

Acupuncture for Migraine: A Systematic Review of Chinese Literature

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ABSTRACT

Introduction: Acupuncture is widely used for the treatment of migraine, but its effectiveness is inconclusive based on findings of two recent systematic reviews. However, these reviews included very few studies conducted in Asian countries. Research papers published in Chinese are yet to be reviewed to determine their role in the overall understanding of the effectiveness and safety of acupuncture for migraine. **Objectives:** Is acupuncture more effective than no treatment, sham/placebo acupuncture, or as effective as other interventions for migraine? **Methods:** *Search Strategies:* Electronic search was performed in the two most comprehensive Chinese e-databases, *Vi Pu* and *Wan Fang*. Keywords used were a combination of acupuncture, headache, migraine, Chinese medicine, electroacupuncture and point-stimulation. *Selection Criteria:* Randomised, controlled trials comparing acupuncture with any type of control interventions and reporting at least one of the clinically related outcome measures for migraine were selected. *Data Collection and Analysis:* Characteristics of the studies were extracted by two independent reviewers. Reporting quality and validity were assessed using the Jadad Scale, Internal Validity Scale and Oxford Pain Validity Scale. STRICTA was used to assess the reporting quality of acupuncture treatment. RevMan 4.2 was used for data analysis. **Results:** Seventeen studies with a total of 2097 participants (median 91; range 62–216) met the inclusion criteria. Ten studies compared acupuncture alone with western medications. The remaining seven trials compared a combined therapy of acupuncture and other therapies with western medications. None of the studies compared acupuncture with no-treatment control or sham/placebo acupuncture. None of the 17 studies was considered of high quality. Studies indicated that acupuncture alone was superior to western medications (RR 1.55, 95% CI 1.27 to 1.88). In comparison to studies included in the other two reviews, the Chinese studies in this review had a larger sample size and acupuncture treatments were more frequent. **Conclusion:** There is moderate evidence that acupuncture is more effective than western pharmacotherapy. Due to the poor quality and validity of included studies, this conclusion requires further assessment. Data from Chinese literature should be included in future systematic reviews.

KEYWORDS systematic review, acupuncture, migraine, headache.

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Introduction

Migraine is a common, disabling, and typically unilateral headache disorder with symptoms such as nausea, vomiting, phonophobia or photophobia. Approximately 16% of Australians suffer from migraine.¹ Direct and indirect costs of migraine as a whole in Australia from 1989 to 1990 were estimated to be between 302 and 721 million dollars.²

Current treatments for migraine focus on symptomatic management using anti-inflammatory medications, opioids and ergots. These western medications have provided some relief, but not without risks, such as drug overuse with resultant headache exacerbation. More and more migraine sufferers seek complementary therapies, including acupuncture, for relief. A recent Italian study reported that the percentages of complementary and alternative medicine users in chronic and episodic migraine sufferers were 50% and 27%, respectively.³

The role of acupuncture in migraine treatment, however, remains uncertain.⁴ Currently available systematic reviews (SRs) on this topic have focused on published studies from western countries, with few studies in Asian languages.⁴⁻⁶ Thus, the majority of Asian studies were neglected, possibly due to language difficulties and a lack of access to the relevant databases.⁴ In China, acupuncture is widely used and data from this region need to be taken into consideration in determining the effectiveness and safety of acupuncture for migraine.

Objectives

Through systematically reviewing Chinese literature, the objectives of this review were to determine whether acupuncture was:

1. more effective than no treatment;
2. more effective than 'sham/placebo' acupuncture; and
3. as effective as other interventions for migraine.

Methods

CRITERIA FOR CONSIDERING STUDIES FOR THIS REVIEW

TYPES OF STUDIES

Studies with a randomised and controlled design were included. Quasi-randomised studies (e.g. by the order of admission or date of birth) were also included. Ongoing or unpublished studies were excluded.

TYPES OF PARTICIPANTS

Participants were migraine patients diagnosed according to standard criteria, such as those recommended by the Ad Hoc Committee of the National Institute of Neurological Diseases and Blindness⁷ or the International Headache Society (IHS).⁸

Studies that did not separate migraine patients from those with other types of headache, such as tension-type headache, were excluded.

TYPES OF INTERVENTION

Studies that involved needle insertion at acupuncture points, tender points, or trigger points, and other invasive methods of stimulating these points (e.g. electroacupuncture) were included. Studies examining non-invasive acupuncture, such as laser acupuncture or acupressure, were excluded, so were studies utilising point-injection alone. Studies comparing a combined therapy of acupuncture and Chinese herbal medicine or Tuina with a control group were included because acupuncture was often used together with other therapies in clinical practice.

Control interventions considered were:

- no treatment,
- sham or placebo acupuncture, or
- other active treatments.

Studies comparing different modalities of acupuncture were excluded, for instance, those comparing manual acupuncture with electroacupuncture. Studies without a valid control group, meaning that the effect of acupuncture could not be assessed (for instance, comparing acupuncture with acupuncture plus Qigong), were also excluded.

TYPES OF OUTCOME MEASURES

Included studies should report at least one clinically related outcome for migraine, such as frequency or intensity of migraine or number of respondents. Trials reporting only physiological or laboratory parameters as outcome measures, such as electroencephalogram, were excluded.

We extracted data of the 'global response' to treatment. Response was defined as at least 50% improvement in our review. We estimated whether 50% improvement was met from the description provided by the authors. For instance, Lao⁹ recorded the reduction of migraine index (MI) during the third month after the end of the treatment. The MI reduction between 90% and 100% was considered as 'cured', between 55% and 89% as 'marked improvement', between 20% and 54% as 'improvement' and less than 20% as 'no effect'. The participants in the first two groups were considered to be respondents in our review. Most studies did not report the immediate and the long-term effects separately. For instance Zhou¹⁰ defined 'improvement' as more than 50% reduction of MI in the three months after the end of the treatment. Consequently, the 50% improvement in our review refers to the global response to acupuncture at 0-12 months after the treatment, and is not specific to either the immediate effect or the long-term effect. Relative risks and their 95% confidence intervals were calculated.

