## Acupuncture for psoriasis: protocol for a systematic review

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Acupuncture for psoriasis: protocol for a systematic review

Lei Wang¹²†, Haoyu Yang²†, Nuo Li¹, Weiming Wang³, Yanping Bai¹*

¹Department of Dermatology, China–Japan Friendship Hospital, Beijing (100029), China
²School of Graduates, Beijing University of Chinese Medicine, Beijing (100029), China
³Department of Acupuncture, Guang’anmen Hospital, China Academy of Chinese Medical Sciences, Beijing (100053), China

†Lei Wang and Haoyu Yang contributed equally to this study.

*Correspondence to: Professor Yanping Bai; Tel: 86-10-84205036; E-mail: zhi@tsinghua.edu.cn

Running title: acupuncture for psoriasis: a protocol

Key words
Acupuncture; psoriasis; system review; protocol

Word count: 2506
Abstract

Introduction: The described systematic review aims to assess the effects and safety of acupuncture for psoriasis.

Methods and analysis: We will electronically search randomized controlled trials in several databases (OVID MEDLINE, EMBASE, Cochrane Central Register of Controlled Trials, Chinese Biomedical Literature Database, Chinese Medical Current Content, Chinese Scientific Journal Database [VIP database], Wan-Fang Database, and China National Knowledge Infrastructure) for articles published from inception to 31 August, 2014. We will also try to obtain literature by manually searching other sources, such as reference lists, conference proceedings, and registers of clinical trials (e.g., the Meta Register of Controlled Trials and the Chinese Clinical Trial Registry). Changes in disease status evaluated by signs or any tool available will be measured as the primary outcome. Global changes as well as changes in participant status (as evaluated by quality of life), safety (as measured by the prevalence and severity of adverse effects or adverse events) and costs (if available) will be measured as secondary outcomes. Selection of studies, data extraction, and assessment of the quality of included studies will be conducted by two researchers, independently. Data synthesis and subgroup analyses will be done using special software (Review Manager). Data will be combined with a random-effect model. Results will be presented as risk ratios for dichotomous data and the standardized mean difference for continuous data.

Ethics and dissemination: Ethical approval will not be required because this is a protocol for a systematic review. The systematic review will evaluate the current evidence of acupuncture therapy for psoriasis. Findings will be disseminated through peer-reviewed publications or conference presentations.

Trial registration number: PROSPERO CRD 42014013695

Strength and limitations of this study
This will be the first systematic review assessing the effects and safety of acupuncture for psoriasis. It may provide a high-quality synthesis of current evidence for patients and dermatologists seeking alternative and effective approaches to psoriasis treatment.

Study selection, data extraction, and assessment of the risk of bias will be conducted independently by two authors.

It will be difficult to pool data with various acupuncture therapies, so subgroup analyses will be conducted to address this problem. Nevertheless, this systematic review may draw inaccurate conclusions.
Introduction

Psoriasis is a chronic, recurrent inflammatory skin disease that presents as discrete bright-red macules, papules or patches covered with lamellated silvery scales.\(^1\) Subtypes of psoriasis can be plaque, guttate, inverse, pustular, and erythrodermic.\(^2\) Psoriasis affects males and females equally, and usually occurs in the second-to-fourth decade of life.\(^3\) It affects approximately 1–3% of individuals worldwide.\(^4\) The prevalence has been estimated to be 1.5% in the UK\(^5\) and it affects 7.5 million patients in the US.\(^6\) Recent data have shown that the prevalence of psoriasis in China increased by from 0.35% in 1984\(^7\) to 0.47% in 2012.\(^8\)

Psoriasis causes considerable psychosocial disability and has a major impact on the quality of life of sufferers.\(^9\) Patients with a diagnosis of psoriasis may also have an increased risk of psoriatic arthritis, obesity, dyslipidemia, hypertension, diabetes mellitus, and cardiovascular disease (e.g., myocardial infarction, stroke).\(^10\) Thus, the cost of psoriasis to patients and healthcare systems is high\(^11\).

Psoriasis is regarded to be an immune-mediated disease in which genetic and environmental factors have significant roles.\(^5\) Psoriasis is most often chronic or can recur intermittently, so long-term therapy is required.\(^12\) Conventional systemic therapy (e.g., methotrexate, cyclosporine, acitretin, photochemotherapy) and biologic agents (e.g., efalizumab, etanercept, infliximab, adalimumab)\(^13\) can result in only temporary remission of the physical symptoms of psoriasis. Moreover, because of the side effects and potential cumulative toxicity of these drugs, as well as the comorbidities associated with the disease (e.g., dyslipidemia)\(^14\), most patients are dissatisfied with treatment, and there is a demand for more effective therapies.\(^15\)

Acupuncture is an important component of Traditional Chinese Medicine. In recent years, it has been used widely for psoriasis in clinical trials.\(^14\) Also, a recent study showed that acupuncture can alleviate erythema, scales, and the local thickening of maculae in some patients.\(^16\) In pre-retrieval of eight electronic databases, we found >17 randomized control trials (RCTs) of acupuncture for treating psoriasis.
However, the effects and safety of acupuncture for psoriasis have not been reviewed systematically.

Thus, we posited two questions: (i) is acupuncture effective for psoriasis, and (ii) is acupuncture safe for psoriasis? To elicit answers to these questions, we will undertake a systematic review of acupuncture therapy for psoriasis. Here, we present the protocol of our proposed systematic review.

Methods

Types of studies

We will include RCTs that evaluated the effects and safety of acupuncture for psoriasis. Randomized crossover studies and quasi-RCTs will be excluded. Dissertation and abstracts will be included if these studies contain sufficient details for critical evaluation.

Types of participants

Regardless of the subtype of psoriasis, participants who have been diagnosed as having psoriasis will be focused upon. There will be no restrictions on age, sex, ethnicity, education, or economic status.

Types of interventions

Studies evaluating any type of acupuncture therapy (body acupuncture, auricular acupuncture, electroacupuncture, fire needling, warm needling, catgut embedding, pricking-cupping, slide-cupping) will be included in the review, regardless of the duration and frequency of treatment.

Control interventions could be ‘no treatment’, ‘placebo acupuncture’ (a needle is attached to the skin surface, does not penetrate the skin but is placed at the same acupoints), ‘sham acupuncture’ (non-point acupuncture, i.e., ‘minimal acupuncture’) and ‘drug therapy’. 
Studies with the following comparisons will be included: (i) acupuncture alone versus no treatment (if available), placebo or sham treatment; (ii) acupuncture adjunctive to drug therapy versus the same drug therapy alone; (iii) acupuncture adjunctive to other treatment versus placebo or sham treatment adjunctive to other treatment.

We will exclude trials comparing only different forms of acupuncture or acupuncture with drug therapy, because these studies cannot be used to detail the net effect of acupuncture or show if acupuncture is efficacious.

Types of outcome assessments

Primary outcomes

Changes in disease status evaluated by signs (e.g. the Psoriasis Area and Severity Index\textsuperscript{17}) or any tool available will be measured as the primary outcome.

Secondary outcomes

We will look at four main secondary outcomes: (i) global changes (e.g. proportion of participants whose symptoms improved after treatment); (ii) changes in participant status as evaluated by quality of life (e.g., Dermatology Life Quality Index\textsuperscript{18}); safety as measured by the prevalence and severity of adverse effects or adverse events; and (iv) costs (if available).

