

BRIEFING PAPER No 9

Depression, Anxiety and Acupuncture

The evidence for effectiveness



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The Evidence Series of Briefing Papers aims to provide a review of the key papers in the literature, which provide evidence of the effectiveness of acupuncture in the treatment of specific conditions. The sources of evidence will be clearly identified ranging from clinical trials, outcome studies and case studies. In particular this series of briefing papers will seek to present, discuss and critically evaluate the evidence.

DEPRESSION, ANXIETY AND ACUPUNCTURE: THE EVIDENCE FOR EFFECTIVENESS

Summary

This paper presents a summary of the evidence for the effectiveness of acupuncture in the treatment of depression and anxiety. The available sources provide some evidence that acupuncture is an effective treatment for these conditions. Whilst the results of the trials and outcome studies are consistently favourable, variability in the type of acupuncture and methodological shortcomings in trial design make any further conclusion difficult.

Introduction

Research suggests that 1 in 4 people will experience some kind of mental health problem in the course of a year (Bird, 1999). Anxiety occurring together with depression is the most common form of mental distress in Britain, according to the Office for National Statistics (ONS, 1995). Results from their 1995 survey suggested that 7.7% of the adult population of Britain suffer from combined anxiety and depression at any one time. In addition, 3.1% of adults were found to experience generalised anxiety disorders (not including depression), and 2.1% suffer from depression (without anxiety).

Anxiety is defined as a persisting state of fear that may or may not be associated with a specific object or situation, often accompanied by physiological changes such as a fast heartbeat and rapid breathing. Sufferers experience significant social or occupational impairment. Contemporary Western psychiatry defines major depression as a persisting pattern of severe depressive episodes, with an episode defined as a severely depressed mood for at least two weeks, accompanied by at least four additional symptoms including: changes in appetite, weight loss or gain, sleep disturbance, fatigue, feelings of worthlessness or guilt, difficulty thinking, suicidal thoughts (Flaws, 2001). Major depressive disorder is also known as unipolar depression to distinguish it from bipolar disorder, or manic depression. The causes of depression have also been used as a basis for classification, with “reactive” depression occurring as a reaction to stressful life events (also known as “minor” depression), and “endogenous” depression describing cases without an external cause but arising from changes in the brain.

The total cost of mental health problems in England has been estimated at £32.1 billion (Patel and Knapp, 1998 as quoted by the Mental Health Foundation: Bird, 1999). A 1993 study estimated that depression alone costs £3 billion each year in England when lost productivity and the cost of welfare benefits are taken into account, with the direct cost to

the National Health Service estimated at £420 million per year (Kind and Sorenson, 1993). Psychiatric medication is the most commonly used treatment for mental illness, accounting for one quarter of all drugs prescribed by the NHS (Bird 1999). In England, the use of anti-depressants has increased dramatically recently: between 1990 and 1995, the number of prescriptions for anti-depressants rose by 116%, with prescriptions for newer antidepressants (serotonin re-uptake inhibitors such as Prozac) rising by 732% (Bird, 1999).

Acupuncture has long been used in the treatment of psychiatric disorders in China. Documentation of their traditional diagnosis and treatment can be found in the Han dynasty classics of the *Huang Di Nei Jing* and the *Nei Jing*. Psychiatric treatment in China has more recently shifted towards the adoption of modern Western psychiatric methods, while acupuncture trials commonly combine Western diagnosis with the acupuncture treatment. The Chinese research cited in this paper employs the American Psychiatric Association's *Diagnostic & Statistical Manual, 4th edition* (DSM-IV), and tend to use the biomedical model of neurotransmitters and brain chemistry rather than the traditional Chinese medical paradigm. With the advent of electro acupuncture, Chinese doctors are now using techniques that span the ground between modern Electro-Convulsive Therapy (ECT) and traditional acupuncture techniques.

