The effectiveness of an acupuncturist working in general practice – an audit

Patrick W Harborow, Jane Ogden

Abstract
This audit was based in general practice and examined 49 consecutive referrals to a UK trained traditional Chinese acupuncturist. It aimed to assess the type of patients referred to an acupuncturist, subsequent changes in health status, whether the effectiveness of acupuncture was related to the type of presenting problem and to examine which factors were predictive of the success of acupuncture. The referred patients had a wide variety of conditions which were categorised as to whether or not there was empirical evidence from trials of responsiveness to acupuncture (evidence based vs non evidence based). Patients completed measures of their health status prior to treatment and at two and six month follow ups. In addition, the referring GP’s beliefs about the prognosis of the problem and the therapist’s and patient’s expectations of success were measured at baseline. The results showed that referred patients reported poorer health status than a historical sample of general practice patients and that they showed significant improvements in all aspects of health status following acupuncture. In particular, patients showed improved energy, pain, emotional reactions, sleep and reduced social isolation at two months which were maintained at six months. Physical mobility was improved at six months. In addition, the results indicated that the best predictors of effectiveness were the therapist’s and patient’s expectations of success at baseline. Effectiveness was not related to the category of condition (evidence based or not) nor to the GP’s expectations about the prognosis of the condition. The results are discussed in terms of implications for the role of acupuncture in General Practice and selectively targeting patients who would be responsive to such an approach.

Keywords
Acupuncture, audit, general practice.

Introduction
Acupuncture has its roots in ancient China some 5000 years ago. It was introduced to Europe in the 17th century and greatly popularised by Mao during the cultural revolution. Over the last 20 years the demand for and interest in acupuncture has increased among patients and doctors in the West, and is now available on both a private basis and in general practice. Researchers have examined the effectiveness of acupuncture as compared to either no treatment or placebo controls or other forms of active intervention. For example, Vickers et al reported that acupuncture was more successful than usual treatment for chronic headache. Kleinhenz et al found a specific effect of acupuncture as compared with sham needling in the treatment of rotator cuff tendonitis. Likewise, Jobst et al examined the use of acupuncture for the management of airways obstruction and reported that true acupuncture was superior for reducing breathlessness when compared to sham acupuncture. Acupuncture has also been shown to be effective for some addictions, nausea, and migraine. However, although such trials have been performed, there remains little consensus as to the usefulness of acupuncture. In particular, the research is confounded by widespread differences between acupuncturists and schools of acupuncture, the wide variety of conditions which are treated by acupuncturists and schools of acupuncture, and small sample sizes. Therefore, generalisation from clinical trials to the reality of acupuncture practice is inherently problematic.
The present audit took a pragmatic approach to examining the outcome in patients treated by an acupuncturist. It was planned in 1994 as a means to assess the effectiveness of acupuncture in treating a wide range of common problems and to assess the contribution an acupuncture service can make to managing general practice patients. In particular, the study aimed to examine the population of patients referred, their response to treatment by an acupuncturist and the best predictors of this response. In addition, the study aimed to examine differences between conditions for which there is evidence for the effectiveness of acupuncture and conditions for which there is not.

Methods
Setting
The study took place in one inner city general practice which has about 6000 patients from a wide range of ethnic and class backgrounds. The practice was sympathetic to alternative health care and had previously employed an osteopath, a masseur and an acupuncturist. However, continued funding had only been secured for the acupuncturist.

Subjects
Several meetings took place between the doctors in the practice and the acupuncturist to develop internal guidelines to define which patients were deemed suitable for treatment by acupuncture. These guidelines were based upon the existing evidence concerning the effectiveness of acupuncture but also the anticipated need by the practice’s patient population and what the doctors themselves felt was acceptable practice. Subsequently, a cohort of 49 consecutive patients who were referred to the acupuncturist were recruited into the study. The patients presented with addiction, asthma, anxiety, irritable bowel syndrome, chronic fatigue, depression, dysmenorrhea, multiple sclerosis, musculoskeletal pains, COPD and chronic pain. About 10% of patients who were offered acupuncture declined for a range of reasons including lack of time and a desire to see only the doctor. Patients who consented to see the acupuncturist were provided with a brief handout describing what acupuncture is and what they should expect from their appointments.