Search methods for identification of studies

Electronic searches

We will search the following electronic databases from inception to 31 August 2014 regardless of publication status: OVID MEDLINE, EMBASE, Cochrane Central Register of Controlled Trials, Chinese Biomedical Literature Database, Chinese Medical Current Content, Chinese Scientific Journal Database (VIP database), Wan-Fang Database, and China National Knowledge Infrastructure.

The search strategy has been decided upon after a discussion among all reviewers according to guidance provided by the Cochrane Handbook\textsuperscript{19}. We will
search the title, abstract and keywords using ‘psoriasis’, ‘psora’, or ‘psoriasis vulgaris’ and ‘body acupuncture’, ‘auricular acupuncture’, ‘electroacupuncture’, ‘fire needling’, ‘warm needling’, ‘catgut embedding’, ‘pricking-cupping’, or ‘slide-cupping’. Chinese translations of these search terms will be used to search in Chinese databases. The search strategy for OVID MEDLINE is shown in Table 1.

**Other sources**

We will examine the reference lists of reviews related to acupuncture and psoriasis to identify potentially eligible studies. We will also search conference proceedings in relation to acupuncture and psoriasis. Registers of clinical trials such as ClinicalTrials.gov (www.clinicaltrials.gov), the Meta Register of Controlled Trials (www.controlled-trials.com) and the Chinese Clinical Trial Registry (www.chictr.org.cn) will also be searched.

**Data collection and analyses**

**Selection of studies**

This systematic review is scheduled to be completed between 30 November 2014 and 1 May 2015. Before selection of studies, a consensus on screening and subsequent procedures will be developed by discussion among all reviewers. Two reviewers (LW and HY) will independently check titles and abstracts retrieved from the search and select all potentially relevant studies. Then, records will be moved to and managed by a database set up by EndNote version X6. The two reviewers will read the titles, abstracts and full texts (if required) to choose studies meeting the inclusion criteria. We will also contact the authors of the included studies for clarification (if necessary). None of the reviewers will be blinded to the names of the authors, institutions, or journal of publication. Disagreements will be discussed by all reviewers and judged by an arbiter (YB). Details of the selection procedure for studies are shown in a PRISMA flowchart (Figure 1).
Extraction and management of data

Two independent reviewers (LW and HY) will extract data using a piloted data extraction form that will be discussed and developed by all reviewers. Disagreements will be discussed by all reviewers and judged by an arbiter (YB). The following data will be extracted:

1. General information: reference identification, the first author of the article, time of publication, and the source/journal.
2. Study methods: design (e.g. parallel design), randomization method, method of allocation concealment, incomplete data, blinding, selective report, and other sources of bias.
3. Participants: inclusion/exclusion criteria, number (total/per group), age and sex distribution, and duration of psoriasis.
4. Interventions and controls: type of acupuncture/control, and details of treatment/control regimen, including duration of treatment.
5. Outcome measurement: as described above in the type of outcome measures section.

Assessment of risk of bias in included studies

Two reviewers (LW and HY) will independently assess the risk of bias of the included studies using the tool for assessment of the risk of bias detailed in the Cochrane Collaboration. Disagreements will be discussed by all reviewers and judged by an arbiter (YB). Six domains of a trial will be assessed: generation of random sequences, allocation concealment, blinding, incomplete outcome data, selective reporting, and other sources of bias. Assessment will be categorized into three levels of bias: low risk, high risk, and unclear risk.

Measure of treatment effect

For dichotomous outcomes, data will be expressed as the relative risk (RR) with 95% confidence intervals (CIs). For continuous outcomes, the standard mean
difference (SMD) with a 95% CI will be used. Analyses will involve all participants in the treatment groups to which they were allocated (if such data are available).

**Dealing with missing data**

If required data are missing, not sufficient, or have not been reported in the included studies, we will attempt to contact the first author or corresponding author of the studies by telephone, email or post to obtain the requisite information. If this strategy does not elicit the required information, we will analyze only available data.

**Assessment of heterogeneity**

We will assess the heterogeneity of the studies before the meta-analysis. Clinical and methodological heterogeneity will be evaluated by noting differences in the distribution of important participant factors between trials and different factors in the trial design. Assessment of statistical heterogeneity will be done using the $I^2$ statistic. We will use a 50% cutoff point for meaningful heterogeneity among included studies. If $I^2 > 50\%$, we will consider significant heterogeneity among included trials and a meta-analysis will not be suggested.

**Assessment of reporting biases**

Funnel plots will be generated to assess reporting biases if sufficient studies (>10) are found for the same outcome. Asymmetric funnel plots could occur because of publication biases. A language bias will occur because inclusion of studies will focus on Chinese and English medical databases.

**Data synthesis**

Data synthesis will be conducted using a software program from the Cochrane Collaboration (Review Manager [RevMan] version 5.2 for Windows). For dichotomous data, we will combine the RRs of each study and calculate values for 95% CIs using a fixed-effect model if heterogeneity is not detected. We will also apply a random-effect model if significant heterogeneity is detected. For continuous data, we
will combine the SMD of each study and calculate the 95% CI according to measurement of the outcome.

**Subgroup analyses**

Subgroup analyses will be carried out if sufficient randomized trials can be identified according to different interventions, controls and outcome measures. Duration of treatment and combination of treatment (acupuncture or acupuncture adjunctive to another therapy) will also be considered.

**Sensitivity analyses**

To ensure the robustness of our results, sensitivity analyses will be conducted to remove the impact of lower-quality studies, provided that significant heterogeneity still exists after subgroup analyses and verification of inputted data. The meta-analysis will be carried out again after lower-quality studies have been removed. We will compare the results of these two meta-analyses, and then make a decision on whether the lower-quality studies will be excluded on the basis of sample size, strength of evidence, and influence on pooled effective size. However, if all included studies have a high risk of bias, we will not carry out sensitivity analyses.

**Ethics and dissemination**

This systematic review will not require formal ethical approval because all the data that we will use will be anonymous with no concerns regarding privacy. Results will provide a general overview and evidence of the effectiveness and safety of acupuncture therapy for psoriasis. Findings will be disseminated through peer-reviewed publications or conference presentations.

**Discussion**

Use of complementary and alternative medicines is common among people with skin diseases, especially those with psoriasis\(^2\). Acupuncture has also been used for psoriasis treatment in China\(^2\) and the developed countries\(^3\). Some studies have
suggested that acupuncture is an effective therapy for psoriasis. However, one RCT concluded that classical acupuncture is not superior to sham (placebo) minimal acupuncture for the treatment of psoriasis\textsuperscript{23}. A systematic review assessing the effects and safety of acupuncture for psoriasis has not been conducted. Here, we presented a protocol for a systematic review of acupuncture for psoriasis. This review may offer benefits and evidence-based information about acupuncture in psoriasis treatment for patients and dermatologists.

The strengths of our review may be twofold. First, our search strategy is comprehensive, and includes searching reference lists, conference proceedings and trial registries related to acupuncture and psoriasis. Second, the study selection, data extraction, and assessment of the risk of bias will be conducted independently by two authors.

Nevertheless, this systematic review will be limited by methodological challenges inherent in the included trials. Acupuncture therapy can be subdivided into types according to the type of manipulation and needling instrument. Acupuncture therapy may vary greatly from the included studies. Subgroup analyses may resolve this problem and ensure the consistency of interventions, but it will reduce the comparability of included studies and increase the difficulty of meta-analysis. As a result, the systematic review may draw an inaccurate conclusion.

