Effect of hand-ear acupuncture on chronic low-back pain: a randomized controlled trial

Luo Yong, Yang Min, Liu Tao, Zhong Xiaolong, Tang Wen, Guo Mingyang, Hu Yonghe

Abstract

OBJECTIVE: To evaluate the effect of hand-ear acupuncture on chronic low-back pain (cLBP).

METHODS: This was an open, randomized and controlled trial in The General Hospital of Western Theater Command, Sichuan Province. The trial was registered with ClinicalTrials.gov, NCT02260284. All the 152 participates with cLBP were randomly assigned to hand-ear acupuncture (n = 54), standard acupuncture (n = 50), or usual care groups (n = 48). Eighteen treatments were provided over 7 weeks. Back-related dysfunction and symptom severity were assessed by the Roland-Morris Disability Questionnaire (RMDQ) and the Visual Analogue Scale (VAS), which were collected at baseline, 2 months and 6 months post to the treatment.

RESULTS: At 6 months, the RMDQ scores improved by 7.74 points of hand-ear acupuncture group. Significant improvement of VAS and RMDQ was observed in hand-ear acupuncture group (P < 0.001), but no significant changes of RMDQ were observed in both standard acupuncture group and usual care group. We also observed an overall efficacy rate of 88.89% in hand-ear acupuncture group, as evaluated by Diagnosis and Curative Effect Standard for Symptom pattern of Traditional Chinese Medicine, which was much higher than 45.84% in the usual care group (H = 16.00, P < 0.001).

CONCLUSION: Both of the hand-ear acupuncture and standard acupuncture modes have beneficial and persistent effectiveness against cLBP compared with the usual care. Furthermore, hand-ear acupuncture is significantly more effective than the standardized acupuncture, especially in the long term.

INTRODUCTION

Low back pain is a common musculoskeletal disease affecting the adult population, with a high prevalence up to 84%, and the prevalence of chronic low back pain
(cLBP) is about 23%. Americans spend at least $50 billion per year on low back pain, with cLBP making up at least 90% of the costs, and the situation is even worse in China. This economic burden can be attributed to prescribing of pain-related medications and increased health resource utilization. Furthermore, patients with cLBP usually experience fear, depression and anxiety, which may worsen pain related disability. Nowadays, many alternative methods, including restorative exercise, strength training, Yoga, interventional approaches, radiofrequency denervation, moxa heat and deep massage, whole-body electromyostimulation and cognitive education have been applied to relieve the patients with cLBP from mental as well as economic burdens, however, the efficacy usually varies. The most used therapies, such as osteopathy, does not mean the best-rated helpfulness for patients with cLBP.

Acupuncture is a form of alternative medicine which has been used for the treatment for acute or chronic pain for thousands of years. It has been proven as an effective supplement to other forms of conventional medical therapy for nonspecific cLBP. In the therapy method, very fine, solid metallic needles are inserted into or through the skin at specific points in ears, hands and body, which is effective with less side-effect. Acupuncture is believed originated in China and is the most widely practiced across the world. Because of the effect of short-term pain relief and functional improvement, acupuncture was recommended by the North American Spine Society and U.K. National Institute for Health and Clinical Excellence for the treatment for patients with low back pain.

Hand-ear acupuncture is a special acupuncture which applies stimuli to the points both in ears and hands. In China, the acupuncture has been applied under the direction of TCM theory to treat various diseases for decades. Actually, ear acupuncture was originated from ancient Egypt 2000 years ago, and then developed by a French physician called Paul Nogier in 20th century. The French man reported many cases of ischialgia and low back pain, which was successfully treated by cautery of the concha. Based on these successful experiences, an idea of an inverted fetus imaged on the ear was developed, describing possible location of body parts represented in the ear pavilion, such as the back, the chest and neck, the extremities, the head and the internal organs. The idea was then systematically checked and a complete map of the body image on the ear was developed and confirmed. In the map, between helixtragic notch and the branching area of superior and inferior antihelix crus, there is a curved line which can be divided into 5 equal parts. The upper 2/5 represents lumbosacral spine, called Yaotongdian (AH 9, bilateral), an acupoint which was believed to have effect for low back pain. Interestingly, there is also acupoint called Yaotongdian (EX-UE 7, bilateral) special for low back pain in hands. Thus, we assumed the hand-ear acupuncture for the treatment of cLBP. In this therapy, hand-ear acupoints targeting low back pain were simultaneously stimulated.

