats Un total de 14 ECR ont été inclus, avec un total de 1683 patients, mais la qualité méthodologique était généralement faible. Résultats de méta-analyse, 1 effet antihypertenseur: comparé au pressage à point unique à usage unique et à la médecine occidentale seule, il n'y avait pas de différence significative en termes d'effet antihypertenseur entre les deux groupes: groupe de pression auriculaire + médecine occidentale comparé à la médecine occidentale seule, groupe de pression auriculaire + groupe de médecine occidentale excellent Dans le groupe de médecine occidentale seul; 2 efficacité symptomatique: pression auriculaire + médecine occidentale est meilleure que la médecine occidentale seule, aucun effet indésirable n'a été rapporté au cours de l'essai. Conclusion Le pressage auriculaire des points d'acupuncture est sûr et efficace dans le traitement de l'hypertension essentielle légère à modérée.

1.2.7.2. Zhang 2017

Zhang Haihong, Wang Xueyan, Song Jianhua. [Auricular pressure for primary hypertension: a meta-analysis]. Scientific & Technical Information of Gansu. 2017;46(2):89-90. [193187].

目的:系统评价耳穴埋豆法治疗原发性高血压的护理疗效. 方法:计算机检索利用计算机检索维普期刊□CNKI□CBM□万方数据库、全国硕士、博士论文数据库等，检索时间从建库至2015年8月. 有2名研究者对纳入文献进行筛选、评价、数据提取后，利用revman5.2软件进行分析. 结果共纳入11个RCT, meta分析显示:(1)总有效率方面，耳穴埋豆法优于常规西医(RR=1.21, 95□CI:1.07, 1.38), 差异有统计学意义(p□0.05);耳穴埋豆法+常规西医疗效也优于常规西医(RR=1.16, 95□CI:1.10, 1.23, p□0.05);(2)耳穴埋豆法+常规西医组在收缩压和舒张压变化方面，均优于常规西医组(收缩压:MD=7.14, 95□CI:4.43, 9.85, p□0.05;舒张压:MD=8.91, 95□CI:7.18, 10.65, p□0.05).结论:本研究显示，耳穴埋豆法治疗高血压效果显著，但是由于纳入文献质量不高，需更多大样本、多中心、高质量的随机对照研究来证实. Traduction automatique : OBJECTIF: Évaluer systématiquement l'efficacité de l'infiltration auriculaire dans le traitement de l'hypertension essentielle. Méthodes: recherche informatisée dans Weipu, CNKI, revues CBM, base de données Wanfang, master national, base de données de thèses de doctorat, etc. En août 2015, deux chercheurs ont utilisé le logiciel revman5.2 pour le criblage, l'évaluation et l'extraction de données. 11 essais contrôlés randomisés. La méta-analyse a montré: (1) l'efficacité totale, la méthode du point d'acupuncture auriculaire était supérieure à la médecine occidentale traditionnelle (RR = 1, 21, IC 95%: 1, 07, 1, 38), la différence était statistiquement significative (p <0, 05); méthode d'insertion des points auriculaires intégrés + Le traitement médical occidental traditionnel est également supérieur à la médecine occidentale traditionnelle (RR = 1, 16). IC 95%: 1, 10, 1, 23, p <0, 05); (2) le groupe de médecine occidentale conventionnelle était supérieur au groupe de médecine occidentale traditionnelle en ce qui concerne la pression artérielle systolique et la pression artérielle diastolique (pression artérielle systolique: MD = 7, 14, IC 95%). %: 4, 43, 9, 85, p <0, 05, pression artérielle diastolique: MD = 8, 91, IC 95%: 7, 18, 10, 65, p <0, 05) Conclusion: cette étude démontre que la méthode du point auriculaire est efficace pour le traitement de l'hypertension, mais que la qualité de la littérature est satisfaisante. Pas élevé, nécessite des essais contrôlés randomisés multicentres de haute qualité et des échantillons plus volumineux pour confirmer.

1.2.7.3. Zhang 2016

Zhang Jia. [Systematic review on ear hole planted seeds in controlling the blood pressure of essential hypertension patients] International Journal of Nursing. 2016;8:1025-29. [193186].