**Contributors**

LW and YB contributed to the conception of the study. The manuscript of the protocol was drafted by LW and HY, and was revised by NL and WW. The search strategy was developed by all authors and run by LW and HY, who will also independently screen the potential studies, extract data of included studies, assess the risk of bias, and complete the data synthesis. YB will arbitrate disagreements and ensure that no errors occur during the study. All authors have approved publication of the protocol.
Funding: This work is supported by the Traditional Chinese Medicine Technology Projects of Beijing (grant number: WZF2012-07), China.

Competing interests: None.
References


Table 1. Search strategy used in the OVID MEDLINE database

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<td>controlled clinical trial.pt.</td>
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<td>randomized.ab.</td>
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<tr>
<td>4</td>
<td>randomized.ab.</td>
</tr>
<tr>
<td>5</td>
<td>placebo.ab.</td>
</tr>
<tr>
<td>6</td>
<td>randomly.ab.</td>
</tr>
<tr>
<td>7</td>
<td>trial.ab.</td>
</tr>
<tr>
<td>8</td>
<td>groups.ab.</td>
</tr>
<tr>
<td>9</td>
<td>or 1-8</td>
</tr>
<tr>
<td>10</td>
<td>exp psoriasis/</td>
</tr>
<tr>
<td>11</td>
<td>psoriasis vulgaris. ti, ab. {Including Related Terms}</td>
</tr>
<tr>
<td>12</td>
<td>psora. ti, ab. {Including Related Terms}</td>
</tr>
<tr>
<td>13</td>
<td>or 10-12</td>
</tr>
<tr>
<td>14</td>
<td>exp acupuncture therapy, or acupuncture</td>
</tr>
<tr>
<td>15</td>
<td>body acupuncture. ti, ab. {Including Related Terms}</td>
</tr>
<tr>
<td>16</td>
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<tr>
<td>17</td>
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</tr>
<tr>
<td>18</td>
<td>fire needling. ti, ab. {Including Related Terms}</td>
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<td>19</td>
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<td>21</td>
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</tr>
<tr>
<td>22</td>
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</tr>
<tr>
<td>23</td>
<td>or 14-22</td>
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<tr>
<td>24</td>
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This search strategy will be modified as required for other electronic databases.
Figure 1. Selection process for studies

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| <b>Primary Subject Heading</b>: | Dermatology |
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Acupuncture for psoriasis: protocol for a systematic review

Lei Wang1,2†, Haoyu Yang2†, Nuo Li1, Weiming Wang3, Yanping Bai1*

1 Department of Dermatology, China–Japan Friendship Hospital, Beijing (100029), China
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Running title: Acupuncture for psoriasis: protocol: a protocol

Key words: acupuncture; psoriasis; systematic review; protocol

Word count: 2,780
Abstract

Introduction: The described systematic review aims to assess the effectiveness and safety of acupuncture for psoriasis.

Methods and analysis: We will electronically search for randomized controlled trials in the following databases from inception to 31 August, 2014: OVID MEDLINE, EMBASE, Cochrane Central Register of Controlled Trials, Chinese Biomedical Literature Database, Chinese Medical Current Content, Chinese Scientific Journal Database [VIP database], Wan-Fang Database, and China National Knowledge Infrastructure. We will also try to obtain literature by manually searching reference lists, conference proceedings, and registers of clinical trials (e.g., the Meta Register of Controlled Trials and the Chinese Clinical Trial Registry). Changes in disease status as evaluated by clinical signs or any available tool will be measured as the primary outcome. Global changes as well as changes in participant status (as evaluated by quality of life), safety (as measured by the prevalence and severity of adverse effects or adverse events), and costs (if available) will be measured as secondary outcomes. Two researchers will independently undertake selection of studies, data extraction, and assessment of the quality of included studies. Data synthesis and subgroup analyses will be done using special software (Review Manager). Data will be combined with a random-effect model. Results will be presented as risk ratios for dichotomous data and the standardized mean difference for continuous data.

Ethics and dissemination: Ethical approval will not be required as this is a protocol for a systematic review. The systematic review will evaluate the current evidence regarding acupuncture therapy for psoriasis. Findings will be disseminated through peer-reviewed publications and conference presentations.

Trial registration number: PROSPERO CRD 42014013695

Strengths and limitations of this study
This will be the first systematic review assessing the effectiveness and safety of acupuncture for psoriasis. It aims to provide a high-quality synthesis of current evidence for patients and dermatologists seeking alternative and effective approaches to psoriasis treatment.

- Study selection, data extraction, and assessment of the risk of bias will be conducted independently by two authors.

- It will be difficult to pool data with various acupuncture therapies, so subgroup analyses will be conducted to address this problem.
INTRODUCTION

Psoriasis is a chronic, recurrent inflammatory skin disease that presents as discrete bright-red macules, papules, or patches covered with lamellated silvery scales.\(^1\) Psoriasis can be classified as plaque, guttate, pustular, or erythrodermic.\(^2\) Psoriasis affects males and females equally, and usually occurs in the second-to-fourth decade of life.\(^3\) It affects approximately 1–3% of individuals worldwide.\(^4\) The prevalence has been estimated to be 1.5% in the UK\(^5\), and it affects 7.5 million patients in the US.\(^6\) Recent data have shown that the prevalence of psoriasis in China has increased from 0.35% in 1984\(^7\) to 0.47% in 2012.\(^8\)

Psoriasis causes considerable psychosocial disability and has a major impact on the quality of life of sufferers.\(^9\) Patients with a diagnosis of psoriasis may also have an increased risk of psoriatic arthritis, obesity, dyslipidemia, hypertension, diabetes mellitus, and cardiovascular disease (e.g., myocardial infarction, stroke).\(^10\) Thus, the cost of psoriasis to patients and healthcare systems is high.\(^11\)

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Acupuncture is an important component of Traditional Chinese Medicine. In recent years, it has been used widely for psoriasis in clinical trials.\(^15\) A recent study showed that acupuncture can alleviate erythema, scales, and the local thickening of maculae in some patients.\(^16\) In pre-retrieval of eight electronic databases, we found more than 17 randomized control trials (RCTs) of acupuncture for treating psoriasis.
However, the effectiveness and safety of acupuncture for psoriasis have not been reviewed systematically.

Thus, the aim of this systematic review is to assess the effectiveness and safety of acupuncture for psoriasis patients. The proposed systematic review will answer the aforementioned questions through the following comparisons:

1. Acupuncture alone versus no treatment (if available), placebo or sham treatment;
2. Acupuncture adjunctive to drug therapy versus the same drug therapy alone;
3. Acupuncture adjunctive to other treatment versus placebo or sham treatment adjunctive to other treatment.

METHODS

Types of studies

We will include RCTs that evaluated the effectiveness and safety of acupuncture for psoriasis. Randomized crossover studies and quasi-RCTs will be excluded. Dissertation and abstracts will be included if these studies contain sufficient details for critical evaluation.

Types of participants

Regardless of the subtype of psoriasis, all participants who have been diagnosed as having psoriasis will be focused upon. There will be no restrictions on age, sex, ethnicity, education, or economic status.

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Studies evaluating any type of acupuncture therapy (body acupuncture, auricular acupuncture, electroacupuncture, fire needling, warm needling, catgut embedding, pricking-cupping, slide-cupping) will be included in the review, regardless of the duration and frequency of treatment.
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We will exclude trials comparing only different forms of acupuncture, and those comparing acupuncture with drug therapy, as these studies cannot be used to detail the net effect of acupuncture or show if acupuncture is efficacious.