In this research, a randomized, controlled study was conducted on patients with cLBP. We want to know whether the hand-ear acupuncture or the standardized one is more effective than the usual medical care for cLBP; and if the hand-ear acupuncture is more effective than the standardized one.

**MATERIALS AND METHODS**

**Trial design**
This randomized and controlled trial study was conducted in the Traditional Chinese Medicine (TCM) Department of the General Hospital of Western Theater Command from October 2014 to December 2017. The trial was registered with ClinicalTrials.gov, NCT02260284. The trial was approved by the Ethics Committee of the General Hospital of Western Theater Command (Approval No. 20140103). All participants were open to the group allocation and gave written informed consent. Outcome assessment and statistical analysis were performed by professionals who were blinded to the patient assignment in each group.

**Participants**
Patients aged 18 to 50 years who presented with cLBP for at least 3 months were recruited. All patients were enrolled according to the following criteria: (a) without taking any other medication for the treatment of cLBP in at least 2 last weeks; (b) without conflict to the written informed consent signed prior to the enrollment. Exclusion criteria included the following: (a) pain mainly below knee; (b) pathological causes of chronic back pain, such as fractures, cancer, spinal stenosis and infections; (c) serious and complicated back disorders, such as vertebral fracture, chronic spondylitis, sciatica, prior back surgery, spinal infection and other medicolegal issues; (d) with contraindications for acupuncture, including cardiac pacemakers, coagulation dysfunctions, being in pregnancy, seizure disorder and other conditions; (e) not compatible for the treatment, like hemiplegic paralysis, and schizophrenia; (f) conditions that might interfere with treatment effects, such as severe fibromyalgia, rheumatoid arthritis and concurrent medication from other providers. Patients from the TCM Department of the General Hospital of Western Theater Command were recruited for the study. Potential participants were evaluated using visual analogue scale (VAS) for pains, and those who suffered from a chronic pain severity rating of at least 3 on the 0-10 scale were considered as eligible. Randomization was performed using concealed random allocation method. An investigator, who was not involved with data collection, assigned the allocation sequence using computer-generated random numbers. According to the base-
In standardized acupuncture group, patients were first assessed by acupuncturist with more than 5 years’ clinical experience on the basis of TCM theory and diagnostic techniques. Secondly, a standardized acupuncture protocol was developed by TCM experts, which was considered effective for cLBP. The standardized acupuncture protocol included six acupoints that are commonly used for the treatment of cLBP (Bl-23 bilateral, Bl-40 bilateral, and KID-3 bilateral) on the low back and lower leg.20 The needling techniques were the same as previously detailed. The penetration depth varied slightly depending on the anatomical position for different acupoints, generally between 1 and 3 cm. All the acupoints were needled for 15 min, with needle stimulation by twirling the needles in 10 min and again at 10 min prior to removal.

In the usual care group, patients received just usual care without any acupuncture treatment. The usual care included but not limited to: massage, restorative exercise, strength training, radiofrequency denervation, whole-body electromyostimulation, cognitive education, and the use of medications [mostly nonsteroidal anti-inflammatory drugs (NSAIDs)]. The patients could also choose to read self-care handbooks concerning how to manage pains, exercise, rest, sleeping, and lifestyle modification.

Outcome measures

Outcomes were measured and assessed at baseline, 2 months and 6 months using questionnaire interviews by interviewers who were blinded to the group assignment. The modified Roland-Morris Disability Questionnaire (RMDQ)21,22 was applied as the primary outcome to evaluate back dysfunction, and VAS was used to assess pain severity. Secondary outcomes included RMDQ, VAS, and the diagnosis and curative effect standard for diseases and symptom pattern in TCM23 for cLBP. The effect standard includes: (a) curing- without LBP and no difficulty in movement; (b) effective- the pain was significantly relieved but still with slight discomfort; (c) ineffective- no symptom improvement at all. Furthermore, physical and mental health component summary scores of the medical outcomes study short-form 36 health survey (SF-36)24-26 were also applied.