SEARCH STRATEGY FOR IDENTIFICATION OF STUDIES

'Acupuncture (针灸)', 'electroacupuncture (电针)', 'Chinese medicine (中医药疗法)', 'point-stimulation (穴位刺激)', 'headache (头痛)' and 'migraine (偏头痛)' were the keywords searched in the two largest Chinese electronic databases, *Vi Pu* (重庆维普, www.cqvip.com, inception 1989) and *Wan Fang* (万方数据, www.wanfangdata.com.cn, inception 1982) for papers published from the inception of the databases to August 2006.

METHODS

ELIGIBILITY

Of 266 papers found, 177 were either not RCTs, used Chinese herbs as the active intervention, or did not have a valid control intervention. A further 55 papers were excluded because they reported other types of headache. Two authors (YYW and ZZ) assessed the remaining 34 papers. Two were excluded because non-invasive acupuncture was used and seven were excluded due to the use of point-injection alone as the treatment. A further eight were eliminated for not providing any clinically relevant outcome measures. Finally, a total of 17 studies were included and analysed. The following flowchart illustrates the process of identifying studies (Figure 1).

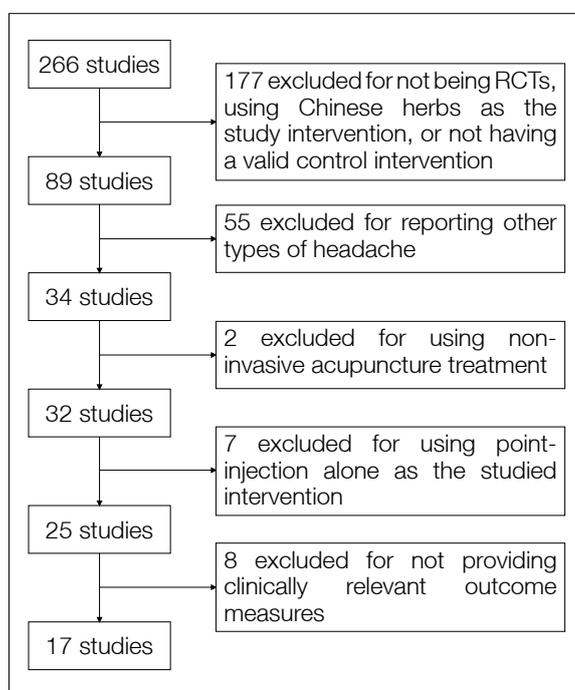


FIGURE 1 A flowchart illustrating the process of study identification

DATA EXTRACTION

Information on participants, randomisation, blinding interventions, outcome measures and results were extracted using the standard form adopted by Melchart and colleagues.⁴ One reviewer (YYW) extracted the data. Another reviewer (ZZ) checked the extraction according to the pre-defined form. Differences between the reviewers were resolved through discussion.

ASSESSMENT OF QUALITY

The quality of included studies was assessed independently by two reviewers using the Jadad Scale,¹¹ the Internal Validity Scale (IVS),¹² and the Oxford Pain Validity Scale (OPVS).¹³ The former two scales have been used in several SRs on acupuncture.^{4,14} Studies scoring three or more points on the Jadad scale are considered of high quality, which is 60% of the maximum score. OPVS was designed specifically to examine the internal validity of trials in the field of pain research.¹³ Points awarded for each item of the Jadad Scale, IVS and OPVS are listed in order for each trial in Table 1. In addition, the Standards for Reporting Interventions in Controlled Trials of Acupuncture (STRICTA) were used to assess the reporting quality of acupuncture interventions.¹⁵

Concealment of allocation is the process of concealing assignments of the interventions. We adopted the method recommended by the Cochrane Collaboration to assess whether allocation concealment was adequate, uncertain, inadequate or not mentioned, and scored A, B, C and D, appropriately.¹⁶ This method has been used by other systematic reviews.^{4,17-19} 'A' refers to studies adopting correct concealment methods, such as using centralised randomisation or sequentially numbered, sealed, opaque envelopes. If studies do not report any concealment approach, 'B' should be coded. Category C includes the use of case record numbers, dates of birth or days of the week, and any procedure that is entirely transparent before allocation, such as an open list of random numbers. 'D' refers to studies that clearly state that allocation concealment was not used.

DATA ANALYSIS

RevMan 4.2 was used for meta-analysis. If significant heterogeneity among the trials was detected with the I^2 statistic ($I^2 \geq 50\%$), a random-effects model was used. Otherwise, a fix-effects model was used. For continuous data, weight or standard mean difference was used; for dichotomy data, relative risk was used.

We adopted the method described by van Tulder and colleagues in 2003 for the qualitative assessment of the overall evidence. This method classifies the evidence into strong, moderate, limited, conflicting or no evidence, depending on the quality, number and results of the studies.²⁰