Types of outcome assessments
Primary outcomes

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We will look at four main secondary outcomes: (i) global changes (e.g., proportion of participants whose symptoms improved after treatment); (ii) changes in participant status as evaluated by quality of life (e.g., Dermatology Life Quality Index\textsuperscript{18}); (iii) safety as measured by the prevalence and severity of adverse effects or adverse events; and (iv) cost (if available).

Search methods for identification of studies
Electronic searches

We will search the following electronic databases from inception to 31 August 2014 regardless of publication status: OVID MEDLINE, EMBASE, Cochrane Central Register of Controlled Trials, Chinese Biomedical Literature Database, Chinese
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shown in Table 1.

Other sources

We will examine the reference lists of reviews related to acupuncture and
psoriasis to identify potentially eligible studies. We will also search conference
proceedings in relation to acupuncture and psoriasis. Registers of clinical trials such
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Data collection and analyses

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4. Interventions and controls: type of acupuncture/control and details of treatment/control regimen, including duration of treatment.
5. Outcome measurement: as described above in the type of outcome measures section.

Assessment of risk of bias in included studies

Two reviewers (LW and HY) will independently assess the risk of bias of the included studies using the tool for assessment of the risk of bias detailed in the Cochrane Collaboration. Disagreements will be discussed by all reviewers and judged by an arbiter (YB). Six domains of each trial will be assessed: generation of random sequences, allocation concealment, blinding, incomplete outcome data, selective reporting, and other sources of bias. Studies will be categorized into three levels of bias: low risk, high risk, and unclear risk.
Measure of treatment effect

For dichotomous outcomes, data will be expressed as the relative risk (RR) with 95% confidence intervals (CI). For continuous outcomes, the standard mean difference (SMD) with 95% CI will be used. Analyses will involve all participants in the treatment groups to which they were allocated (if such data are available).

Unit of analysis issues

The primary unit of analysis will be every randomized individual. If there are two different control groups in a parallel-group trial, we will separately report a pair-wise comparison. If two or more different intervention groups exist in the studies, pair-wise comparison results will be presented through different subgroups of intervention in a particular comparison, and their results will not be combined into a single summary measure.

Dealing with missing data

If required data are missing, not sufficient, or have not been reported in the included studies, we will attempt to contact the first author or corresponding author of the studies by telephone, email, or post to obtain the requisite information. If this strategy does not elicit the required information, we will analyze only available data.

Assessment of heterogeneity

We will assess the heterogeneity of the studies before conducting the meta-analysis. Clinical and methodological heterogeneity will be evaluated by noting differences in the distribution of important participant factors between trials and different factors in the trial design. Assessment of statistical heterogeneity will be done using the Chi² test (significance level: 0.1) and I² statistic (an I² value of 0% to 50% will be taken to indicate that heterogeneity may not be important, while I² values of 50% to 100% may represent substantial heterogeneity). If there is a low level of heterogeneity among the studies (I² < 50% or p ≥ 0.1), we will conduct a meta-analysis. If I² ≥ 50% or p < 0.1, we will consider that significant heterogeneity
exists among included trials and a systematic narrative synthesis will be done instead.²⁰

**Assessment of reporting biases**

Funnel plots will be generated to assess reporting biases if sufficient studies (more than 10) are found for the same outcome. Asymmetric funnel plots could occur because of publication biases. A language bias will occur because the study search will focus on Chinese and English medical databases.

**Data synthesis**

Data synthesis will be conducted using a software program from the Cochrane Collaboration (Review Manager [RevMan] version 5.3 for Windows). For dichotomous data, we will combine the RRs of each study and calculate values for 95% CI using a fixed-effect model if heterogeneity is not detected; we will apply a random-effect model if significant heterogeneity is detected. For continuous data, we will combine the SMD of each study and calculate the 95% CI according to the outcome measurement.

**Subgroup analyses**

Subgroup analyses will be carried out if sufficient RCTs can be identified according to different interventions, controls, and outcome measures. Duration of treatment and combination of treatment (acupuncture or acupuncture adjunctive to another therapy) will also be considered.

**Sensitivity analyses**

To ensure the robustness of our results, sensitivity analyses will be conducted to remove the impact of lower-quality studies, provided that significant heterogeneity still exists after subgroup analyses and verification of inputted data. The meta-analysis will be carried out again after lower-quality studies have been removed. We will compare the results of these two meta-analyses, and then make a decision on whether
the lower-quality studies will be excluded on the basis of sample size, strength of evidence, and influence on pooled effective size. However, if all included studies have a high risk of bias, we will not carry out sensitivity analyses.

**Grading the quality of evidence**

We will judge the quality of evidence for all outcomes using the Grading of Recommendations Assessment, Development, and Evaluation working group methodology. We will assess the quality of evidence through the domains of risk of bias, consistency, precision, publication bias, and other domains where appropriate. Quality will be rated as high (further research is very unlikely to change our confidence in the estimate of effect), moderate (further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate), low (further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate), or very low (very uncertain about the estimate of effect).

**Ethics and dissemination**

This systematic review will not require formal ethical approval because all data used will be anonymous with no concerns regarding privacy. Results will provide a general overview and evidence of the effectiveness and safety of acupuncture therapy for psoriasis. Findings will be disseminated through peer-reviewed publications and conference presentations.

**DISCUSSION**

Use of complementary and alternative medicines is common among people with skin diseases, especially those with psoriasis. Acupuncture has been used for psoriasis treatment in China and the developed countries. Some studies have suggested that acupuncture is an effective therapy for psoriasis. However, one RCT concluded that classical acupuncture was not superior to sham (placebo) minimal
acupuncture for the treatment of psoriasis. A systematic review assessing the effectiveness and safety of acupuncture for psoriasis has not been conducted. Here, we presented a protocol for a systematic review of acupuncture for psoriasis. This review may offer evidence-based information for patients and dermatologists about acupuncture in psoriasis treatment.

The strengths of our review may be twofold. First, our search strategy is comprehensive, and includes searching reference lists, conference proceedings, and trial registries related to acupuncture and psoriasis. Second, the study selection, data extraction, and assessment of the risk of bias will be conducted independently by two authors.

Nevertheless, this systematic review will be limited by methodological challenges inherent in the included trials. Acupuncture therapy can be subdivided into types according to the type of manipulation and needling instrument. Acupuncture therapy may vary greatly in the included studies. Subgroup analyses may resolve this problem and ensure the consistency of interventions, but it will reduce the comparability of included studies and increase the difficulty of meta-analysis. As a result, the systematic review may draw an inaccurate conclusion.

Contributors

LW and HY contributed to the conception of the study. The manuscript of the protocol was drafted by LW and HY, and was revised by YB. The search strategy was developed by all authors and run by LW and HY, who will also independently screen the potential studies, and extract data of included studies. NL and WW will assess the risk of bias, and complete the data synthesis. YB will arbitrate disagreements and ensure that no errors occur during the study. All authors have approved publication of the protocol.

Acknowledgments

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**Funding:** This work is supported by the Traditional Chinese Medicine Technology Projects of Beijing (grant number WZF2012-07), China.