The therapeutic effectiveness of acupuncture in the treatment of mental distress is becoming more widely known in the west. In the context of drug addiction complicated by psychiatric disturbance, modern auricular acupuncture treatment is playing a vital role in prisons, rehabilitation centres and mental health day centres across the country. Depression itself is one of the 10 most frequent indications for the use of complementary and alternative medicine (Astin 1998), and ever-increasing numbers of mental health service users want access to complementary therapies. A recent Mental Health Foundation Survey found that 85% of those asked had found different types of complementary or alternative therapies to be extremely helpful, with a high proportion of the sample wanting the opportunity of trying other forms of therapy (Faulkner, 1997).

Literature Search

A search was made of the ARRC's database (primarily acupuncture and Chinese medicine-related records from AMED and MEDLINE) using the key words "depression" (& depressive etc), "anxiety", "affective", "bipolar", "mental disorders", plus "acupuncture". Several other references came from searching sources not found in these databases: conference proceedings (Hougham, 1997), university dissertation (Johnson, 1992, which led to Riederer et al, 1975), internet site (Flaws & Lake, 2001) and personal communication (Allen et al, 1998). Articles were included in the review if they described original clinical studies of acupuncture (involving insertion of needles, or electro acupuncture) for anxiety and/or depression and were written in English (though one German paper with a full English abstract was included: Eich et al, 2000). The following were retrieved: seven controlled trials, four uncontrolled trials, and one case study. One of the controlled trials (Riederer et al, 1975) was primarily concerned with investigating neurophysiological aspects of acupuncture but has been included because it also made a clinical contribution. In the context of understanding the physiological mechanisms mention is also made of the pioneering work by Han in Beijing (Han, 1985).

Controlled Trials

A summary of the seven controlled trials identified in the literature search is given in Table 1

A groundbreaking pilot-study from the University of Arizona (Allen et al, 1998) deserves particular mention for its ingenious and progressive trial design. The Arizona research team managed to study the treatment of major depression using traditional, individually tailored acupuncture treatment, within the structure of a double-blind, randomised, controlled trial. The study assigned patients to three groups, the first group receiving acupuncture treatment specifically for depression. The individual diagnoses were made transparent and accountable through a manual, produced beforehand, and used by the assessing acupuncturist to create a treatment plan according to the presenting TCM syndromes. Four acupuncturists blind to this process then administered treatment. Rather than using “sham” acupuncture as a control (with its unknown non-specific effects), one control group received “non-specific” treatment for something other than depression (e.g. back pain). The acupuncturists themselves were blind to the condition they were supposed to be treating, and so applied themselves equally when needling both specific and non-specific groups. The second control group was made up of patients on a waiting list for treatment.

After eight weeks the specific acupuncture group had improved by 11.7 points, the sham acupuncture group by 2.9 and the no-treatment control by 6.1, on a depression rating scale. Furthermore, when the two controls were subsequently given specific acupuncture, in weeks 8-16, they proceeded to improve at a similar rate to the original specific group, with the result that, at the end of the study, 64% of the women were judged to be in full remission from their symptoms. The only mystery in this trial was the rate at which those patients on the waiting list improved (intermediate between the specific and sham acupuncture groups), although when they went on to have the specific acupuncture treatment, they improved at a still faster rate. Since this trial was published, the authors have brought out a book (Allen & Schnyer, 2001), which provides a step-by-step methodology for evaluation and treatment of depression by acupuncture, using the protocol as tested in this trial. A full-scale trial is also currently underway at the University of Arizona.