TABLE 1 Characteristics of included studies

Author and date	Intervention	Sample population*	Outcomes#	Follow-up	Drop-out
Zhou JH (2005)	Acupuncture vs western medication	Acu: <i>n</i> = 35 WM: <i>n</i> = 35	▲	6 months	No
Wang B (2004)	Acupuncture vs western medication	Acu: <i>n</i> = 125 WM: <i>n</i> = 61	▲	N/A	No
Cui R, et al. (2004)	Acupuncture vs western medication	Acu: <i>n</i> = 48 WM: <i>n</i> = 38	▲	3 months	No
Feng SL, et al. (2003)	Acupuncture vs western medication	Acu: <i>n</i> = 35 WM: <i>n</i> = 27	▲	2 months	No
Zhang YC, et al. (2002)	Acupuncture vs western medication	Acu: <i>n</i> = 106 WM: <i>n</i> = 110	■	1 year	No
Liu KY, et al. (2001)	Acupuncture vs western medication	Acu: <i>n</i> = 43 WM: <i>n</i> = 43	▲ and frequency and duration	1 month	No
Li W, et al. (1998)	Acupuncture vs western medication	Acu: <i>n</i> = 70 WM: <i>n</i> = 32	▲	N/A	Yes
Chen XS (1997)	Acupuncture vs western medication	Acu: <i>n</i> = 45 WM: <i>n</i> = 30	■	6 months	No
Zhou LS (2003)	Acupuncture vs western medication	Acu: <i>n</i> = 43 WM: <i>n</i> = 20	▲	3 months	No
Lao JX (2003)	Electronic acupuncture vs western medication	Acu: <i>n</i> = 87 WM: <i>n</i> = 61	▲	2 months	No
Wang JL, et al. (2004)	Acupuncture plus Chinese medicine injection vs western medication	Acu: <i>n</i> = 60 WM: <i>n</i> = 60	■	6 months	No
Liu Y, et al. (2002)	Acupuncture plus acupoint injection vs western medication	Acu: <i>n</i> = 54 WM: <i>n</i> = 52	■	8 weeks	No
Lu ZQ (2004)	Acupuncture plus massage vs western medication	Acu: <i>n</i> = 54 WM: <i>n</i> = 30	■	6 months	Yes (16)

Number and percentage of respondents: Treatment vs Control	Quality	Allocation concealment [†]
Treatment: 21/35, 60% Control: 9/35, 25.7%	Jadad: 1-0-0-0-1 IVS: 0.5-0-0.5-0-0-1 OPVS: 0-3-2-0-1-1-0-1	C
Treatment: 100/125, 80% Control: 36/61, 59%	Jadad: 1-0-0-0-1 IVS: 0.5-0-1-0-0-1 OPVS: 0-3-2-0-1-1-0-1	B
Treatment: 28/48, 58.3% Control: 17/38, 44.7%	Jadad: 1-0-0-0-1 IVS: 0.5-0-1-0-0-1 OPVS: 0-3-2-0-1-0-0-1	C
Treatment: 23/35, 65.7% Control: 7/27, 25.9%	Jadad: 1-0-0-0-1 IVS: 0.5-0-0.5-0-0-1 OPVS: 0-3-2-0-1-0-0-1	B
Treatment: 63/106, 59.4% Control: 24/110, 21.8%	Jadad: 1-0-0-0-1 IVS: 0.5-0-0-0-0-1 OPVS: 0-3-2-0-1-1-0-1	B
Treatment: 33/43, 76.7% Control: 25/43, 58.1% Frequency: 0.3 ± 1.4 vs 2.6 ± 1.6 Duration: 2.54 ± 1.37 vs 14.7 ± 15.6	Jadad: 1-0-0-0-1 IVS: 0.5-0-1-0-0-1 OPVS: 0-3-2-0-1-1-1-1	B
Treatment: 37/70, 52.9% Control: 15/32, 46.9%	Jadad: 1-0-0-0-0 IVS: 0.5-0-0-0-0-0.5 OPVS: 0-3-2-0-1-1-0-1	C
Treatment: 30/45, 66.7% Control: 16/30, 53.3%	Jadad: 1-0-0-0-1 IVS: 0.5-0-1-0-0-1 OPVS: 0-3-2-0-1-1-0-1	B
Treatment: 40/43, 93% Control: 15/20, 75%	Jadad: 1-0-0-0-1 IVS: 0.5-0-0.5-0-0-1 OPVS: 0-3-2-0-1-0-0-1	B
Treatment: 41/87, 47.1% Control: 14/61, 23%	Jadad: 1-0-0-0-1 IVS: 0.5-0-0.5-0-0-1 OPVS: 0-3-2-0-1-1-0-1	B
Treatment: 37/60, 61.7% Control: 19/60, 31.7%	Jadad: 1-0-0-0-1 IVS: 0.5-0-0.5-0-0-1 OPVS: 0-3-2-0-1-0-0-1	C
Treatment: 41/54, 75.9% Control: 32/52, 61.5%	Jadad: 1-0-0-0-1 IVS: 0.5-0-0.5-0-0-1 OPVS: 0-3-2-0-1-1-0-1	B
Treatment: 35/46, 76.1% Control: 12/26, 46.2%	Jadad: 1-0-0-0-0 IVS: 0.5-0-0.5-0-0-0.5 OPVS: 0-3-2-0-1-1-0-1	B

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TABLE 1 Characteristics of included studies (continued)

Author and date	Intervention	Sample population*	Outcomes#	Follow-up	Drop-out
Shao Y, et al. (2005)	Electronic acupuncture plus massage vs western medication	Acu: <i>n</i> = 35 WM: <i>n</i> = 33	▲	6 months	No
Wang LQ, et al. (2004)	Acupuncture plus hyperbaric oxygen vs western medication	Acu: <i>n</i> = 63 WM: <i>n</i> = 28	●	1 year	No
Liu XL, et al. (2002)	Acupuncture plus hyperbaric oxygen vs western medication	Acu: <i>n</i> = 256 WM: <i>n</i> = 158	■	N/A	No
Zhang YK (2005)	Acupuncture plus medication vs western medication	Acu: <i>n</i> = 60 WM: <i>n</i> = 60	Headache index	No	No

* Acu: acupuncture, WM: western medications

▲ refers to four categories of self-defined 'global response', named 'cured', 'marked improvement', 'improvement' and 'no effect'. According to the definition, the participants in the 'cured' and 'significantly improved' categories had more than 50% improvement when compared with the baseline and were considered as respondents in this review. ■ refers to three categories of self-defined 'global response', named 'cured', 'effective' and 'ineffective'. According to the definition, the participants in the 'cured' category had more than 50% improvement, and were considered as respondents in this review. ● refers to four categories of self-defined 'global response', named 'cured', 'marked improvement', 'improvement' and 'no effect'. According to the definition, the participants in the 'cured', 'significantly improved' and 'improved' categories had more than 50% improvement, and were considered as respondents in this review.