Objective	To explore the intervention effect of ear hole planted seeds in controlling the blood pressure of essential hypertension patients.
Methods	By searching Pubmed, Embase, CNKI, WANFANG database, and VIP database, the randomized controlled trials of control and intervention of ear hole planted seeds on patients with primary hypertension were collected. In addition, literature quality evaluation and data extraction were carried out. Meta-analysis was conducted on the total effective rate and obvious effective rate.

Results	Finally, 8 middle qualified articles had been enrolled. Meta-analysis showed that ear hole planted seeds combined with western medicine could improve the total effectiveness rate and excellence rate in lowering blood pressure, compared with the sheer western medicine group, and the difference was statistically significant (P<0. 01) .
Conclusions	The analysis of Meta showed that ear hole planted seeds is helpful for controlling the blood pressure of essential hypertension patients

1.2.8. Acupoint Sticking

1.2.8.1. Wei 2022

Wei L, Xingjiang X, Lumin Q, Yuyi C, Yixuan LI, Xing SU, Fuyong C, Hongxu L. Acupoint application therapies for essential hypertension: a systematic review and Meta-analysis. J Tradit Chin Med. 2022 Apr;42(2):159-166. http://journaltcm.com/EN/10.19852/j.cnki.jtcm.2022.02.001|

Objective	To evaluate the efficacy and safety of acupoint application therapies (AA) for hypertension.
Methods	We searched PubMed, EMBASE, the Cochrane Center Controlled Trials Register, Chinese National Knowledge Infrastructure, Chinese Scientific Journal Database, and Wanfang Med Online Database from their inceptions to October 7, 2019. No language restriction was applied. We included randomized clinical trials testing AA against Western Medicine, AA versus placebo, AA combined with Western Medicine versus Western Medicine. Study selection, data extraction, quality assessment, and data analyses were conducted according to the Cochrane standards.
Results	Totally **41 trials with 3772 participants** were included. The methodological quality of the included trials was evaluated as generally low. AA plus Western Medicine significantly lowered systolic blood pressure (BP) [weighted mean difference (): -10.36, 95% confidence intervals (): -12.62, -8.10; 0.000 01], diastolic BP (: -5.71, 95% : -7.30, -4.13; 0.000 01), and total effect [risk ratio (): 1.23, 95% : 1.15, 1.32; 0.000 01]. The BP-lowering effect of AA was significantly higher than that of placebo [systolic BP (SBP): -8.05, 95% : -8.67, -7.43; 0.000 01; diastolic BP (DBP): -6.66, 95% : -7.31, -6.01, 0.000 01]. The total effect also improved significantly from baseline with AA than placebo (: 10.85, 95% : 4.71, 24.98; 0.000 01). Traditional Chinese Medicine symptoms score were significantly reduced by AA compared with Western Medicine (: -1.75, 95% : -2.52, -0.99; 0.000 01), 10 trials reported adverse events, indicating that the safety of SSYX Capsule is still uncertain.
Conclusions	Application therapies may be considered a safe and beneficial for the treatment of hypertension and can reduce BP and improve the total effect. Further well-designed trials are needed to support our conclusions.

1.2.8.2. Yin 2018

Yin Tao, Ma Poi-Hong, He Zhao-Xuan, Qiu Ke, Zeng Fang. [Meta-analysis of Clinical Effect of Acupoint Sticking Supplementary Therapy of Fructus Evodiae on Hypertension]. Chinese Journal of Basic Medicine in TCM. 2018;24(12):1757. [193196].

Objective	Systematic evaluation of therapeutic effect of Acupoint sticking of Fructus Evodiae on hypertension.

Methods	Randomized controlled trials (RCTs) concerning fructus evodiae and basic therapy for hypertension were searched through databases such as PubMed CNKI, VIP, Wanfang from inception to July 2017. Literatures were extracted according to inclusion and exclusion criteria, and methodological quality of included studies was assessed. Metaanalysis was performed by RevMan 5.3.
Results	After selection,**9 randomized controlled trials** were included,a total of **733 patients**. The results showed that compared with the control group, there were significant differences in the treatment of hypertension.
Conclusion	Actual clinical evidence indicates that on the basis medicine therapy, add Acupoint sticking of Fructus Evodiae can improve therapeutic efficacy. However, reliability of systematic review is affected by low quality and number of included studies. More large-scale RCTs should be carried out for further validation.