**Competing interests:** None.
References


Table 1. Search strategy used in the OVID MEDLINE database

<table>
<thead>
<tr>
<th>Number</th>
<th>Search terms</th>
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<tbody>
<tr>
<td>1</td>
<td>randomized controlled trial.pt.</td>
</tr>
<tr>
<td>2</td>
<td>controlled clinical trial.pt.</td>
</tr>
<tr>
<td>3</td>
<td>randomized.ab.</td>
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<tr>
<td>4</td>
<td>randomized.ab.</td>
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<tr>
<td>5</td>
<td>placebo.ab.</td>
</tr>
<tr>
<td>6</td>
<td>randomly.ab.</td>
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<tr>
<td>7</td>
<td>trial.ab.</td>
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<tr>
<td>8</td>
<td>groups.ab.</td>
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<tr>
<td>9</td>
<td>or 1-8</td>
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<tr>
<td>10</td>
<td>exp psoriasis/</td>
</tr>
<tr>
<td>11</td>
<td>psoriasis vulgaris. ti, ab. {Including Related Terms}</td>
</tr>
<tr>
<td>12</td>
<td>psora. ti, ab. {Including Related Terms}</td>
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<tr>
<td>13</td>
<td>or 10-12</td>
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<tr>
<td>14</td>
<td>exp acupuncture therapy, or acupuncture</td>
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<td>15</td>
<td>acupuncture. ti, ab. {Including Related Terms}</td>
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<td>catgut embedding, ti, ab. {Including Related Terms}</td>
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<td>pricking-cupping, ti, ab. {Including Related Terms}</td>
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<tr>
<td>23</td>
<td>slide-cupping, ti, ab. {Including Related Terms}</td>
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<td>24</td>
<td>or 14-23</td>
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<td>25</td>
<td>9 and 13 and 24</td>
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</table>

This search strategy will be modified as required for other electronic databases.
Figure 1. Selection process for studies

Records identified through search of eight databases (From date of database creation to 31 August 2014, n=)

Additional records identified through other sources
- Studies from reference lists (n=)
- Unpublished conference proceedings (n=)
- Ongoing trials (n=)

Records after duplicates have been removed

Records screened (n=)
- Not related to psoriasis (n=)
- Not related to acupuncture (n=)
- Not related to humans (n=)
- Not clinical trials (n=)

Full-text articles assessed for eligibility (n=)
- Full-text articles excluded with the following reasons:
  - non-randomized controlled trials (n=)
  - no data for extraction (n=)
  - other reasons (n=)

Studies included in qualitative synthesis (n=)

Studies included in qualitative synthesis (meta-analysis) (n=)
## PRISMA-P checklist

<table>
<thead>
<tr>
<th>Section and topic</th>
<th>Item No</th>
<th>Checklist Item</th>
<th>Reported on page No.</th>
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<tr>
<td><strong>Administrative information</strong></td>
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<td>Title:</td>
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<tr>
<td>Identification 1a</td>
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<td>Identify the report as a protocol of a systematic review</td>
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<tr>
<td>Update 1b</td>
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<td>If the protocol is for an update of a previous systematic review, identify as such</td>
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<tr>
<td>Registration 2</td>
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<td>If registered, provide the name of the registry (such as PROSPERO) and registration number</td>
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<tr>
<td>Authors:</td>
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<tr>
<td>Contact 3a</td>
<td></td>
<td>Provide name, institutional affiliation, e-mail address of all protocol authors; provide physical mailing address of corresponding author</td>
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<tr>
<td>Contributions 3b</td>
<td></td>
<td>Describe contributions of protocol authors and identify the guarantor of the review</td>
<td>12</td>
</tr>
<tr>
<td>Amendments 4</td>
<td></td>
<td>If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important protocol amendments</td>
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<tr>
<td><strong>Support:</strong></td>
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<tr>
<td>Sources 5a</td>
<td></td>
<td>Indicate sources of financial or other support for the review</td>
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<tr>
<td>Sponsor 5b</td>
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<td>Provide name for the review funder and/or sponsor</td>
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<tr>
<td>Role of sponsor or funder 5c</td>
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<td>Describe roles of funder(s), sponsor(s), and/or institution(s), if any, in developing the protocol</td>
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<tr>
<td><strong>Introduction</strong></td>
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<tr>
<td>Rationale 6</td>
<td></td>
<td>Describe the rationale for the review in the context of what is already known</td>
<td>4-5</td>
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<tr>
<td>Objectives 7</td>
<td></td>
<td>Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO)</td>
<td>5</td>
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<tr>
<td><strong>Methods</strong></td>
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<tr>
<td>Eligibility criteria 8</td>
<td></td>
<td>Specify the study characteristics (such as PICO, study design, setting, time frame) and report characteristics (such as years considered, language, publication status) to be used as criteria for eligibility for the review</td>
<td>5-6</td>
</tr>
<tr>
<td>Information sources 9</td>
<td></td>
<td>Describe all intended information sources (such as electronic databases, contact with study authors, trial registers or other grey literature sources) with planned dates of coverage</td>
<td>6-7</td>
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<tr>
<td>Search strategy</td>
<td>Present draft of search strategy to be used for at least one electronic database, including planned limits, such that it could be repeated</td>
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<td>Study records:</td>
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<tr>
<td>Data management</td>
<td>Describe the mechanism(s) that will be used to manage records and data throughout the review</td>
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<tr>
<td>Selection process</td>
<td>State the process that will be used for selecting studies (such as two independent reviewers) through each phase of the review (that is, screening, eligibility and inclusion in meta-analysis)</td>
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<tr>
<td>Data collection process</td>
<td>Describe planned method of extracting data from reports (such as piloting forms, done independently, in duplicate), any processes for obtaining and confirming data from investigators</td>
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<tr>
<td>Data items</td>
<td>List and define all variables for which data will be sought (such as PICO items, funding sources), any pre-planned data assumptions and simplifications</td>
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<tr>
<td>Outcomes and prioritization</td>
<td>List and define all outcomes for which data will be sought, including prioritization of main and additional outcomes, with rationale</td>
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<tr>
<td>Risk of bias in individual studies</td>
<td>Describe anticipated methods for assessing risk of bias of individual studies, including whether this will be done at the outcome or study level, or both; state how this information will be used in data synthesis</td>
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<tr>
<td>Data synthesis</td>
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<tr>
<td>15a</td>
<td>Describe criteria under which study data will be quantitatively synthesised</td>
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<tr>
<td>15b</td>
<td>If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data and methods of combining data from studies, including any planned exploration of consistency (such as $I^2$, Kendall’s $t$)</td>
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<tr>
<td>15c</td>
<td>Describe any proposed additional analyses (such as sensitivity or subgroup analyses, meta-regression)</td>
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<tr>
<td>15d</td>
<td>If quantitative synthesis is not appropriate, describe the type of summary planned</td>
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<tr>
<td>Meta-bias(es)</td>
<td>Specify any planned assessment of meta-bias(es) (such as publication bias across studies, selective reporting within studies)</td>
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<tr>
<td>Confidence in cumulative evidence</td>
<td>Describe how the strength of the body of evidence will be assessed (such as GRADE)</td>
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</tbody>
</table>
Acupuncture for psoriasis: protocol for a systematic review

Lei Wang¹,²†, Haoyu Yang²†, Nuo Li¹, Weiming Wang³, Yanping Bai¹*

¹Department of Dermatology, China–Japan Friendship Hospital, Beijing (100029), China
²School of Graduates, Beijing University of Chinese Medicine, Beijing (100029), China
³Department of Acupuncture, Guang’anmen Hospital, China Academy of Chinese Medical Sciences, Beijing (100053), China

†Lei Wang and Haoyu Yang contributed equally to this study.

