CRD summary
Acupuncture appeared effective for treatment of insomnia, but further large rigorously designed trials were warranted. The authors' conclusions reflected the evidence presented, but limitations of the included studies should be borne in mind.

Authors' objectives
To evaluate the beneficial and harmful effects of acupuncture for treatment of insomnia.

Searching
PubMed, The Cochrane Library, China Network Knowledge Infrastructure, Chinese Scientific Journal Database VIP and the Wanfang Database were searched to December 2008 with no limitation on language or publication type. Search terms were reported.

Study selection
Randomised controlled trials (RCTs) that evaluated acupuncture (alone or combined with other treatments) compared with no treatment, placebo or basic medical therapy for patients with insomnia were eligible for inclusion. Outcomes of interest were duration and quality of sleep using validated instruments.

Interventions in the included studies included acupuncture (body, auricular acupuncture, electroacupuncture, acupressure and acupoint injection), acupuncture plus conventional medication or herbal medication. Comparators included no treatment, sham acupuncture, medication or herbal medicine. The number of acupoints ranged from two to 20. Total treatment duration ranged from two days to 10 weeks. Most participants were diagnosed with primary insomnia. Other participants had insomnia post stroke, experienced depression, were in remittent stage of schizophrenia, had cervical spondylosis, end-stage renal disease and drug addiction. Disease duration ranged from 10 days to 40 years. Participant ages ranged from 13 to 85 years. Outcome assessments varied between studies and used a variety of tools, which included Pittsburgh Sleep Quality Index (PSQI), Self-rating Depression Scale, Self-rating Anxiety Scale, Asberg Rating Scale, monitoring questionnaires, Sleep Dysfunction Rating Scale, Hamilton Anxiety Scale, SF-36, Piper Fatigue Scale, Beck Depression Inventory and Leeds Sleep Evaluation Questionnaire. Adverse effects were assessed. Most studies were published in Chinese; the English-language studies were conducted in Taiwan and Korea.

Two reviewers independently selected studies for inclusion.

Assessment of study quality
Validity was assessed and studies categorised as A: good (studies with the least biases and with results considered valid), B: fair (studies susceptible to some degree of bias but not sufficient to invalidate results) and C: poor (studies had significant biases that may have invalidated results).

Validity was assessed independently by two reviewers.

Data extraction
Data for relevant outcomes were extracted and used to calculate relative risk (RR) and corresponding 95% confidence intervals (CI) for binary outcomes and mean difference (MD) and 95% CIs for continuous outcomes.

Two authors independently extracted data.

Methods of synthesis
Studies were combined in a meta-analysis where trials were homogeneous on study design, participants, interventions, control and outcome measures. Pooled relative risks and mean differences were calculated together with corresponding CIs. Publication bias was explored using funnel plots.

Results of the review
Forty-six RCTs (n=3,811, range 22 to 182) were included in the review. Seven RCTs were categorised as A (good) and 39 were categorised as B (fair). Fourteen RCTs described randomisation procedure. Eight RCTs blinded patient or assessor. Nine RCTs reported number of dropouts. No studies used an intention-to-treat method.

Acupressure was significantly better than no treatment for improvement of total scores of PSQI (MD -3.28, 95% CI -6.10 to -0.46; four RCTs). Real acupuncture was more effective than sham acupuncture for improved total scores of PSQI (MD -2.94, 95% CI -5.77 to -0.11; two RCTs). Acupuncture was more effective than Western medication for total sleeping time increased by more than three hours (RR 1.53, 95% CI 1.24, 1.88; 10 RCTs). No difference was reported between acupuncture and medication for average sleep duration (two RCTs). Acupuncture plus medication showed a greater effect than medication alone on total sleep duration (MD 1.09, 95% CI 0.56 to 1.61; two RCTs). Acupuncture plus herbs had a significantly greater effect on increase of sleep rates than herbs alone (RR 1.67, 95% CI 1.12 to 2.50; two RCTs). Twelve RCTs reported on adverse events in relation to acupuncture and three RCTs reported minor adverse effects.

Results for other outcomes were reported. There was some evidence of publication bias.

Authors’ conclusions
Acupuncture appeared to be effective for treatment of insomnia, but further large rigorously designed trials were warranted.

CRD commentary
The review question was clear with appropriate inclusion criteria. Several relevant sources were searched and attempts were made to locate unpublished literature and reduce potential for language bias. Formal assessment reported some evidence of publication bias. Most of the included studies were published in Chinese. Validity was assessed and details of the assessment were partially reported. Appropriate efforts were made to reduce reviewer error and bias in study selection, validity assessment and data extraction processes. Studies were combined in meta-analyses (methods were not reported). The authors reported that statistical heterogeneity was low, but no results of this analysis were reported. A number of meta-analyses included only one or two studies. The authors acknowledged that many studies had small sample sizes, methodological limitations and short duration of follow-up. There were differences between studies in terms of interventions and control groups, conduct of acupuncture, diagnosis and comorbid conditions of participants, outcomes and assessment tools. It appeared that all the studies were conducted in China, Korea and Taiwan and the results may not be generalisable to other populations. The authors' conclusions reflected the evidence presented, but limitations of the included studies should be borne in mind.

Implications of the review for practice and research
The authors did not state any implications for practice.

Research: The authors stated that further rigorously designed trials with large sample sizes were needed to confirm the effectiveness of acupuncture for treatment of insomnia. Studies should fully describe randomisation methods, attempt blinding of patients and outcome assessors, use well-defined diagnostic criteria, include an intention-to-treat analysis and include long term follow-up. Future trials should evaluate subgroups to determine the effect of acupuncture on different types of patients and different treatment techniques. Studies should describe treatment in detail. Treatment should be conducted by well-trained qualified acupuncturists according to STRICTA guidelines.

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