METHODOLOGICAL ASSESSMENT

DESCRIPTION OF THE STUDIES

Table 1 summarises the characteristics of the 17 studies. Sixteen trials adopted the IHS criteria for the diagnosis of migraine, and one trial used the Ad Hoc Committee's criteria.²¹ A total of 2097 participants (median 91; range 62–414) were included in our review.

All studies compared acupuncture with western medication treatments. Ten studies used acupuncture alone. Six studies used a combined therapy of acupuncture with acupoint injection,²² with intravenous injection of a purified Chinese herb,²³ with Chinese Tuina,^{24,25} or with hyperbaric oxygen.^{26,27} The remaining study compared acupuncture plus western medication with western medication alone.^{23,28} None of the studies compared acupuncture with no-treatment control or sham/placebo acupuncture.

QUALITY ASSESSMENT

The median Jadad score was 2 (range 1–2) out of a possible score of 5; the median IVS was 2.0 (range 1.5–2.5) out of 6; and the median OPVS was 8 (range 7–9) out of 16. None of the 17 studies had more than 60% of a maximum score of Jadad, IVS or OPVS.

All 17 trials were described as randomised studies. Six studies in which the method of randomisation was briefly mentioned used the order of admission or date of birth to allocate participants, and can be considered as quasi-randomised studies. Consequently, 'C Inadequate' was coded for these six studies. The remaining twelve studies were in Category B because it is unclear if and how the allocation concealment was conducted. Detailed information about allocation concealment was absent in eleven studies, one trial only merely stated that the sortition method was used.⁹

Furthermore, no study reported details regarding the process of blinding. The participants were not blinded to the treatment allocation because western medications were the control intervention. The blinding of assessors was not reported in any of the studies. All studies gained one point for reporting drop-outs. In two studies, a drop-out rate of less than 10% was reported.^{21,25} The remaining studies did not have any drop-outs.

Only two trials^{28,29} presented means and standard deviations of the outcome measures and were awarded one point for data presentation in OPVS.

Number and percentage of respondents: Treatment vs Control	Quality	Allocation concealment [†]
Short-term: Treatment: 26/35, 74.3% Control: 25/33, 75.8%	Jadad: 1-0-0-0-1 IVS: 0.5-0-0.5-0-0-1	C
After 6 months: Treatment: 26/35, 74.3% Control: 17/33, 51.5%	OPVS: 0-3-2-0-1-1-0-1	
Treatment: 53/63, 84.1% Control: 33/56, 58.9%	Jadad: 1-0-0-0-1 IVS: 0.5-0-0.5-0-0-1 OPVS: 0-3-2-0-1-1-0-1	B
Treatment: 103/256, 40.2% Control: 50/158, 31.6%	Jadad: 1-0-0-0-1 IVS: 0.5-0-1-0-0-1 OPVS: 0-3-2-0-1-1-0-1	C
Treatment: 9.1 ± 2.07 Control: 11.7 ± 3.04	Jadad: 1-0-0-0-1 IVS: 0.5-0-0.5-0-0-1 OPVS: 0-3-2-0-1-1-0-1	B

† A: indicates adequate concealment of the allocation (e.g. by telephone randomisation, or use of consecutively numbered, sealed, opaque envelopes). B: indicates uncertainty about whether the allocation was adequately concealed (e.g. where the method of concealment is not known). C: indicates that the allocation was definitely not adequately concealed (e.g. open random number lists or quasi-randomisation, such as alternate days, odd/even date of birth, or hospital number). D: indicates the score was not assigned, i.e. allocation concealment was not used.

In contrast to the poor reporting quality of study designs, most of the studies achieved satisfactory results in STRICTA, reporting quality of intervention, which is not assessed by any other measurements. All 17 trials gave detailed information for acupuncture rationale, needling techniques, treatment regimes, co-interventions and control interventions; however, none of the studies gave details of practitioner backgrounds (Table 2).

ACUPUNCTURE INTERVENTION

Twelve trials used formula acupoints. One trial employed formula acupoints plus Ashi points.²¹ The remaining four used semi-structured acupuncture treatment, including formula plus complementary acupoints based on traditional Chinese medicine (TCM) syndrome differentiation.^{9,25,26,30} The principles of acupuncture point selection were clearly stated in 16 studies, including dispelling wind,^{22,23,25} dredging meridian and activating Qi and blood,^{27,28,31-33} and regulating the liver.^{9,10,21,24,26,29,34,35} Deqi (a feeling of numbness, heaviness, distension or radiation) was reported in all 17 studies.

The median treatment period was 30 days (range 5–56 days) with an average of 30 treatment sessions (range 5–40). In 13 studies, participants were treated with acupuncture daily. Three studies gave five or six treatment sessions weekly^{21,30,35} and in the remaining study, treatment was given once every three days.³¹

The top five acupoints used in the 17 trials were GB 8 *Shuaigu*, GB 20 *Fengchi*, LI 4 *Hegu*, LR 3 *Taichong*, and Ex-HN 5 *Taiyang*.

CONTROL INTERVENTION

All 17 trials used western medications as the control intervention. Participants took prophylactics daily. These drugs were categorised as Ca⁺⁺ channel blocker (Nimodipine), antihistamines (Flunarizine), anticonvulsants (Carbamazepine) and analgesics (Rotudin, a combination of analgesics and unnamed herbs). In two studies, participants were instructed to use NSAID (Indomethacin and Brufen) daily,^{25,28} which is not a standard western pharmacotherapy for prophylactic treatment of migraine. They were excluded from the meta-analysis.

In six trials, Ergotamine, Cafegot or Ibuprofen was used for acute attacks in the control group only.^{10,21,22,24-26,31}

OUTCOME MEASURES

All studies reported the use of at least one of the clinical-related outcome measures, such as frequency, intensity, and duration of migraine. However, apart from two studies which presented the means and standard deviations of clinical data,^{28,29} the remaining fifteen reported the number of participants in the 'cured', 'marked improvement', 'improvement' and 'no effect' categories. None of the studies mentioned the use of a diary to record patients' migraine.