Design
The study used a prospective design with measures taken at baseline (pre treatment) and at two and six month follow ups. Patients consulting the GP who were considered to have conditions that were in accordance with the in-house guidelines were asked if they would like to see the acupuncturist, and following their informed consent were referred for a course of treatment. For most patients a maximum of 14 acupuncture sessions was offered. There were, however, some exceptions who received more sessions than this. The following measures were completed by GP, therapist and patient at baseline and at two and six months’ follow up (patient questionnaire conducted by post). Ethics approval was not considered necessary for this audit since the acupuncture was offered as a routine and the additional burden of questionnaires was small.

Measures
1. Baseline
   GPs: doctors referring patients recorded the principal diagnosis. This was used to categorise the subjects into those with problems for which there is evidence from trials of benefit from acupuncture (evidence based: nicotine addiction, alcohol addiction, asthma, COPD, chronic pain, nausea, and musculoskeletal pain) and those for which there is no such evidence (non evidence based: depression, anxiety, dysmenorrhea, IBS, chronic fatigue). This classification did not involve a systematic review of the existing evidence but was based upon the existence or absence at the time of published refereed trials concluding that acupuncture has been shown to be effective for a given problem. Doctors rated their prognosis of the patient’s condition: ‘How do you think this problem will change over the next six months if untreated?’ on a scale ranging from ‘Get much worse’(5) to ‘Get much better (1)’. (This part of the referral form was not available to the therapist.)

   Therapist: the acupuncturist rated his expectations of success of the acupuncture, ‘How successful do you think that acupuncture will be for this patient?’ on a scale ranging from ‘Not at all’ (1) to ‘Very’ (5).

   Patients: i) patients rated their expectation of success
by the statement ‘How successful do you think that acupuncture will be for you?’ on a scale ranging from ‘Not at all’ (1) to ‘Very’ (5). ii) health status: patients completed the Nottingham Health Profile. This is a validated and frequently used self-report measure of health status that assesses six separate domains. Patients are asked to rate a series of items using a numeric rating scale and these items are summated to produce scores for energy, pain, emotional reactions, sleep, social isolation and physical mobility and an overall total score. Higher scores indicate lower energy, and greater pain, emotional reactions, poorer sleep, more social isolation and poorer physical mobility. Patients completed these questionnaires before seeing the acupuncturist.

Follow up (two and six months) Therapist: The therapist recorded the number of sessions attended, and whether the course of treatment was completed.

Patients: Patients completed the NHP.

The treatment The acupuncturist trained in the UK in traditional Chinese medicine using Five Element and Eight Principle diagnosis and has been an acupuncture practitioner for eight years. He uses needles and moxibustion and gives lifestyle advice but does not use herbs, massage or other types of traditional Chinese medicine. Each session lasted 45 minutes and sessions continued until either the patient or the therapist considered treatment to be complete.

Data analysis Data were analysed in the following ways:

i) to describe subjects’ profile characteristics and to compare the health status of the subjects with data from other populations using descriptive statistics;

ii) to examine changes in patients’ health status over the course of the study using repeated measures ANOVA with category of condition as the between subject factor (evidence base vs no evidence base) and time (baseline, two months) as the within subjects factor;

iii) to explore differences between the evidence based and non evidenced based problems in terms of changes in health status using repeated measures ANOVA with category of condition as the between subject factor (evidence base vs no evidence base) and time (baseline, two months) as the within subjects factor;

iv) to explore the best predictors of responsiveness to treatment using multiple regression analysis.

A total health status score was computed for baseline and six month follow up by summing the individual subscales. A change score was then computed (follow up-baseline) to reflect overall improvement in health status in the first two months of the study. The results were then analysed to examine the best predictors of change in health status using multiple regression analysis. Baseline variables (the evidence base for the conditions, therapist expectations of success, GP’s rating of prognosis, patient’s expectations of success, age, sex) were entered as independent variables and change in health status was entered as the dependent variable.

Results

1. Profile characteristics During a 78 week period (between 1994 and 1996) 49 consecutive referred patients were included in the study. The mean age of referred patients was 42 (range 20 to 83) years and 77% of the referred patients were female. The principal diagnosis was recorded by the doctor in 47 of the patients. These were categorised as evidence based problems (n=16) and non evidence based problems (n=31).