*Correspondence to: Professor Yanping Bai
Tel: 86-10-84205036
E-mail: zhi@tsinghua.edu.cn

Running title: Acupuncture for psoriasis: protocol: a protocol

Key words: acupuncture; psoriasis; systematic review; protocol

Word count: 2,780
Abstract

**Introduction:** The described systematic review aims to assess the effectiveness and safety of acupuncture for psoriasis.

**Methods and analysis:** We will electronically search for randomized controlled trials in the following databases from inception to 31 March, 2015: OVID MEDLINE, EMBASE, Cochrane Central Register of Controlled Trials, Chinese Biomedical Literature Database, Chinese Medical Current Content, Chinese Scientific Journal Database [VIP database], Wan-Fang Database, and China National Knowledge Infrastructure. We will also try to obtain literature by manually searching reference lists, conference proceedings, and registers of clinical trials (e.g., the Meta Register of Controlled Trials and the Chinese Clinical Trial Registry). Changes in disease status as evaluated by clinical signs or any available tool will be measured as the primary outcome. Global changes as well as changes in participant status (as evaluated by quality of life), safety (as measured by the prevalence and severity of adverse effects or adverse events), and costs (if available) will be measured as secondary outcomes. Two researchers will independently undertake selection of studies, data extraction, and assessment of the quality of included studies. Data synthesis and subgroup analyses will be done using special software (Review Manager). Data will be combined with a random-effect model. Results will be presented as risk ratios for dichotomous data and the standardized mean difference for continuous data.

**Ethics and dissemination:** Ethical approval will not be required as this is a protocol for a systematic review. The systematic review will evaluate the current evidence regarding acupuncture therapy for psoriasis. Findings will be disseminated through peer-reviewed publications and conference presentations.

**Trial registration number:** PROSPERO CRD 42014013695

**Strengths and limitations of this study**
This will be the first systematic review assessing the effectiveness and safety of acupuncture for psoriasis. It aims to provide a high-quality synthesis of current evidence for patients and dermatologists seeking alternative and effective approaches to psoriasis treatment.

- Study selection, data extraction, and assessment of the risk of bias will be conducted independently by two authors.

- It will be difficult to pool data with various acupuncture therapies, so subgroup analyses will be conducted to address this problem.
INTRODUCTION

Psoriasis is a chronic, recurrent inflammatory skin disease that presents as discrete bright-red macules, papules, or patches covered with lamellated silvery scales.\(^1\) Psoriasis can be classified as plaque, guttate, pustular, or erythrodermic.\(^2\) Psoriasis affects males and females equally, and usually occurs in the second-to-fourth decade of life.\(^3\) It affects approximately 1–3% of individuals worldwide.\(^4\) The prevalence has been estimated to be 1.5% in the UK\(^5\), and it affects 7.5 million patients in the US.\(^6\) Recent data have shown that the prevalence of psoriasis in China has increased from 0.35% in 1984\(^7\) to 0.47% in 2012.\(^8\)

Psoriasis causes considerable psychosocial disability and has a major impact on the quality of life of sufferers.\(^9\) Patients with a diagnosis of psoriasis may also have an increased risk of psoriatic arthritis, obesity, dyslipidemia, hypertension, diabetes mellitus, and cardiovascular disease (e.g., myocardial infarction, stroke).\(^10\) Thus, the cost of psoriasis to patients and healthcare systems is high.\(^11\)

Psoriasis is regarded to be an immune-mediated disease in which genetic and environmental factors have significant roles.\(^5\) Psoriasis is most often chronic or can recur intermittently, so long-term therapy is required.\(^1\) Conventional systemic therapy (e.g., methotrexate, cyclosporine, acitretin, photochemotherapy) and biologic agents (e.g., efalizumab, etanercept, infliximab, adalimumab)\(^12\) can result in only temporary remission of the physical symptoms of psoriasis. Moreover, most patients are dissatisfied with treatment because of the side effects and potential cumulative toxicity of these drugs, as well as the comorbidities associated with the disease (e.g., dyslipidemia)\(^13\); hence there is a demand for more effective therapies.\(^14\)

Acupuncture is an important component of Traditional Chinese Medicine. In recent years, it has been used widely for psoriasis in clinical trials.\(^15\) A recent study showed that acupuncture can alleviate erythema, scales, and the local thickening of maculae in some patients.\(^16\) In pre-retrieval of eight electronic databases, we found more than 17 randomized control trials (RCTs) of acupuncture for treating psoriasis.
However, the effectiveness and safety of acupuncture for psoriasis have not been reviewed systematically.

Thus, the aim of this systematic review is to assess the effectiveness and safety of acupuncture for psoriasis patients. The proposed systematic review will answer the aforementioned questions through the following comparisons:

1. Acupuncture alone versus no treatment (if available), placebo or sham treatment;
2. Acupuncture adjunctive to drug therapy versus the same drug therapy alone;
3. Acupuncture adjunctive to other treatment versus placebo or sham treatment adjunctive to other treatment.

METHODS

Types of studies

We will include RCTs that evaluated the effectiveness and safety of acupuncture for psoriasis. Randomized crossover studies and quasi-RCTs will be excluded. Dissertation and abstracts will be included if these studies contain sufficient details for critical evaluation.

Types of participants

Regardless of the subtype of psoriasis, all participants who have been diagnosed as having psoriasis will be focused upon. There will be no restrictions on age, sex, ethnicity, education, or economic status.

Types of interventions

Studies evaluating any type of acupuncture therapy (body acupuncture, auricular acupuncture, electroacupuncture, fire needling, warm needling, catgut embedding, pricking-cupping, slide-cupping) will be included in the review, regardless of the duration and frequency of treatment.
Control interventions could be ‘no treatment’, ‘placebo acupuncture’ (where a needle is attached to the skin surface, does not penetrate the skin, but is placed at the same acupoints as for actual acupuncture treatment), ‘sham acupuncture’ (non-point acupuncture, i.e., ‘minimal acupuncture’), or ‘drug therapy’.

Studies with the following comparisons will be included: (i) acupuncture alone versus no treatment (if available), placebo, or sham treatment; (ii) acupuncture adjunctive to drug therapy versus the same drug therapy alone; (iii) acupuncture adjunctive to other treatment versus placebo or sham treatment adjunctive to other treatment.

We will exclude trials comparing only different forms of acupuncture, and those comparing acupuncture with drug therapy, as these studies cannot be used to detail the net effect of acupuncture or show if acupuncture is efficacious.

Types of outcome assessments

Primary outcomes

Changes in disease status as evaluated by signs (e.g., the Psoriasis Area and Severity Index) or any available tool will be measured as the primary outcome.

Secondary outcomes

We will look at four main secondary outcomes: (i) global changes (e.g., proportion of participants whose symptoms improved after treatment); (ii) changes in participant status as evaluated by quality of life (e.g., Dermatology Life Quality Index); (iii) safety as measured by the prevalence and severity of adverse effects or adverse events; and (iv) cost (if available).

Search methods for identification of studies

Electronic searches

We will search the following electronic databases from inception to 31 March 2015 regardless of publication status: OVID MEDLINE, EMBASE, Cochrane Central Register of Controlled Trials, Chinese Biomedical Literature Database, Chinese
Medical Current Content, Chinese Scientific Journal Database (VIP database),
Wan-Fang Database, and China National Knowledge Infrastructure.