1.3. Special Clinical Forms

1.3.1. Hypertension in the elderly

1.3.1.1. Lv 2025

Lv H, Li M, Liu H, Zhong Y, Wen H, Wang X. Acupuncture as adjuvant therapy for hypertension in the elderly: A network meta-analysis. J Manipulative Physiol Ther. 2025 Nov 6:S0161-4754(25)00090-9. https://doi.org/10.1016/j.jmpt.2025.10.061

Objective	The purpose of this study was to evaluate the effectiveness and safety of acupuncture as adjuvant therapy for hypertension in elderly patients.
Methods	We conducted a systematic review and network meta-analysis to assess the effects of acupuncture as adjuvant therapy for hypertension in the elderly. Databases searched included the Cochrane Library, PubMed, Embase, Web of Science, and the China National Knowledge Infrastructure database from their inception to March 1, 2025. The primary outcome was the mean change in blood pressure, while the secondary outcome was safety, evaluated by the incidence of adverse reactions.
Results	A total of **24 studies (3044 participants)** were included. For systolic blood pressure (SBP), acupuncture combined with calcium antagonists demonstrated significantly greater efficacy compared to calcium antagonists alone, auricular acupressure plus calcium antagonists, auricular acupressure alone, acupuncture plus ACE inhibitors, auricular acupressure plus ACE inhibitors, ACE inhibitors alone, acupuncture alone, electroacupuncture, and angiotensin II (mean difference [MD]: 10.71; 17.86; 13.48; 16.47; 19.84; 25.8; 28.25; 36.34; and 27.23, respectively). For diastolic blood pressure (DBP), acupuncture combined with calcium antagonists was significantly more effective than auricular acupressure alone, calcium antagonists alone, electroacupuncture, acupuncture alone, angiotensin II, acupuncture plus ACE inhibitors (MD: 26.32; 17.48; 32.43; 29.56; 22.66; 29.18; 31.75; 24.27; and 25.61, respectively). Based on ranking probabilities, acupuncture combined with calcium antagonists may be the most effective and safe treatment for hypertension in the elderly.
Conclusion	Current evidence suggests that acupuncture as adjuvant therapy could be effective and safe for elderly patients with hypertension, with the combination of acupuncture and calcium antagonists potentially being the optimal choice. However, due to potential biases, results should be interpreted cautiously.

1.3.1.2. Wang 2023

Wang T, Li H, Feng S, Wang J, Qin W, Zhang Y, Sun W, Wang C, Cai X, Han D, Liu J, Liu Y. Efficacy of acupuncture for hypertension in the elderly: a systematic review and meta-analysis. Front Cardiovasc Med. 2023 Dec 14;10:1147135. https://doi.org/10.3389/fcvm.2023.1147135

Backgound	Hypertension has now developed into a major public health problem worldwide. Under the existing antihypertensive drug treatment paradigm, problems such as decreasing drug resistance and increasing drug side effects can occur for elderly patients. Acupuncture, a core technique in the non-pharmacological treatment of Chinese medicine, plays an important role in the treatment of elevated blood pressure.
Objective	This study aimed to systematically evaluate the effect of acupuncture alone or in combination with antihypertensive drugs on the efficiency of reducing blood pressure and controlling blood pressure in elderly patients with hypertension.
Methods	Articles of randomized controlled trials of acupuncture for hypertension in the elderly published before November 2022 were searched in 7 databases. The methodological quality of the literature was evaluated using the Cochrane Risk of Bias Assessment Tool. The primary outcome was the efficiency rate of blood pressure reduction, and the secondary outcome was the change in blood pressure after treatment.
Results	This study conducted a systematic review and meta-analysis of **12 randomized controlled trials with a total of 1,466 subjects**. Among the primary outcome-efficiency rate, acupuncture-only treatment (RR = 1.11, 95% CI: 1.03-1.20, P < 0.01) and acupuncture combined with antihypertensive drug treatment (RR = 1.18, 95% CI: 1.06-1.31, P < 0.01) were significantly different compared with drugs-only treatment. Among the secondary outcomes, SBP (MD: -4.85, 95% CI: -10.39 to -0.69, P = 0.09) and DBP (MD: -1.45, 95% CI: -5.35 to 2.45, P = 0.47) show no significant difference between acupuncture-only treatment and drug-only treatment. Compared to drugs-only treatment, acupuncture plus drugs has more significant efficiency in lowering SBP (MD: -9.81, 95% CI: -13.56 to -6.06, P < 0.01) and DBP (MD: -7.04, 95% CI: -10.83 to -3.24, P < 0.01).
Conclusion	For elderly patients with hypertension, acupuncture-only treatment has the same efficiency and antihypertensive effect compared to drug therapy and acupuncture plus drugs outperforms drugs-only treatment. If the patients receive therapy with less frequency per week and longer duration, there will be a more obvious antihypertensive effect. Due to the methodological defects in the included study and the limited sample size of this paper, more well-designed randomized controlled trials are needed for verification.