FOLLOW-UP

Follow-up was not clearly mentioned in three studies, and one trial did not include a follow-up period. Fourteen studies had a follow-up period ranging from one month to one year after treatment with a median of 4.5 months. Performance of the participants during the follow-up period was not reported separately from that immediately after acupuncture.

Side effects of acupuncture and western medications were not reported.

Results

ACUPUNCTURE VS WESTERN MEDICATIONS

In total, ten studies with 1094 participants were included in this analysis. All 10 studies reported positive results (Figure 2); however, the I^2 statistic (61.4%) indicated significant heterogeneity. Thus, a random-effects model was applied in the data analyses. The results significantly favoured acupuncture as an intervention (RR 1.55; 95% CI 1.27 to 1.88). Only one study²⁹ presented the details of frequency and duration of migraine in mean and SD (frequency per month: 0.3 ± 1.4 vs 2.6 ± 1.6 ; duration in hours: 2.54 ± 1.37 vs 14.7 ± 1.56). This study also provided the number of participants in the sub-groups of 'cured', 'marked improvement', 'improvement' and 'no effect'. The number of respondents in the study was chosen for the meta-analysis.

ACUPUNCTURE PLUS WESTERN MEDICATION VS WESTERN MEDICATION

There was only one study in the comparison. Zhang (2005) compared acupuncture plus western medication with the same western medication alone (Brufen). In total, 120 participants

were randomised into two groups with 1:1 ratio. After 30 treatment days, the acupuncture group (9.1 ± 2.07) was found to be statistically significantly better than the western medication alone group (11.7 ± 3.04) in headache index, a combined measure of frequency and intensity of headache.

ACUPUNCTURE PLUS OTHER TCM THERAPIES VS WESTERN MEDICATIONS

Four studies compared a combined therapy of acupuncture and other Chinese medicine (CM) therapies, including acupoint injection,²² intravenous injection of a purified Chinese herb²³ and Tuina^{24,25}, respectively, with western medications. Lu²⁵ combined acupuncture with Chinese Tuina to compare with treatment with Indomethacin (NSAID) (25 mg twice a day for 30 days), an invalid pharmacological treatment for migraine. In fact, frequent use of NSAIDs could lead to migraine from medicine overuse.³⁶ Consequently, this study was not included in the meta-analysis.

Shao²⁴ is the only study that presented both short-term data and the six-month follow-up data. The results indicated that acupuncture with massage produced a long-term effect, although the short-term effect was not better than western medications. To be consistent with the data extracted from other studies, the follow-up data were included in the meta-analysis.

The fixed-effects model was used because the I^2 statistic was 43.1%. Figure 3 shows that acupuncture plus other CM therapies were significantly better than western medications control (RR 1.48, 95% CI 1.22 to 1.81).

ACUPUNCTURE PLUS OTHER THERAPY VS WESTERN MEDICATION

Two studies of 503 participants combined acupuncture with hyperbaric oxygen to compare with western medication.^{26,27}

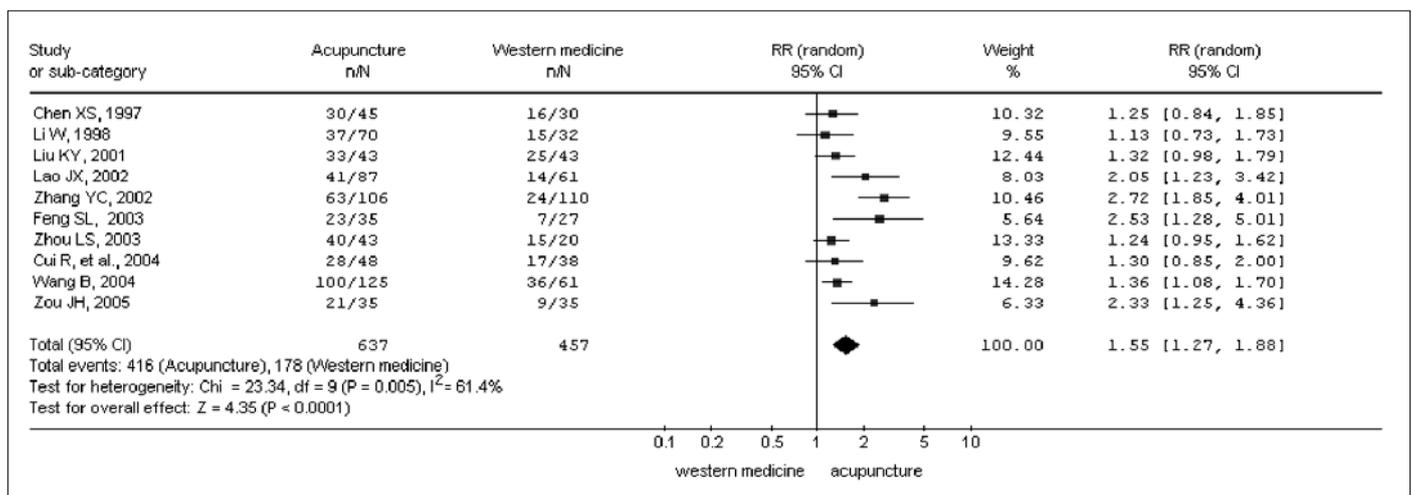


FIGURE 2 Global responses to the treatments – acupuncture versus western medications