Statistical analyses

The collected data was processed and assessed with The SPSS 23.0 software (IBM Corp. Released 2015. IBM SPSS Statistics for Windows, Version 23.0. Armonk, NY, USA). Paired t-test and repeated-measure analysis of variance was used to compare between the pre- and post-treatment results at 2 and 6 months. One-way analysis of variance was used to compare the baseline values in the three groups. Pearson’s chi-squared test was used for categorical variables. Baseline data, including age, disease course, RMDQ, VAS, SF-36 physical health and SF-36 mental health are presented as mean ± standard deviation ( x̄ ± δ); mean
RMDQ and VAS at baseline and follow-up, and changes of RMDQ and VAS from the baseline data are presented as mean (95% CI). A P-value under 0.05 was considered statistically significant.

RESULTS

Baseline data
A total of 152 patients were enrolled from the TCM Department, the General Hospital of Western Theater Command and randomly processed into three groups, with 54 in hand-ear acupuncture group, 50 in standard acupuncture group, and 48 in usual care group. The three groups were comparable in terms of age (t = 1.150, P = 0.320), sex ($\chi^2 = 0.430, P = 0.807$), mean disease course ($t = 0.707, P = 0.495$), No. of patients under the medication of NSAIDs 2 weeks prior to the randomization ($\chi^2 = 2.030, P = 0.362$), No. of patients under routine treatment of cLBp before the enrollment ($\chi^2 = 4.432, P = 0.180$), RMDQ ($t = 0.458, P = 0.6348$), VAS ($t = 0.174, P = 0.841$), F-36 physical health score ($t = 0.090, P = 0.914$) and SF-36 mental health score ($t = 0.844, P = 0.432$) (Table 1).

Study recruitment and follow-up
Among the 256 candidates for the clinical trial, 104 were excluded because of no more than 3 months of back pain (n = 11), being under medication for the treatment of cLBp within 2 weeks prior to the trial (n = 7), being aged beyond 18 to 50 years (n = 4) and being with conflict to the written consent (n = 10), cancer (n = 1), spinal tuberculosis (n = 1), contraindication to acupuncture (n = 31) and other unknown reasons (n = 38). Patients were randomly pressed to hand-ear acupuncture group (n = 54), standard acupuncture group (n = 50), and usual care group (n = 48). All participants were followed up at 2 and 6 months (Figure 1).

Primary outcomes
At baseline, the three groups were comparable in terms of RMDQ and VAS. At 2 months, both the outcome measures were significantly improved in comparison with baseline in all the groups ($P < 0.001$). However, Covariance test indicated that, RMDQ ($F = 23.796, P < 0.001$) and VAS ($F = 25.923, P < 0.001$) were more significantly improved in hand-ear acupuncture group versus control. At 6 months, further significant improvement of VAS was observed in the three groups ($P < 0.001$), but no significant changes of were observed of RMDQ in both standard acupuncture groups and usual care group. In hand-ear acupuncture group, RMDQ was further significantly improved ($t = 2.992, P = 0.004$) as compared with the baseline data. Covariance test also indicated a more significant improvement ($P < 0.001$) of RMDQ in hand-ear acupuncture group than that in the other two groups (Tables 2 and 3).

Secondary outcomes
At the 6 months, the RMDQ scores were significantly decreased in hand-ear acupuncture group by 7.74 points (95% CI - 9.68 to - 5.80, $P < 0.001$) and standardized acupuncture group by 6.12 points (95% CI -7.83 to - 4.41, $P < 0.05$), as compared with 1.75