The number of sessions ranged from 0 to 29 distributed as follows: 1-3 sessions, n=9; 4-7 sessions, n=7; 8-12 sessions, n=10; 13-16 sessions, n=11; 17-24 sessions, n=5; 24+ sessions, n=1. Of those referred, 42 attended for their first appointment. A non attendance rate of 14% is similar to that for the practice’s counsellor (13.6%), but higher than those failing to attend for booked appointments with the doctor (6%) and nurse (12%). Thirty nine patients completed the questionnaire at two months and 27 patients completed the questionnaire at six months. Baseline characteristics of these different groups (didn’t attend first appointment n=7; completed first questionnaire only n=3; completed first and second questionnaires n=12; completed first, second and third questionnaires n=27) were
compared using chi square and Fisher’s exact test for non parametric data, and analysis of variance for parametric data. All four groups were comparable in terms of age, referring doctor, and doctors’ prognosis of patient’s condition. However, men were significantly more likely to drop out before the six month follow up (Fisher’s exact test P<0.05).

2. Comparison of subjects with other patient groups
The NHP has been used to measure health status in a range of other patient groups, as described by Hunt at al. These were compared with the results from the present study in Table 1.

The results indicate that the acupuncture group NHP scores were higher than other GP patient samples, and similar to fracture victims and chronically ill patients on several of the constructs within the NHP, indicating that the GPs were referring patients who reported a high level of morbidity to see the acupuncturist.

3. Changes in health status over the course of the study
The scores on the NHP at baseline, two months and six months are shown in Table 2.

At two months follow up (n=39) the results showed a significant main effect of time for energy (F[1,38]=14.25, P<0.001), pain (F[1,38]=7.69, P<0.01), emotional reactions (F[1,38]=22.46, P<0.0001), sleep (F[1,38]=10.05, P<0.005), and social isolation (F[1,38]=6.68, P<0.01). However, there was no significant main effect of time for physical mobility. This indicates that over the first two months of the study, subjects reported an increase in energy and sleep and decreases in pain, emotional reactions and social isolation but no change in physical mobility. At the six months follow up, compared to baseline (n=27), the results showed significant main effects of time for energy (F[1,26]=9.37, P<0.001), pain (F[1,26]=6.59, P<0.005), sleep (F[1,26]=6.7, P<0.05), emotional reactions (F[1,26]=12.57, P<0.0001), social isolation (F[1,26]=5.27, P<0.01) and physical mobility (F[1,26]=4.9, P<0.05). This indicates that all aspects of health status had improved by six months follow up. Further, the results showed no significant differences between two months and six months follow up for all factors except for physical mobility. This indicates that changes in energy, pain, sleep, emotional reactions and social isolation shown at two months follow up were maintained at six months and the improvements in physical mobility were first found at six months.

### Table 1
<table>
<thead>
<tr>
<th></th>
<th>Acupuncture pts (n=42)</th>
<th>GP pts*</th>
<th>Fracture pts</th>
<th>Chronically ill elderly pts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy</td>
<td>61.0</td>
<td>12.6</td>
<td>25.8</td>
<td>38.0</td>
</tr>
<tr>
<td>Pain</td>
<td>29.2</td>
<td>5.9</td>
<td>26.6</td>
<td>29.2</td>
</tr>
<tr>
<td>Emotional reactions</td>
<td>39.3</td>
<td>10.0</td>
<td>13.7</td>
<td>15.1</td>
</tr>
<tr>
<td>Sleep</td>
<td>33.7</td>
<td>13.0</td>
<td>28.0</td>
<td>32.1</td>
</tr>
<tr>
<td>Social isolation</td>
<td>24.9</td>
<td>3.5</td>
<td>8.0</td>
<td>12.8</td>
</tr>
<tr>
<td>Physical mobility</td>
<td>13.2</td>
<td>3.3</td>
<td>27.6</td>
<td>2.2</td>
</tr>
</tbody>
</table>

* Mean scores for randomly selected females in a GP population aged 40-44 years; pts: patients.