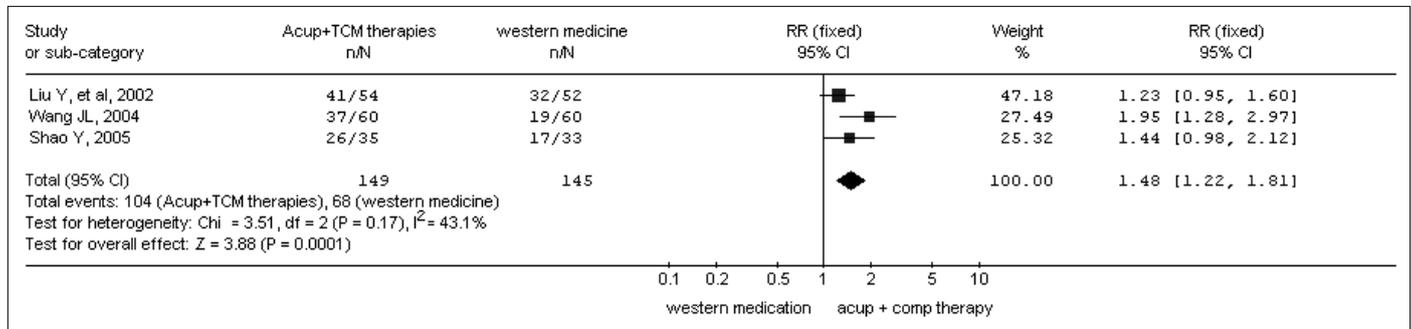


FIGURE 3 Global responses to the treatments – acupuncture with other traditional Chinese medicine versus western medications

Significant heterogeneity was indicated by the I² statistic (84.7%), and a random-effects model was applied. Figure 4 indicates that the combined therapy was not statistically significantly better than the western medication controls (RR 1.22, 95% CI 0.87 to 1.7).

A COMPARISON OF OUR REVIEW WITH THE OTHER TWO SRS

A comparison of findings from our review with those in the two previous SRs^{4,6} is presented in Table 3. The majority of studies included in the two existing SRs were published in English or European languages. In general, studies published in China had larger sample sizes, were of poorer quality, had acupuncture treatment more frequently and had pharmacotherapy controls only. All studies included in our review emphasised that the Deqi sensation was achieved during treatment. Only 9 out of 26 trials reported Deqi in Melchart et al’s review,⁴ and 10 out of 25 in Scott and Deare’s review.⁶

Twenty three percent of the Chinese trials (four out of 17 studies) used semi-standardised acupuncture treatment based on Chinese medicine syndrome differentiation. In comparison, 44% of the trials reported in English and European literature adopted this method.

Trials published in English and European languages used sham/placebo acupuncture, waiting list, western medicine or physiotherapy as the control interventions; blinding of participants was common in the sham acupuncture–controlled trials. All of the 17 Chinese studies used western medications as a control. Except for two studies,^{25,28} all drugs used in these 17 trials were recommended migraine medication³⁷ and were similar to those of trials in the other SRs

Discussion

This review of Chinese literature was conducted to determine the effect of acupuncture on migraine when compared with sham acupuncture, no treatment and other therapies. No relevant studies were identified for the first two comparisons. There is moderate evidence from Chinese literature supporting the value of acupuncture for the treatment and prevention of migraine when compared with western medications. Furthermore, combining acupuncture with other modalities of Chinese medicine is superior to western medications.

The major limitation of our SR is that we were not able to identify papers published prior to the 1980s because the inceptions of the two databases – *Vi Pu* (重庆维普) and *Wan*

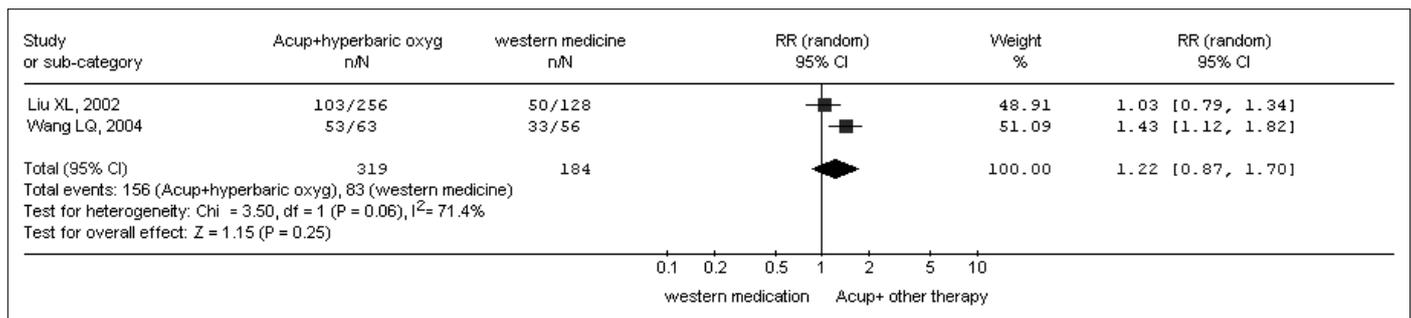


FIGURE 3 Global responses to the treatments – acupuncture and other therapy versus western medications