<table>
<thead>
<tr>
<th>Item</th>
<th>Hand-ear acupuncture group (n = 54)</th>
<th>Standard acupuncture group (n = 50)</th>
<th>Usual care group (n = 48)</th>
<th>t/\chi^2 value</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>39±9</td>
<td>36±10</td>
<td>37±9</td>
<td>1.150</td>
<td>0.320</td>
</tr>
<tr>
<td>Sex (n)</td>
<td>Male</td>
<td>43</td>
<td>38</td>
<td>39</td>
<td></td>
</tr>
<tr>
<td></td>
<td>female</td>
<td>11</td>
<td>12</td>
<td>9</td>
<td>0.430</td>
</tr>
<tr>
<td>Disease course (years)</td>
<td>6±4</td>
<td>5±4</td>
<td>6±6</td>
<td>0.707</td>
<td>0.495</td>
</tr>
<tr>
<td>Use of NSAIDs (2 weeks prior to the randomization)</td>
<td>Yes</td>
<td>36</td>
<td>34</td>
<td>29</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>18</td>
<td>16</td>
<td>19</td>
<td>0.707</td>
</tr>
<tr>
<td>Married (n)</td>
<td>Yes</td>
<td>50</td>
<td>42</td>
<td>41</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>4</td>
<td>8</td>
<td>7</td>
<td>2.030</td>
</tr>
<tr>
<td>Regular treatment (n)</td>
<td>Yes</td>
<td>39</td>
<td>43</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>15</td>
<td>7</td>
<td>13</td>
<td>4.342</td>
</tr>
<tr>
<td>RMDQ</td>
<td>12±7</td>
<td>13±8</td>
<td>13±7</td>
<td>0.458</td>
<td>0.634</td>
</tr>
<tr>
<td>VAS</td>
<td>7±2</td>
<td>7±2</td>
<td>7±2</td>
<td>0.174</td>
<td>0.841</td>
</tr>
<tr>
<td>SF-36 physical health</td>
<td>59±17</td>
<td>61±16</td>
<td>60±20</td>
<td>0.090</td>
<td>0.914</td>
</tr>
<tr>
<td>SF-36 mental health</td>
<td>45±13</td>
<td>42±10</td>
<td>45±13</td>
<td>0.844</td>
<td>0.432</td>
</tr>
</tbody>
</table>

Notes: NSAIDs: nonsteroidal anti-inflammatory drugs; RMDQ: the modified Roland-Morris disability questionnaire; VAS: visual analogue scale; SF-36: physical and mental health component summary scores of the medical outcomes study short-form 36 health survey.
Being under medication for the treatment of cLBP within 2 weeks prior to the trial (n = 7)
- Being aged beyond 18 to 50 years (n = 4)
- Being with conflict to the written consent (n = 10)

Excluded (n = 72)
- Being with cancer (n = 1)
- Being with spinal tuberculosis (n = 1)
- Being not compatible for the acupuncture (n = 31)
- Other reasons (n = 38)

Included and randomized (n = 152)

Hand-ear acupuncture group (n = 54)
- Lost to follow-up (n = 0)
- Drop out (n = 0)

Standard acupuncture group (n = 50)
- Lost to follow-up (n = 0)
- Drop out (n = 0)

Usual care group (n = 48)
- Lost to follow-up (n = 0)
- Drop out (n = 0)

Figure 1. Flow chart of enrollment and follow-up status

At 2 months, significant difference of the overall efficacy was observed in the three groups (H = 8.224, P = 0.016). The number of effectiveness was 41 (75.93%) in hand-ear acupuncture group, 32 (60.00%) in standardized acupuncture group, and 20 (41.67%) in the usual care group. At 6 months, the significant difference of the overall efficacy was still observed (H = 16.000, P < 0.001). The number of effectiveness was 48 (88.89%) in hand-ear acupuncture group, 34 (68.00%) in standardized acupuncture group, and only 22 (45.84%) in the usual care group (Table 4). In hand-ear acupuncture group, a significant difference was found between the value at 2 months and 6
Table 2 Mean RMDQ and VAS at baseline and follow-up in the three groups [mean (95% CI)]

<table>
<thead>
<tr>
<th>Group</th>
<th>n</th>
<th>Function (RMDQ)</th>
<th>Symptom severity (VAS)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Baseline</td>
<td>2 months 6 months</td>
</tr>
<tr>
<td>Hand-ear acupuncture</td>
<td>54</td>
<td>12.15 (10.36, 13.93)</td>
<td>6.46 (5.42, 7.50)</td>
</tr>
<tr>
<td>Standard acupuncture</td>
<td>50</td>
<td>12.98 (10.66, 15.30)</td>
<td>7.08 (5.12, 9.04)</td>
</tr>
<tr>
<td>Usual care</td>
<td>48</td>
<td>13.50 (11.49, 15.51)</td>
<td>12.31 (10.30, 14.32)</td>
</tr>
</tbody>
</table>