1.3.2. hypertension in pregnancy

1.3.2.1. Maolinda 2026

Maolinda W, Makajil JD, Lasimbang HB, Friscilla I, Fitriani A. Efficacy and safety of acupuncture as a non-pharmacological intervention for managing hypertension in pregnancy: A systematic review. Afr J Reprod Health. 2026;30(5):149-162. https://doi.org/10.29063/ajrh2026/v30i5.14

Background	Hypertensive disorders in pregnancy remain a leading cause of maternal and perinatal morbidity and mortality globally, affecting approximately 5-10% of pregnancies according to WHO estimates.
Objective	This systematic review evaluates the efficacy and safety of acupressure as a nonpharmacological intervention for managing hypertension in pregnant women.

Methods	Following PRISMA guidelines, a comprehensive search of Scopus, PubMed, and Web of Science databases from 2010 to 2023 retrieved 285 records. Quantitative and qualitative analyses were conducted based on the PICO framework to assess intervention effectiveness.
Results	Acupressure applied at key points LI4 (Hegu), ST36 (Zusanli), SP6 (Sanyinjiao), and auricular sites such as Shenmen demonstrated statistically significant reductions in systolic (10-15 mmHg) and diastolic (5-8 mmHg) blood pressure ($p < 0.05$).
Conclusion	This review highlights the opportunity to incorporate acupressure into community-based maternal health services, especially in low-resource settings where access to pharmacologic treatment may be limited. However, the development of standardized clinical protocols, professional training programs, and long-term outcome evaluations is essential before widespread clinical adopt

1.4. Special outcome

1.4.1. Insomnia symptoms in hypertensive patients

1.4.1.1. Zhang 2024

Zhang J, Zhou X, Jiang H, Zhu W, Chi H, Jiang L, Zhang S, Yang J, Deng S, Li B, Zhuo B, Zhang M, Cao B, Meng Z. Acupuncture for insomnia symptoms in hypertensive patients: a systematic review and meta-analysis. Front Neurol. 2024 Feb 19;15:1329132. https://doi.org/10.3389/fneur.2024.1329132

Purpose	In the realm of pain management, traditional Chinese medicine, specifically acupuncture, has garnered increasing attention. This meta-analysis pioneers the evaluation of acupuncture's effectiveness in treating insomnia among hypertensive patients.
Methods	We conducted a comprehensive search across several databases-PubMed, Web of Science, Cochrane Library, WANFANG, China National Knowledge Infrastructure (CNKI), Sinomed, and the Chinese Journal of Science and Technology (VIP). Additionally, forward and backward articles of studies published from the inception of these databases until 10 September 2023, were reviewed. This systematic review and meta-analysis included all randomized controlled trials (RCTs) focusing on acupuncture for insomnia in hypertensive patients, without imposing language or date restrictions. We rigorously assessed all outcome measures reported in these trials. The evidence was synthesized by calculating the difference between mean differences (MD) in symptom change. The quality of the evidence was determined using the Cochrane Risk of Bias tool. This study is registered with PROSPERO under number CRD42023461760.
Results	Our analysis included **16 RCTs, comprising 1,309 patients**. The findings revealed that acupuncture was significantly more effective than the control group in reducing insomnia symptoms, as indicated by a greater decrease in the PSQI score (MD = -3.1, 95% CI [-3.77 to -2.62], $p < 0.00001$). Additionally, improvements in both systolic and diastolic blood pressure were more pronounced in the acupuncture group compared to the control group (SBP: MD = -10.31, 95% CI [-16.98 to -3.64], $p = 0.002$; DBP: MD = -5.71, 95% CI [-8.19 to -3.23], $p < 0.00001$).
Conclusion	These results suggest that acupuncture not only improves sleep quality but also lowers blood pressure in patients suffering from hypertension and insomnia. Further research is warranted to elucidate optimal acupuncture points and the duration of treatment for maximized therapeutic effect