A trial from the Department of Psychiatry at the University of Mainz (Roschke et al, 1999) also asked whether acupuncture could treat people severely affected by a major depressive illness. Using a more standard design (randomised, single-blind, controlled with “sham” acupuncture), this trial measured the efficacy of acupuncture applied *in addition* to drug treatment. 70 hospital in-patients were divided into 3 groups with all groups receiving the antidepressant Mianserin. The first group received medication only; the second also received “true” acupuncture treatment 3 times a week for one month (point prescription Bl15, Bl17, Bl18, He7, Pc6, St40, Sp5, Sp6, Lu1 with “a few minutes” needle retention); the third group received sham acupuncture given by “merely pricking” the skin superficially “in the neighbourhood” of the point. Two independent judges blind to true/sham conditions, used 3 different rating scales to assess results. The results showed that patients treated with acupuncture experienced a significantly higher therapeutic benefit than patients receiving antidepressant medication alone, but there was no significant difference in the benefit experienced by the true acupuncture group compared to the sham group.

Another German trial (Eich et al, 2000) used a randomised, sham-controlled double blind design. 43 patients with minor depression and 13 with generalised anxiety disorders were divided into true and sham acupuncture groups. The true group were needled at Du20, Ex6, He7, P6 and Bl62 and the sham group at sham acupuncture points (details not known). Although after 5 treatments the two groups were responding similarly, after 10 treatments a significant improvement was experienced by those receiving true acupuncture, with a remarkable reduction in anxiety symptoms. These results raise the question whether the number of acupuncture sessions might be an important factor in therapeutic success, as well as suggesting that the specific choice of points is an important factor (in contradiction to the findings in Roschke et al, 1999). This was judged (Fialka-Moser, 2000) to be a good quality study, but, as with the previous one, there remain substantial doubts: the validity of sham acupuncture as a control, the numbers of subjects and (Eich et al only) the mixing of subjects with two different diagnoses.

A series of trials from the Institute of Mental Health at Beijing Medical University compared the treatment of depression using electro acupuncture (EA) to treatment with the tricyclic antidepressant amitriptyline (AM). The results are consistent: that EA is as effective as AM in the treatment of depression, and even more effective in the alleviation of symptoms of anxiety, without the side effects of drug treatment.

The first of the Beijing trials (Luo et al, 1985) randomly assigned 47 patients with depression to 2 groups. One group received EA at points Bai Hui (Du20) and Yintang for one hour per day, 6 days a week, for 5 weeks. The control group received daily doses of AM. The patients were interviewed weekly by 2 psychiatrists, who were tested regularly for congruity and consistency of ratings. The authors classified therapeutic effect by a method commonly practised in China according to four categories: cured, markedly improved, improved and non-improved. 70% of the acupuncture group were deemed either cured or markedly improved, compared to only 65% of the medication group. In addition, except for a slight soreness at the point of stimulation, the patients receiving EA did not suffer any side effects, whereas the AM group experienced side effects of dizziness, fatigue, palpitations, dry mouth, constipation.