The search strategy has been decided upon after a discussion among all
reviewers according to guidance provided by the Cochrane Handbook.¹⁹ We will
search the title, abstract, and keywords using ‘psoriasis’, ‘psora’, or ‘psoriasis
‘electroacupuncture’, ‘fire needling’, ‘warm needling’, ‘catgut embedding’,
‘pricking-cupping’, or ‘slide-cupping’. Chinese translations of these search terms will
be used to search in Chinese databases. The search strategy for OVID MEDLINE is
shown in Table 1.

Other sources

We will examine the reference lists of reviews related to acupuncture and
psoriasis to identify potentially eligible studies. We will also search conference
proceedings in relation to acupuncture and psoriasis. Registers of clinical trials such
as ClinicalTrials.gov (www.clinicaltrials.gov), the Meta Register of Controlled Trials
(www.controlled-trials.com), and the Chinese Clinical Trial Registry
(www.chictr.org.cn/) will also be searched.

Data collection and analyses

Selection of studies

This systematic review is scheduled to be completed between 30 November 2014
and 1 July 2015. Before selection of studies, a consensus on screening and subsequent
procedures will be developed by discussion among all reviewers. Two reviewers (LW
and HY) will independently check titles and abstracts retrieved from the search and
select all potentially relevant studies. Then, records will be moved to and managed by
a database set up by EndNote version X6. The two reviewers will read the titles,
abstracts, and full texts (if required) to choose studies meeting the inclusion criteria.
We will also contact the authors of the included studies for clarification (if necessary).
None of the reviewers will be blinded to the names of the authors, institutions, or
journal of publication. Disagreements will be discussed by all reviewers and judged by an arbiter (YB). Details of the selection procedure for studies are shown in a PRISMA flowchart (Figure 1).

Extraction and management of data

Two independent reviewers (LW and HY) will extract data using a piloted data extraction form that will be discussed and developed by all reviewers. Disagreements will be discussed by all reviewers and judged by an arbiter (YB). The following data will be extracted:

1. General information: reference identification, the first author of the article, time of publication, and the source/journal.
2. Study methods: design (e.g., parallel design), randomization method, method of allocation concealment, incomplete data, blinding, selective reporting, and other sources of bias.
3. Participants: inclusion/exclusion criteria, number (total/per group), age and sex distribution, and duration of psoriasis.
4. Interventions and controls: type of acupuncture/control and details of treatment/control regimen, including duration of treatment.
5. Outcome measurement: as described above in the type of outcome measures section.

Assessment of risk of bias in included studies

Two reviewers (LW and HY) will independently assess the risk of bias of the included studies using the tool for assessment of the risk of bias detailed in the Cochrane Collaboration.\textsuperscript{19} Disagreements will be discussed by all reviewers and judged by an arbiter (YB). Six domains of each trial will be assessed: generation of random sequences, allocation concealment, blinding, incomplete outcome data, selective reporting, and other sources of bias. Studies will be categorized into three levels of bias: low risk, high risk, and unclear risk.
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exists among included trials and a systematic narrative synthesis will be done instead.\textsuperscript{20}

**Assessment of reporting biases**

Funnel plots will be generated to assess reporting biases if sufficient studies (more than 10) are found for the same outcome. Asymmetric funnel plots could occur because of publication biases. A language bias will occur because the study search will focus on Chinese and English medical databases.

**Data synthesis**

Data synthesis will be conducted using a software program from the Cochrane Collaboration (Review Manager [RevMan] version 5.3 for Windows). For dichotomous data, we will combine the RRs of each study and calculate values for 95% CI using a fixed-effect model if heterogeneity is not detected; we will apply a random-effect model if significant heterogeneity is detected. For continuous data, we will combine the SMD of each study and calculate the 95% CI according to the outcome measurement.

**Subgroup analyses**

Subgroup analyses will be carried out if sufficient RCTs can be identified according to different interventions, controls, and outcome measures. Duration of treatment and combination of treatment (acupuncture or acupuncture adjunctive to another therapy) will also be considered.

**Sensitivity analyses**

To ensure the robustness of our results, sensitivity analyses will be conducted to remove the impact of lower-quality studies, provided that significant heterogeneity still exists after subgroup analyses and verification of inputted data. The meta-analysis will be carried out again after lower-quality studies have been removed. We will compare the results of these two meta-analyses, and then make a decision on whether
the lower-quality studies will be excluded on the basis of sample size, strength of evidence, and influence on pooled effective size. However, if all included studies have a high risk of bias, we will not carry out sensitivity analyses.

**Grading the quality of evidence**

We will judge the quality of evidence for all outcomes using the Grading of Recommendations Assessment, Development, and Evaluation working group methodology. We will assess the quality of evidence through the domains of risk of bias, consistency, precision, publication bias, and other domains where appropriate. Quality will be rated as high (further research is very unlikely to change our confidence in the estimate of effect), moderate (further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate), low (further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate), or very low (very uncertain about the estimate of effect).

**Ethics and dissemination**

This systematic review will not require formal ethical approval because all data used will be anonymous with no concerns regarding privacy. Results will provide a general overview and evidence of the effectiveness and safety of acupuncture therapy for psoriasis. Findings will be disseminated through peer-reviewed publications and conference presentations.

**DISCUSSION**

Use of complementary and alternative medicines is common among people with skin diseases, especially those with psoriasis. Acupuncture has been used for psoriasis treatment in China and the developed countries. Some studies have suggested that acupuncture is an effective therapy for psoriasis. However, one RCT concluded that classical acupuncture was not superior to sham (placebo) minimal
acupuncture for the treatment of psoriasis. A systematic review assessing the effectiveness and safety of acupuncture for psoriasis has not been conducted. Here, we presented a protocol for a systematic review of acupuncture for psoriasis. This review may offer evidence-based information for patients and dermatologists about acupuncture in psoriasis treatment.

The strengths of our review may be twofold. First, our search strategy is comprehensive, and includes searching reference lists, conference proceedings, and trial registries related to acupuncture and psoriasis. Second, the study selection, data extraction, and assessment of the risk of bias will be conducted independently by two authors.

Nevertheless, this systematic review will be limited by methodological challenges inherent in the included trials. Acupuncture therapy can be subdivided into types according to the type of manipulation and needling instrument. Acupuncture therapy may vary greatly in the included studies. Subgroup analyses may resolve this problem and ensure the consistency of interventions, but it will reduce the comparability of included studies and increase the difficulty of meta-analysis. As a result, the systematic review may draw an inaccurate conclusion.

**Contributors**

LW and HY contributed to the conception of the study. The manuscript of the protocol was drafted by LW and HY, and was revised by YB. The search strategy was developed by all authors and run by LW and HY, who will also independently screen the potential studies, and extract data of included studies. NL and WW will assess the risk of bias, and complete the data synthesis. YB will arbitrate disagreements and ensure that no errors occur during the study. All authors have approved publication of the protocol.