### Table 2
<table>
<thead>
<tr>
<th></th>
<th>Baseline (n=47)</th>
<th>2 months (n=39)</th>
<th>6 months (n=27)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy</td>
<td>55.4 ± 39.4</td>
<td>34.1 ± 35.9</td>
<td>23.1 ± 37.4</td>
</tr>
<tr>
<td>Pain</td>
<td>32.4 ± 35.1</td>
<td>21.6 ± 33.5</td>
<td>9.5 ± 23.7</td>
</tr>
<tr>
<td>Emotional reactions</td>
<td>39.5 ± 28.7</td>
<td>20.0 ± 26.9</td>
<td>10.7 ± 15.4</td>
</tr>
<tr>
<td>Sleep</td>
<td>37.9 ± 29.5</td>
<td>24.5 ± 27.8</td>
<td>28.8 ± 27.9</td>
</tr>
<tr>
<td>Social isolation</td>
<td>22.9 ± 26.8</td>
<td>11.1 ± 23.8</td>
<td>5.8 ± 13.1</td>
</tr>
<tr>
<td>Physical mobility</td>
<td>13.5 ± 17.7</td>
<td>14.7 ± 19.9</td>
<td>8.4 ± 16.5</td>
</tr>
</tbody>
</table>
4. Differences between those with an evidence base for treatment and those without

The results were analysed to assess whether patients with evidence based problems responded differently to acupuncture from those with problems with no evidence base (see Table 3).

The result for category of condition by time interaction for sleep (F[2,37]=4.19, P<0.05) was borderline allowing for multiple testing. The means indicate that whereas those subjects with conditions without an evidence base for acupuncture effectiveness reported no change in their sleep scores, those with conditions with an evidence base for effectiveness reported a greater improvement in their sleep ratings, though this might be a chance finding. No other interactions were found suggesting that acupuncture was equally effective for problems regardless of their evidence base.

5. Predicting changes in health status

The results showed that patient expectations of success prior to starting treatment (beta = -0.42, where beta value is a indication of association, range 0-1) and the therapist’s expectations of how the patient’s main diagnosis would respond to treatment (beta = -0.39) accounted for 25% of the total variance in change in well being. This indicates that the greater both the patient’s and the therapist’s belief that the given problem will respond to treatment, the greater the improvement in health status. Patients’ age and sex, the doctor’s rating of the prognosis of the condition and whether or not the problem had an evidence base or not for the effectiveness of acupuncture were unrelated to the improvement in health status following acupuncture.

Discussion

The study first aimed to describe patients referred for acupuncture and showed that patients were referred for a wide variety of conditions including addictions, asthma, anxiety, chronic fatigue, IBS and pain. The referred patients showed high baseline health status scores which were comparable with patients attending fracture clinics and the chronically ill elderly, and higher than other GP patient samples. Thus the GPs clearly discriminate in their referrals to the acupuncturist. This is in line with the GP’s role as the gate-keeper to specialist services.

The second aim of the study was to examine changes in health status following acupuncture. The results showed that there was a decrease in scores for energy, pain, emotional reactions, sleep and social isolation at two months and that this was maintained at six months. In addition, physical mobility was seen to improve by six months. It is possible that this result simply reflected the natural history of the presenting problems. However, this seems unlikely given the high level of disability at baseline, the dramatic improvement

<table>
<thead>
<tr>
<th>Table 3 Differences between those with conditions with evidence for acupuncture treatment and those without in changes in health status (NHP score mean±SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>No evidence (n=26)</strong></td>
</tr>
<tr>
<td><strong>Time 1</strong></td>
</tr>
<tr>
<td>Energy</td>
</tr>
<tr>
<td>Pain</td>
</tr>
<tr>
<td>Emotional reactions</td>
</tr>
<tr>
<td>Sleep</td>
</tr>
<tr>
<td>Social isolation</td>
</tr>
<tr>
<td>Physical mobility</td>
</tr>
</tbody>
</table>

* no significant differences allowing for multiple testing
in scores and the chronicity of many of the presenting problems. Alternatively, the results may be an artefact of the measures used. However, research indicates that the NHP is generally stable over time. Therefore, the results provide support for the effectiveness of acupuncture and indicate that overall, acupuncture resulted in an improvement in all domains of the patients’ perceived health status as measured by the Nottingham Health Profile.