Table 1: Controlled Trials of Acupuncture for Depression/Anxiety

Trial	Trial Design	Sample	Inclusion Criteria	Control	Treatment frequency	Acupuncture	Assessment	Results
Allen et al 1998	Double-blind,	38 women	Major depression according to DSM-IV	Non-specific acupuncture, waiting list	12 sessions over 8 weeks	According to TCM differential diagnosis	Modified Hamilton Depression Rating Scale (HAMD)	Specific acupuncture group (-11.7) significantly better than sham acupuncture (-2.9) & non-significantly better than no treatment group (-6.1)
Roschke et al 1999	Single blind	70 in-patients	Major depressive episode according to DSM-III-R, over 18 on HAMD	Antidepressant, antidepressant plus sham acupuncture	3 times per week, 4 weeks	BI15, BI17, BI18, He7, P6, St40, Sp5, Sp6, Lu1 + antidepressant	Global Assessment Scale (GAS), Bech-Rafaelson Melancholia Scale (BRMS), Clinical Global Impression Scale (CGI)	Addition of acupuncture significantly better than antidepressant alone, but no difference between true and sham acupuncture.
Eich et al 2000	Double-blind,	43	n/g	Sham acupuncture	10 treatments over 2 weeks	Du20, Ex6, He7, P6, BI62	CGI, HAMD, HAMA (Hamilton Anxiety Rating Scale)	Significant clinical improvement, especially for anxiety symptoms. True acupuncture significantly better than sham after 10 Tx (but not after 5).
Luo et al 1985	-	47	Over 20 HAMD, major and minor depression	Amitriptyline (AM)	Daily, 6 days per week, 5 weeks	Electro acupuncture (EA), Du20, Yintang,	HAMD, CGI, Antidepressant Side-Effect Rating Scale (ASER)	EA: 70% cured or markedly improved. AM: 65%
Luo et al 1990	-	241 in-patients	Over 20 HAMD, mostly manic depression, some reactive depression	Amitriptyline (AM)	Daily, 6 Days per week, 5 weeks	Electro acupuncture (EA), Du20, Yintang, + placebo capsule	HAMD	EA as effective as AM, more effective for anxiety
Yang et al 1994	-	41	HAMD, manic, major and minor depression	Amitriptyline (AM)	Daily, 6 days per week, 6 weeks	Manual acupuncture: Du12, Du14, Ren 14, Ren17, P6. EA: Du20, Du24, GB20. + manual acupuncture acc. to differentiation of syndromes	HAMD	Acupuncture as effective as AM, more effective for anxiety
Riederer et al 1975	Single-blind	26	Adults and children with varying diagnoses	Sham acupuncture (scant details provided)	1 or more treatments	LI4, St36, Liv3 combined with "generally effective points"	Biochemical composition of blood and urine studied pre- and post- acupuncture	Acupuncture influences various biochemical processes, in particular the neurotransmitters involved in depression.

In the wake of this study, Professor J Han (Han, 1985) set about investigating the effects of electro acupuncture on the neurotransmitters commonly implicated in depression and anxiety, focussing his measurements on serotonin (5-HT) and norepinephrine (NE). By measuring the effects of EA (via St36 or Sp6) on rats and rabbits Professor Han found an explanation for the findings of the trial above, that EA accelerates the synthesis and release of 5-HT and NE in the central nervous system. A previous trial in Vienna in 1975 (Riederer et al, 1975) had found that needling specific acupuncture points (Liv 3, St 36, LI4) effected change in the amounts of particular neurotransmitters found in subjects' blood and urine. The authors remark in passing that subjects of the trial experienced improvement in their depression but, although this was apparently a sham controlled trial, details of the clinical aspects are too scanty to support a firm conclusion. Professor Han himself concludes that because EA is less damaging than ECT (and thus accepted more readily by patients), and just as effective as tricyclic medication, it should be considered as an alternative, or at least an adjunct to pharmacological treatment.

Following the smaller trial in 1985, EA was again compared to AM treatment in an ambitiously large RCT across 9 Chinese provinces (Luo et al, 1990). 241 hospital in-patients experiencing depressive psychosis (mostly the depressive phase of manic depression, some reactive depression) were divided into two groups using the same methodology as the 1985 trial, although this time the acupuncture group was also given placebo capsules. The results were similar: EA was found to be just as effective as AM in the treatment of the depressive phase of manic-depression, either short- or long-term (follow-up was over a two to four year period, although only given for 148 of 241 patients - with no explanation). Patients suffering from reactive depression and anxiety responded even better to EA than AM in therapeutic effect. Again, a high percentage of the AM group experienced side effects not present in the EA group.