TABLE 2 Study and control interventions of included studies

Author and date	Study intervention	Type of acupuncture treatment	Acupuncture points and needling
Zhou JH (2005)	Acupuncture alone	Formula acupuncture (dredging meridian and activating Qi and blood)	GB8, GB 19, TE20. Deqi mentioned.
Wang B (2004)	Acupuncture alone	Formula acupuncture (dredging meridian and activating Qi and blood)	GV 15, GV 16, GV 17; dividing the distance between GV 16 and GB 12 into 6 equal sections, then needling the points dividing the sections. Deqi mentioned.
Cui R, et al. (2004)	Acupuncture alone	Formula acupuncture (regulating the liver)	GB8, GB 20, GB 39, GB 41, LI4, LR3, KI 12. Deqi mentioned.
Feng SL, et al. (2003)	Acupuncture alone	Formula acupuncture plus complementary point based on TCM syndrome differentiation	Empirical points: 1st point: 0.5 cun above GB 8; 2nd/3rd points: 1 cun left or right of the 1st point. Complementary points: BL 23, KI 3 ,LR3, or SP9, ST 8, ST 40 or GB 20, GB 34, LR3. Deqi mentioned.
Zhang YC, et al. (2002)	Acupuncture alone	Formula acupuncture (dredging meridian and activating Qi and blood)	TE 21. Deqi mentioned.
Liu KY, et al. (2001)	Acupuncture alone	Formula acupuncture (regulating the liver)	Ex-HN 5, GB 8, GB 20, GB 34, GB 41, LR 3, TE 5, ST 36, start and end points of lower sensory area in Head acupuncture. Deqi mentioned.
Li W, et al. (1998)	Acupuncture alone	Formula acupuncture (regulating the liver) plus Ashi points	GV 20, GB 20, GB 39, LR2. Complementary points: Ashi points. Deqi mentioned.
Chen XS (1997)	Acupuncture alone	Formula acupuncture (regulating the liver)	Ex-HN 5, GB 20, LR3, ST 8, TE 5. Deqi mentioned.
Zhou LS (2003)	Acupuncture alone	Formula acupuncture (regulating the liver)	TE 5, GB 8, GB 41, GB 44, TE 3, TE 19. Deqi mentioned.
Lao JX (2003)	Electrical acupuncture alone	Formula acupuncture (regulating the liver) plus complementary point based on TCM syndrome differentiation	GB4, TE23. Complementary points: Ex-HN 5, GB 20, LU 7, or KI 3, LR3 or LI 4, LR 2, or GB 8, ST 40. Deqi mentioned.
Wang JL, et al. (2004)	Acupuncture plus intravenous injection of a purified Chinese herb	Formula acupuncture (dispelling wind)	Ex-HN 5, GB 8, GB 20, LI 4, LR 3, TE 3. Deqi mentioned.
Liu Y, et al. (2002)	Acupuncture plus acupoint injection	Formula acupuncture (dispelling wind)	GV 20, Ex-HN 5, GB 8, GB 20, LI 4, LU 7, ST 8, TE 23. Deqi mentioned.
Lu ZQ (2004)	Acupuncture plus massage	Formula acupuncture (dispelling wind) plus complementary point based on TCM syndrome differentiation	Ex-HN 5, GV 14 GV 20, GB 20. Complementary points: LI 4, ST 40 or KI 3, LR 3 or LI 4, SP 6 or LU 9, ST 36. Deqi mentioned.
Shao Y, et al. (2005)	Electrical acupuncture plus massage	Formula acupuncture (regulating the liver)	Ex-HN 5, GB 4, GB 20, GB 38, GB 41, LR 3, PC 6 , TE 23. Deqi mentioned.
Wang LQ, et al. (2004)	Acupuncture plus hyperbaric oxygen	Formula acupuncture (regulating the liver) plus complementary point based on TCM syndrome differentiation	GB 4, GB 20, TE 19, TE 23. Complementary points: BL 17, SP 10, or BL 12, BL 60, or SP 6, ST 40, or BL 23, KI 3. Deqi mentioned.
Liu XL, et al. (2002)	Acupuncture plus hyperbaric oxygen	Formula acupuncture (dredging meridian and activating Qi and blood)	Ex-HN 5, LI 4, LI 11, LU 4. Deqi mentioned.
Zhang YK (2005)	Formula acupuncture plus medication	Formula acupuncture (dredging meridian and activating Qi and blood)	GB8, GB 20, LI 4, LR3. Deqi mentioned.

Key: bid = twice per day; tid = three times per day; qd = four times per day.

Other treatment	Treatment regime	Practitioner background	Control intervention
No	1/day for 30 days	N/A	Nimodipine (Ca channel blocker) 40 mg, tid
No	1/3 days for 30 days	N/A	1. Cafegot 2 tabs for acute migraine attacks; if not effective within 30 mins, take another 1–2 tablets; max 6 tab/day. 2. Nimodipine 30 mg bid for 30 days.
No	6/week for 3 weeks	N/A	Nimodipine 40 mg, tid and oryzanol 20 mg, tid
No	5/week for 8 weeks	N/A	Nimodipine 40 mg, t.i.d
No	1/day for 5 days	N/A	Flunarizine (antihistamines) 10 mg, q.d for 5 days
No	1/day for 30 days	N/A	Nimodipine 30 mg, tid for 30 days
No	6/week for 3 weeks	N/A	Carbamazepine (anticonvulsants) 100 mg, tid for 21 days
No	1/day for 20 days	N/A	Nimodipine 30 mg, tid for 20 days
No	1/day for 40 days	N/A	Ergotamine 1 mg for acute migraine attacks; if not effective, take another 2 mg after 30 mins; maximal dose 6 mg/day
No	1/day for 10 days, then rest 5 days; totally repeated 3 times	N/A	Rotudin 30 mg tid for 10 days, then rest 5 days; totally repeat 3 times
Ligustrazine Hydrochloride (川芎嗪) 100 mL i.v. drip qd for 15 days	1 /day for 15 days	N/A	Flunarizine 5 mg, qd
Acupoint injection using stauntoniae (野木瓜皂甙) on Ex-HN 5 or GB 16, 2 mL for 8 weeks	1/day for 10 days, then rest 2 day, lasting 8 weeks	N/A	Flunarizine 5 mg, qd for 8 weeks; cafergot for acute migraine attacks.
Tuina	1/day for 30 days	N/A	1. Ergotamine 1–2 mg for acute migraine attacks, if not effective, take another 2 mg after 30 mins; max 6 mg/day. 2. Indomethacin (NSAID) 25 mg bid for 30 days.
Tuina along the gallbladder meridian on the head for 15 min	1/day for 10 days, then rest 3 days, totally 3 phases.	N/A	Flunarizine 5 mg, qd Acute migraine attack, take ibuprofen 1–2 tablets.
Hyperbaric oxygen	1/day for 10 days	N/A	1. Cafegot (1–2 tabs for first symptoms). 2. Nimodipine 40 mg tid and Flunarizine (antihistamines) 5 mg, tid for 10 days.
Hyperbaric oxygen	1/day for 10 days	N/A	Somiton (a combination of analgesics and unnamed herbs) 500 mg, tid, oryzanol 10 mg, tid, and VB1 10 mg, tid for 7 days
Brufen 400 mg, t.i.d for 30 days	1/day for 30 days	N/A	Brufen 400 mg, tid for 30 days

Fang (万方数据) – were 1989 and 1982 respectively. These two databases are the most comprehensive Chinese e-databases and include all the academically credible journals and theses published in China in the area of science and technology. Although studies published before the 1980s are not included in these databases, it is unlikely we have missed many published papers in this area. Apart from two of the 17 papers being published in 1997 and 1998, the remaining fifteen studies were published after 2001.