F value: - 0.458 23.796 28.838 0.174 25.923 25.694
P value: - 0.634 < 0.001 < 0.001 0.841 < 0.001 < 0.001

Notes: hand-ear acupuncture: treated at hand points Yaotongdian (EX-UE 7) every other day for 4 weeks followed by twice a week for 3 weeks, and at auricular points Yaotongdian (AH 9) in 7 consecutive days followed by 3-day intervals for 7 weeks; standardized acupuncture: treated with routine needles every other day for 4 weeks followed by twice a week for 3 weeks; usual care: treated with usual care only for 7 weeks. RMDQ: the modified Roland-Morris disability questionnaire; VAS: visual analogue scale. In comparison with the baseline data, *P < 0.001, **P < 0.05.

Table 3 Changes of RMDQ and VAS from the baseline data in the three groups [mean (95% CI)]

<table>
<thead>
<tr>
<th>Group</th>
<th>n</th>
<th>RMDQ</th>
<th>VAS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>2 months 6 months</td>
<td>2 months 6 months</td>
</tr>
<tr>
<td>Hand-ear acupuncture</td>
<td>54</td>
<td>- 5.67 (&lt; - 6.92, - 4.45)**</td>
<td>- 2.85 (&lt; - 3.43, - 2.27)**</td>
</tr>
<tr>
<td>Usual care</td>
<td>48</td>
<td>- 1.39 (&lt; - 2.19, - 0.19)**</td>
<td>- 1.75 (&lt; - 2.89, - 0.61)**</td>
</tr>
</tbody>
</table>

P value versus control: - < 0.001 < 0.001 < 0.001

Notes: hand-ear acupuncture: treated at hand points Yaotongdian (EX-UE 7) every other day for 4 weeks followed by twice a week for 3 weeks, and at auricular points Yaotongdian (AH 9) in 7 consecutive days followed by 3-day intervals for 7 weeks; standardized acupuncture: treated with routine needles every other day for 4 weeks followed by twice a week for 3 weeks; usual care: treated with usual care only for 7 weeks. RMDQ: the modified Roland-Morris disability questionnaire; VAS: visual analogue scale. In comparison with the baseline data, *P < 0.001, **P < 0.05.

Table 4 Overall efficacy outcome in the three groups [n (%)]

<table>
<thead>
<tr>
<th>Group</th>
<th>n</th>
<th>2 months</th>
<th>6 months</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Curing Effective Ineffective</td>
<td>Curing Effective Ineffective</td>
</tr>
<tr>
<td>Hand-ear acupuncture</td>
<td>54</td>
<td>30 (55.56) 11 (20.37) 13 (24.07)**</td>
<td>38 (70.37) 10 (18.52) 6 (11.11)**</td>
</tr>
<tr>
<td>Standard acupuncture</td>
<td>50</td>
<td>22 (44.00) 10 (20.00) 18 (36.00)**</td>
<td>23 (46.00) 11 (22.00) 16 (32.00)**</td>
</tr>
<tr>
<td>Usual care</td>
<td>48</td>
<td>9 (18.75) 11 (22.92) 28 (58.33)</td>
<td>11 (22.92) 11 (22.92) 26 (54.16)</td>
</tr>
</tbody>
</table>

H value: - 8.224 16.000
P value: - 0.016 < 0.001

Notes: hand-ear acupuncture: treated at hand points Yaotongdian (EX-UE 7) every other day for 4 weeks followed by twice a week for 3 weeks, and at auricular points Yaotongdian (AH 9) in 7 consecutive days followed by 3-day intervals for 7 weeks; standardized acupuncture: treated with routine needles every other day for 4 weeks followed by twice a week for 3 weeks; usual care: treated with usual care only for 7 weeks. In comparison with the control group, *P < 0.001, **P < 0.05.