**Acknowledgments**

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**Competing interests:** None.
References


Table 1. Search strategy used in the OVID MEDLINE database

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<tr>
<th>Number</th>
<th>Search terms</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>randomized controlled trial.pt.</td>
</tr>
<tr>
<td>2</td>
<td>controlled clinical trial.pt.</td>
</tr>
<tr>
<td>3</td>
<td>randomized.ab.</td>
</tr>
<tr>
<td>4</td>
<td>randomized.ab.</td>
</tr>
<tr>
<td>5</td>
<td>placebo.ab.</td>
</tr>
<tr>
<td>6</td>
<td>randomly.ab.</td>
</tr>
<tr>
<td>7</td>
<td>trial.ab.</td>
</tr>
<tr>
<td>8</td>
<td>groups.ab.</td>
</tr>
<tr>
<td>9 or 1-8</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>exp psoriasis/</td>
</tr>
<tr>
<td>11</td>
<td>psoriasis vulgaris. ti, ab. {Including Related Terms}</td>
</tr>
<tr>
<td>12</td>
<td>psora. ti, ab. {Including Related Terms}</td>
</tr>
<tr>
<td>13 or 10-12</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>exp acupuncture therapy, or acupuncture</td>
</tr>
<tr>
<td>15</td>
<td>acupuncture. ti, ab. {Including Related Terms}</td>
</tr>
<tr>
<td>16</td>
<td>body acupuncture. ti, ab. {Including Related Terms}</td>
</tr>
<tr>
<td>17</td>
<td>auricular acupuncture. ti, ab. {Including Related Terms}</td>
</tr>
<tr>
<td>18</td>
<td>electroacupuncture. ti, ab. {Including Related Terms}</td>
</tr>
<tr>
<td>19</td>
<td>fire needling. ti, ab. {Including Related Terms}</td>
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<tr>
<td>20</td>
<td>warm needling, ti, ab. {Including Related Terms}</td>
</tr>
<tr>
<td>21</td>
<td>catgut embedding, ti, ab. {Including Related Terms}</td>
</tr>
<tr>
<td>22</td>
<td>pricking-cupping, ti, ab. {Including Related Terms}</td>
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<tr>
<td>23</td>
<td>slide-cupping, ti, ab. {Including Related Terms}</td>
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<tr>
<td>24 or 14-23</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>9 and 13 and 24</td>
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</table>

This search strategy will be modified as required for other electronic databases.
Figure 1. Selection process for studies

173x222mm (300 x 300 DPI)
### PRISMA-P checklist

<table>
<thead>
<tr>
<th>Section and topic</th>
<th>Item No</th>
<th>Checklist Item</th>
<th>Reported on page No.</th>
</tr>
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<tr>
<td><strong>Administrative information</strong></td>
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<td>Title:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identification</td>
<td>1a</td>
<td>Identify the report as a protocol of a systematic review</td>
<td>1</td>
</tr>
<tr>
<td>Update</td>
<td>1b</td>
<td>If the protocol is for an update of a previous systematic review, identify as such</td>
<td>-</td>
</tr>
<tr>
<td>Registration</td>
<td>2</td>
<td>If registered, provide the name of the registry (such as PROSPERO) and registration number</td>
<td>2</td>
</tr>
<tr>
<td>Authors:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contact</td>
<td>3a</td>
<td>Provide name, institutional affiliation, e-mail address of all protocol authors; provide physical mailing address of corresponding author</td>
<td>1</td>
</tr>
<tr>
<td>Contributions</td>
<td>3b</td>
<td>Describe contributions of protocol authors and identify the guarantor of the review</td>
<td>12</td>
</tr>
<tr>
<td>Amendments</td>
<td>4</td>
<td>If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important protocol amendments</td>
<td>-</td>
</tr>
<tr>
<td><strong>Support:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sources</td>
<td>5a</td>
<td>Indicate sources of financial or other support for the review</td>
<td>13</td>
</tr>
<tr>
<td>Sponsor</td>
<td>5b</td>
<td>Provide name for the review funder and/or sponsor</td>
<td>13</td>
</tr>
<tr>
<td>Role of sponsor or funder</td>
<td>5c</td>
<td>Describe roles of funder(s), sponsor(s), and/or institution(s), if any, in developing the protocol</td>
<td>-</td>
</tr>
<tr>
<td><strong>Introduction</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Rationale</td>
<td>6</td>
<td>Describe the rationale for the review in the context of what is already known</td>
<td>4-5</td>
</tr>
<tr>
<td>Objectives</td>
<td>7</td>
<td>Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO)</td>
<td>5</td>
</tr>
<tr>
<td><strong>Methods</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eligibility criteria</td>
<td>8</td>
<td>Specify the study characteristics (such as PICO, study design, setting, time frame) and report characteristics (such as years considered, language, publication status) to be used as criteria for eligibility for the review</td>
<td>5-6</td>
</tr>
<tr>
<td>Information sources</td>
<td>9</td>
<td>Describe all intended information sources (such as electronic databases, contact with study authors, trial registers or other grey literature sources) with planned dates of coverage</td>
<td>6-7</td>
</tr>
<tr>
<td>Section</td>
<td>Item</td>
<td>Description</td>
<td>Points</td>
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<tr>
<td>Search strategy</td>
<td>10</td>
<td>Present draft of search strategy to be used for at least one electronic database, including planned limits, such that it could be repeated</td>
<td>16</td>
</tr>
<tr>
<td>Study records:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data management</td>
<td>11a</td>
<td>Describe the mechanism(s) that will be used to manage records and data throughout the review</td>
<td>8</td>
</tr>
<tr>
<td>Selection process</td>
<td>11b</td>
<td>State the process that will be used for selecting studies (such as two independent reviewers) through each phase of the review (that is, screening, eligibility and inclusion in meta-analysis)</td>
<td>7-8</td>
</tr>
<tr>
<td>Data collection process</td>
<td>11c</td>
<td>Describe planned method of extracting data from reports (such as piloting forms, done independently, in duplicate), any processes for obtaining and confirming data from investigators</td>
<td>7-8</td>
</tr>
<tr>
<td>Data items</td>
<td>12</td>
<td>List and define all variables for which data will be sought (such as PICO items, funding sources), any pre-planned data assumptions and simplifications</td>
<td>7</td>
</tr>
<tr>
<td>Outcomes and prioritization</td>
<td>13</td>
<td>List and define all outcomes for which data will be sought, including prioritization of main and additional outcomes, with rationale</td>
<td>6</td>
</tr>
<tr>
<td>Risk of bias in individual studies</td>
<td>14</td>
<td>Describe anticipated methods for assessing risk of bias of individual studies, including whether this will be done at the outcome or study level, or both; state how this information will be used in data synthesis</td>
<td>8</td>
</tr>
<tr>
<td>Data synthesis</td>
<td>15a</td>
<td>Describe criteria under which study data will be quantitatively synthesised</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>15b</td>
<td>If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data and methods of combining data from studies, including any planned exploration of consistency (such as I^2, Kendall’s t)</td>
<td>9-10</td>
</tr>
<tr>
<td></td>
<td>15c</td>
<td>Describe any proposed additional analyses (such as sensitivity or subgroup analyses, meta-regression)</td>
<td>10-11</td>
</tr>
<tr>
<td></td>
<td>15d</td>
<td>If quantitative synthesis is not appropriate, describe the type of summary planned</td>
<td>9-10</td>
</tr>
<tr>
<td>Meta-bias(es)</td>
<td>16</td>
<td>Specify any planned assessment of meta-bias(es) (such as publication bias across studies, selective reporting within studies)</td>
<td>10</td>
</tr>
<tr>
<td>Confidence in cumulative evidence</td>
<td>17</td>
<td>Describe how the strength of the body of evidence will be assessed (such as GRADE)</td>
<td>11</td>
</tr>
</tbody>
</table>
Acupuncture for psoriasis: protocol for a systematic review

Lei Wang, Haoyu Yang, Nuo Li, Weiming Wang and Yanping Bai

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