None of the 17 studies in our review were included in the other two SRs,^{4,6} indicating that a large body of research was not considered when the conclusions were drawn. Given that the Chinese studies have larger sample sizes than those conducted in western countries, potentially yielding a higher weighting in a meta-analysis, it is even more important to include such studies.

A search indicated that only one journal included in our review

(*Zhongguo Zhenjiu*) was indexed in PubMed (from 2005). Three studies¹⁶⁻¹⁸ in our review were published in this journal before 2005 and so were not included in PubMed. This confirms the view expressed by the authors of the other two SRs that there is a lack of access to the Asian literature.^{4,6}

In this review, we encountered the same difficulty that faced the authors of the other two SRs. Ideally, we should use the number of days with migraine per month or changed intensity or duration of migraine at the end of the treatment as the main outcome measure for quantitative analyses as recommended by the IHS.³⁸ Only two papers presented means and standard deviations of these outcome measures.^{28,29} Due to detailed clinical data being unavailable, the number of respondents was used for meta-analyses. There are differences in the definition of respondents; 50% was used in our and Melchart et al's reviews, and 33% in Scott and Deare's review. Such a reduction of data limits our understanding of the exact effects of acupuncture on the frequency, intensity and duration of migraine.

TABLE 3 A comparison of our review (overall data) and two other systematic reviews of acupuncture for migraine

	Our review	Melchart et al.	Scott and Deare
Sample size (median)	91	37	63
Frequency of treatment (sessions per week)	5–7	1–2	mostly 1–2
Deqi sensation	17/17 trials reported	9/26 trials reported	10/25 trials reported
Jadad, median (range)	2 (1–2)	1.5 (1–4)	2.3 (1–5)
IVS	2 (1.5–2.5)	2.5 (1–4)	3 (0.5–6)
Acupoint selection	23% of the studies chose acupoints according to Chinese medicine individual syndrome differentiation	N/A	44% of the studies chose acupoints according to Chinese medicine individual syndrome differentiation
Control intervention	Western medications	Physiotherapy (massage and relaxation), sham/placebo acupuncture, waiting list, western medications, standard GP care.	Physiotherapy (massage and relaxation), sham/placebo acupuncture, waiting list, western medications, standard GP care
Respondent rate	50%	50%	33%
Relative risk (acupuncture vs western medications)	1.55 (1.27–1.88) Favours acupuncture	N/A	1.38 (1.08–1.76) Favours acupuncture

Similar pharmacological treatments were used as the control interventions in our review and Scott and Deare's. The effect size identified in our review (1.55) is comparable with the value reported by Scott and Deare (1.38). Considering the different definitions for respondents, Chinese trials have a higher success rate. It is unknown whether the higher success rate is due to publication bias reported by Vickers and colleagues,³⁹ lower quality, or the differences in acupuncture treatment protocol.

The reporting quality and internal validity are generally poor, as confirmed by three different scales. All 17 studies compared acupuncture with western medications, and participants could not be blinded to treatment allocation. Furthermore, no trial described whether the acupuncturists were blinded to outcome assessment or whether an independent assessor/evaluator was employed. No trials reported the detailed process of randomisation or the reasons for drop-out.

Another major shortcoming of the Chinese literature is the assessment of the outcomes. First, the effect of acupuncture on acute attacks was not investigated. Second, the Chinese trials neither presented detailed clinical data nor separated the immediate effect from the long-term effect. As a result, we cannot determine the duration of the effect of acupuncture on migraine. Third, although many included studies claimed that they assessed the time-profile and intensity of migraine, none of the studies described either the use of a diary, a method recommended by the IHS,⁴⁰ or how the data were recorded. The poor reporting quality and lower internal validity might have contributed to the over-estimation of the effect size.

Most Chinese trials implemented nearly daily treatment, which is much more frequent than the treatments provided in studies included in the other two SRs.^{4,6} It is unknown whether frequent treatment is associated with better results. Except for one study using empirical points alone, the remaining 16 trials selected traditional acupoints and provided the basis for point selection. All of them are in accordance with the classic literature. From the available data, we cannot conclude how frequent the treatment should be and which formula is the best. The ideal acupuncture treatment, in terms of frequency of treatment and acupoint selection, should be investigated in the future.

Conclusion

IMPLICATIONS FOR RESEARCH

Acupuncture shows promising effects on migraine. There is moderate evidence that acupuncture alone or combined with western medications is more effective than western medication for the prevention and treatment of migraine. However, the poor quality of the available studies and a lack of detailed data greatly reduced the level of overall evidence. Future

Clinical Commentary

This review indicates that acupuncture alone or when combined with other therapies is 1.2 to 1.5 times more effective than western medications for the treatment of migraine. Formula-based acupuncture is used in the majority of studies. The most frequently used acupoints are GB8 *Shuaigu*, GB20 *Fengchi*, LI4 *Hegu*, LR3 *Taichong* and Ex-HN5 *Taiyang*. The findings of this review need to be interpreted with caution as the quality of the included studies is poor.

studies should improve the reporting quality and trial design and present detailed data of the outcome measures. Profiles of the side effects of acupuncture should also be recorded. Furthermore, it is important to include trials published in Chinese in meta-analyses.

IMPLICATIONS FOR CLINICAL PRACTICE

Acupuncture might be an effective prophylactic treatment for migraine. It can be used either alone or in conjunction with western medications.

Acknowledgments

POTENTIAL CONFLICTS OF INTEREST

None. The authors recently completed a randomised, controlled clinical trial of acupuncture for migraine.

CONTRIBUTION OF REVIEWERS

YYW and ZZ contributed to the development of the protocol, paper selection, data extraction and assessment of quality. YYW, ZZ and CX contributed to interpretation of the data and writing of the manuscript.

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