months ($\chi^2 = 7.773$, $P = 0.017$), but no difference was found between the other groups. The use of NSAIDs for back pain 2 weeks prior to the randomization was similar across groups at baseline. In hand-ear group, 30 of 36 cases using NSAIDs withdrew from the drug use successfully without complications within post-treatment 6 months. Among them 13 withdrew in 2 months and 17 in 6 months. In standard acupuncture group, 29 of 34 cases using NSAIDs withdrew successfully. The withdrawal rate of NSAIDs within post-treatment 6 months in hand-ear treatment group was significantly higher than that (only 5 of 29) in usual care group ($\chi^2 = 7.515$, $P = 0.006$). There was no overall group difference at 2 months in SF-36 mental and physical health scores; however, at 6 months the two acupuncture groups had better scores than the usual care group ($P < 0.05$). In the trial, the possible acupuncture-related events,
like local pain, bleeding, organ trauma, fainting, infection, were closely monitored. All the interventions were well tolerated in all the patients. No server adverse event was reported except for 1 with needling pain in hand-ear treatment group and 2 with anxiety in standard acupuncture group. The reported adverse events in either group were transient and very slight in severity.

**DISCUSSION**

In this study, the effect of the hand-ear acupuncture treatment for cLBP was explored and compared with the standardized acupuncture or with the usual care. Though both acupuncture treatments were similarly indicated to be more effective than the usual care for the treatment of cLBP, pronounced difference in RMDQ, VAS and overall efficacy was still noticed between the two acupuncture groups. Notably, patients under the hand-ear acupuncture treatment attained better improvement in physical function, low back pain and overall efficacy when compared with those under the standardized acupuncture treatment. Furthermore, the treatment effect was further improved in hand-ear acupuncture group, but not in the other two groups, suggesting a long-term efficacy when using the hand-ear acupuncture to treat cLBP.

The special acupoint Yaotongdian (EX-UE 7) on the dorsum of the hand was initially described in a classical book of TCM by Gong Yunlin, a famous physician at Ming Dynasty in China. The acupuncture at the special acupoint Yaotongdian (EX-UE 7) was mostly used to treat cLBP for hundreds of years. Interestingly, one auricular point (AH 9), is also called Yaotongdian in Chinese Pinyin, which was believed to have the same effect as those in hand, and has been widely used to treat cLBP since 80’s last century in China. Thus, a novel hand-ear acupuncture, which combines the two penetration methods, is therefore usually applied in our clinical experience. This trial was designed to assess the efficacy of the hand-ear acupuncture on cLBP in comparison with the standardized acupuncture and the usual care. Our results indicated that, at 2 months, the primary outcomes like RMDQ and VAS scores were both significantly improved in hand-ear acupuncture group versus control. We also observed a similar condition in secondary outcomes, including RMDQ and VAS scores, the overall efficacy, the withdrawal rate of NSAIDs, SF-36 mental and physical health scores. The improving trend was even maintained at 6 months post to the initial treatment in hand-ear acupuncture group, but not in control, suggesting a better prescription choice for the treatment of cLBP.

Even so, the views concerning the treatment efficacy of acupuncture are usually contradictory. Several researchers tried to explain how acupuncture works to ease pain, but they finally failed. It is hard to explain the nature of philosophical phenomenon using modern scientific methods. However, it does not necessary mean that acupuncture is ineffective. Nowadays evidences from some clinical as well as animal experiments have confirmed the analgesic effects of acupuncture at the spinal level.27-29 These analgesic effects were associated with various pain-related factors,30 including endorphin, substance P,31 met-enkephalin, dynorphin A,32-34 cholecystokinin-8 and its receptors,35 tumor necrosis factor-α, interleukin-6, and nitric oxide.36 Up- or down-regulation of those molecules in the spinal level or serum level was considered as one of the major factors to cause hyperalgesia. Unfortunately, the above work is still insufficient to explain how acupuncture works to affect the nociceptive pathways and nociceptive processing. Our study indicated enduring efficacy of the hand-ear acupuncture treatment in patients with cLBP; however, the mechanism underlying its action still remains unclear.

Because most patients rejected to be treated with possible sham-acupuncture and would like to know their group assignment, we could not perform the trial in a double blind, sham-controlled manner, which may be regarded as a primary limitation in the study. In conclusion, the effects of hand-ear acupuncture on cLBP including: (a) improving the back-related dysfunction; (b) relieving the chronic back pain; (c) improving the overall efficacy as measured with Diagnosis and Curative Effect Standard for Symptom pattern of TCM for cLBP; (d) improving the withdrawal rate of NSAIDs and (e) improving the mental and physical health of patients with cLBP. The hand-ear acupuncture is more effective than the standardized acupuncture for cLBP treatment.

**REFERENCES**

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