2. Overviews of Systematic Reviews

2.1. Zhou 2022 ☆

Zhou M, Bu H, Wang D, Wang M, Guan Y, Sun X, Tian Z, Wang H. An Overview of Systematic Reviews: Acupuncture in the Treatment of Essential Hypertension. Int J Gen Med. 2022 Nov 8;15:8093-8109. https://doi.org/10.2147/IJGM.S387490.

Objective	Acupuncture treatment is widely used for essential hypertension (EH), and numerous systematic reviews on acupuncture for EH have been published. This article provides an overview of the effectiveness and safety of acupuncture for EH and assesses the quality of reports, methodological bias, quality of evidence and risk of bias for inclusion in the evaluation.
Methods	Two researchers independently computer searched Pubmed, EMbase, The Cochrane library, WOS, CBM, CNKI, Wangfang Data, VIP and other Chinese and English databases with a search time frame from the date of creation to 13th October 2022; and independently screened systematic reviews of acupuncture therapy for EH; and finally The Report Quality Assessment Tool (PRISMA 2020), Methodological Quality Assessment Tool (AMSTAR2), Grading of Evidence Assessment Tool (GRADE), and Bias Assessment Tool (ROBIS) were used independently to assess the bias of the included literature.
Results	A total of **11 systematic reviews** were included. The included studies mainly reported on outcome indicators such as efficiency rate, end SBP, end DBP, SBP change value, DBP change value, etc. Deficiencies in the quality of PRISMA 2020 reporting were mainly in the areas of independent screening by multiple researchers, use of GRADE for analysis, early registration, description of conflict of interest, and public access to information; the results of the AMSTAR 2 tool evaluation were mostly were very low, and of the 16 entries affecting the methodological quality of the systematic evaluation, entries 2/3/4/5/12/16 had the greatest methodological bias; GRADE assessed the quality of evidence for key outcome indicators, with a few being low and all others being very low; and ROBIS reported a high level of bias in the literature.
Conclusion	Current acupuncture has some efficacy in the treatment of essential hypertension, but its quality of evidence is low. It is hoped that the quality of relevant literature reporting, methodological quality, quality of evidence, and bias will improve.

2.2. Zhao 2019 ☆

Zhao H , Li D , Li Y , Yang Y , Liu Y , Li J , Mao J. Efficacy and safety of acupuncture for hypertension: An overview of systematic reviews. Complement Ther Clin Pract. 2019;:185-194. [192802].

Background and purpose	Acupuncture is widely used in the treatment of hypertension, yet its efficacy and safety for hypertension remain controversial. This overview aimed to summarize the evidence on acupuncture for hypertension.
Methods	Eight databases were searched. The Assessment of Multiple Systematic Reviews (AMSTAR) tool and the Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach were performed.

Results	**Fifteen systematic reviews (SRs)** were identified. Methodological quality and quality of evidence were unsatisfactory. Acupuncture combined with Western medicine (WM) was superior to WM in systolic blood pressure (SBP) and diastolic blood pressure (DBP), efficacy rate, and traditional Chinese medicine (TCM) syndrome. Acupuncture was more effective in treating SBP and DBP than sham acupuncture plus WM. Evidence regarding the benefit of acupuncture alone for SBP and DBP, efficacy rate and TCM syndrome was inconsistent. No serious adverse effects were identified.
Conclusion	High-quality SRs and randomized controlled trials (RCTs) are required.

2.3. Niu 2019

Niu JF, Zhao XF, Hu HT, Wang JJ, Liu YL, Lu DH. Should acupuncture, biofeedback, massage, Qi gong, relaxation therapy, device-guided breathing, yoga and tai chi be used to reduce blood pressure?: Recommendations based on high-quality systematic reviews. Complement Ther Med. 2019;42:322-331. [191423].