The study also explored differences between those patients with evidence based conditions and those patients for which there is no evidence of the effectiveness of acupuncture. Overall, the results show no systematic difference between these two groups in terms of changes in the health status following acupuncture, suggesting that acupuncture is equally as effective for a range of conditions regardless of the existing evidence, though the limitations of this result are discussed below. This might indicate that the existing evidence base for the effectiveness of acupuncture is not particularly useful for predicting which problems will respond to acupuncture. The only likely exception to this was changes in sleep, with patients with evidence based conditions showing greater improvement in sleep patterns. This may be because there are no good studies looking at the effects of acupuncture in conditions such as anxiety, depression and chronic fatigue. Such studies, if carried out, might well show similar benefits to those found in pain, nausea and asthma.

Finally, the study aimed to explore which factors were the best predictors of improved health status following a course of acupuncture. The results showed that a greater improvement in health status was related to both the therapist’s and patient’s expectations of success but not to the evidence of acupuncture effectiveness or the GP’s prediction of prognosis. It is possible that this reflects an accurate prediction by both the patient and the therapist based upon their previous experience of both the presenting condition and acupuncture treatment for that condition. An alternative explanation is that such expectations actually influence the outcome of the intervention, ie believing that acupuncture will work actually improves its effectiveness. Much research has highlighted the importance of expectation in the placebo effect. The present study is compatible with this suggestion, and it has been proposed that as well as having a real effect, acupuncture is also a particularly strong placebo.

There are, however, some limitations with the study which need to be considered. First, the study took place in one practice, with one acupuncturist, and the results may not generalise to other populations. Second, the study did not include a control group, which means that it is unclear whether changes in health status would have happened in the absence of any acupuncture intervention. Finally, our division into evidence based and non evidence based condition was based upon a close reading of the literature rather than a systematic review. However, in support of the study, the NHP is a validated and stable measure of health status and the changes over time found in the present study would not be expected in an untreated population. Further, although we did not use a systematic review the results do provide some insights into the usefulness of acupuncture for a wide range of problems and provide some tentative evidence that our existing evidence base is a poor predictor of the effectiveness of this procedure.

Conclusion

The present study explored the usefulness of acupuncture for a wide range of common problems in general practice and indicated an overall improvement in patient health status following acupuncture. This improvement was greater if both patient and therapist expected the acupuncture to work, but was unrelated to the type of presenting problem or GPs’ predicted prognosis. Acupuncture would seem to be a useful treatment in primary care for a range of conditions, particularly if offered to patients by therapists who expect it to work.

Summary points

Patients referred for acupuncture in primary care showed benefits in many aspects of health after treatment

The benefits were still present six months later

The best predictors of success were patient’s and therapist’s expectation

Neither evidence of effectiveness nor the GPs’ expectations predicted success
Audits

Acknowledgements
The authors would like to thank Christine Appenteng (research assistant); Dr David Armstrong (help with design and analysis of the study); Robin Herbert (acupuncturist); and Karen Mayes (data puncher).

Reference list

Editorial comment
The peer reviewers of this report argued that the division of conditions into ‘evidence based’ and ‘not evidence based’ was not performed rigorously to the usual standards of evidence-based medicine and should be omitted because the resultant classification is not reliable. However, the editors allowed the authors to retain this aspect of the paper because it represents an important innovation. Readers should note that the evidence-based classification might have been appropriate in 1994 but would not be supported by more recent evidence.
The effectiveness of an acupuncturist working in general practice – an audit

Patrick W Harborow and Jane Ogden

Acupunct Med 2004 22: 214-220
doi: 10.1136/aim.22.4.214

Updated information and services can be found at:
http://aim.bmj.com/content/22/4/214

These include:

Email alerting service
Receive free email alerts when new articles cite this article. Sign up in the box at the top right corner of the online article.

Notes

To request permissions go to:
http://www.bmj.com/company/products-services/rights-and-licensing/

To order reprints go to:
http://journals.bmj.com/content/subscribers

To subscribe to BMJ go to:
http://group.bmj.com/subscribe/