Background	This review aims to rate the quality of evidence and the strength of recommendations in high-quality systematic reviews of non-drug therapies. Hypertensive patients who are resistant or non-adherent to antihypertensive drugs may be easier to manage if they choose alternative non-drug therapies for hypertension, based on this review.
Methods	P: Adults (>18 years), except pregnant women, with essential hypertension. I: Cupping, moxibustion, acupuncture, acupoint stimulation, yoga, meditation, tai chi, Qi gong, Chinese massage, massage, spinal manipulation, biofeedback, device-guided breathing therapy, aromatherapy, music therapy, and relaxation approaches. C: 1. No treatment. 2. Sham therapy. 3. Conventional treatment, including antihypertensive drugs and lifestyle modification (e.g., exercise). O: 1. Change in the incidence of cardiovascular death. 2. Change in the incidence of myocardial infarction. 3. Change in the incidence of stroke. 4. Change in blood pressure (BP). 5. Efficacy rate of BP lowering. 6. Adverse effects (review specific). S: Systematic reviews of randomized controlled trials, including meta-analyses and assessments of the methodological quality/risk of bias. INFORMATION SOURCES: Cochrane Database of Systematic Reviews, Database of Abstracts of Reviews of Effects, Cochrane library, PubMed, Web of Science, China National Knowledge Infrastructure, and Chinese Scientific Journal Database were searched. The bibliographies of the included articles were also searched for relevant systematic reviews. GRADE criteria were used to rate the quality of evidence in systematic reviews considering 6 factors, including risk of bias.
Results	This review ultimately included 13 systematic reviews of 14 non-drug therapies (acupuncture, wet cupping, Baduanjin, blood letting, auricular acupuncture, music, massage, Qi gong, moxibustion, relaxation therapies, biofeedback, device-guided breathing, yoga and tai chi) based on the inclusion criteria. The quality of evidence was generally low, and weak recommendations were given for most therapies except massage and acupuncture plus antihypertensive drug. Based on the analyzed evidence, massage and acupuncture plus antihypertensive drug could benefit people who want to lower their BP and do not have contraindications for massage and acupuncture plus antihypertensive drug.
Discussion/Strength	The GRADE approach makes this review a unique reference for people who are considering the grade of quality of evidence in systematic reviews, the balance of desirable and undesirable consequences and the strength of recommendations to decide which intervention should be used to reduce BP.

Limitations	Many non-drug therapies were excluded due to the low methodological quality of their systematic reviews, and only 14 therapies were evaluated in this review. As no patient-important outcomes were reviewed, surrogate outcomes were used to rate the strength of recommendations. This approach may cause a decrease in evidence quality according to GRADE, but we argue that this is appropriate in the context of this review.

Wang 2023

3. Clinical Practice Guidelines

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

3.1. Malaysia Health Technology Assessment Section (MaHTAS, Malaysia) 2017 Ø

Malaysia Health Technology Assessment Section (MaHTAS). Primary & Secondary Prevention of Cardiovascular Disease 2017. Ministry of Health (MoH). 2017:156P. [172243]. URL

The committee does not recommend acupuncture as a form of blood pressure lowering therapy (III, b).

3.2. U.S. Navy Bureau of Medicine and Surgery (USA) 2013 ⊕

Acupuncture. U.S. Navy Bureau of Medicine and Surgery. 2013.17p. [180539].

Category B (limited evidence): Authorized but not recommended for routine use (consider as adjunct). Hypertension

3.3. American Heart Association 2013 (AHA, USA) Ø

Brook RD, Appel LJ, Rubenfire M, Ogedegbe G, Bisognano JD, Elliott WJ, Fuchs FD, Hughes JW, Lackland DT, Staffileno BA, Townsend RR, Rajagopalan S et al. Beyond medications and diet: alternative approaches to lowering blood pressure: a scientific statement from the american heart association. Hypertension. 2013;61(6):1360-83. [197526].

Class III, no benefit, Level of Evidence B recommendation for BP-lowering efficacy. Acupuncture is not recommended in clinical practice to reduce BP at this time.

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