Another Beijing Medical University trial (Yang et al, 1994) compared the use of more traditional acupuncture techniques against AM in the treatment of depression (both uni- and bi-polar). 41 patients were randomly assigned to either acupuncture or AM groups. The focus of the acupuncture was the extraordinary vessels, and points along the Du channel (Du12, Du14, Du20 and Du24) and the Ren channel (Ren14 and Ren17) were needled along with GB20 and P6. Du20, Du24 and GB20 were electrically stimulated in all patients. These points were supplemented with points based on differentiation of the presenting TCM syndromes (examples given are Stagnation of Liver Qi with Spleen Qi Deficiency, Stagnation of Liver Blood, Spleen and Kidney Yang deficiency, Heart and Spleen deficiency). Acupuncture treatment was given 6 days per week for 6 weeks. The control group were given 25mg AM per day, which was gradually increased to between 150 and 300 mg (according to side-effects and depressive state). Progress was assessed using the Hamilton Depression Rating Scale once per week. The results again confirm the findings above, that acupuncture treatment is as effective as AM in the treatment of depression and even more effective for anxiety symptoms. It is noteworthy that the more traditional mode of treatment used here is able to match the therapeutic results of the EA in the trials above.

The Chinese trials have been criticised (Stevinson, 1999) for the lack of a sham acupuncture treatment and hence the inability to separate off the non-specific effects. "Traditional"

acupuncturists, on the contrary, tend to favour a more pragmatic version of the randomised controlled trial, where normal clinical acupuncture treatment can be compared to a/the standard medical treatment rather than to a version of itself. The arguments on this issue have been presented in previous papers in this series. Only one (Yang et al, 1994) of the three Chinese studies can be said to have used “normal clinical” acupuncture, if this is taken to involve individualised diagnosis and point selection. If a standardised approach is to be used then the rationale for the formula chosen should be clearly set out and well rooted (literature, peer consensus). None of the Chinese or German trials referred to here give any reference for the basis of their point selections (although the predominantly German language paper (Eich et al, 2000) may contain this information).

Methodologically the Chinese trials may suffer with respect to the blinding of the assessors (no information given except for Luo et al, 1985) but they do nevertheless add a substantial amount to the evidence in favour of acupuncture’s effectiveness in depressive illness.

Outcome Studies

A summary of the outcome studies identified in the literature search is given in Table2.

A study from Michigan (Chen, 1992) investigated the use of electro acupuncture on 85 patients suffering stress-related chronic illness complicated by reactive depression. Physical diagnoses were varied: headache, backache, arthritis, asthma amongst others were included in the study. Treatment was administered using the authors own method of “Sequential Electric Acupuncture” (SEA), where the patient is instructed to meditatively follow the sensation of acupoints electrically stimulated in sequence (20 minute sessions once per day, less frequently as condition improves). Points used for depression included Du20, Yintang, GB20, P6, He7, St36, Sp6 and Ki3. Acupoints for the physical disorder were added according to TCM pattern discrimination. Patients used a self-assessment scale designed by the author in addition to two other standard depression scales. 77.1% of the sample found that their depression had improved, with 78.8% experiencing improvement in their physical disorder. The author concluded that his method of SEA released cerebral serotonin, which provided both anti-depressant and analgesic effects. He reported that many of the patients were able to discontinue use of their anti-depressant medication. Whilst this study provides some supporting evidence of acupuncture’s effects on depression, the sheer diversity of the disorders treated, as well as the lack of any external assessment, make for fairly flawed evidence. Also, whilst encouraging patients to actively participate in the process of relaxation might be sound clinical practise, it does muddy the results by introducing non-specific effects from conscious relaxation.

A study from China also investigated the effects of acupuncture on reducing anxiety and depression in patients with chronic physical illness, where the psychological state of the patient was exacerbating their physical condition, contributing to a "vicious circle" of deteriorating health (Dong 1993). 68 patients were treated specifically for anxiety and/or depression using “standard acupuncture points” based on differential diagnosis (no further details given). Anxiety and depression rating scales were used before and after treatment.

One month after treatment anxiety had decreased to normal levels in 70% of the sample, and depression in 90%. Although this study focused on acupuncture's effectiveness in treating the psychological state to contribute to physical wellness no mention is made of concomitant changes in physical symptoms.

A pilot study in the East End of London (Hougham, 1997) focused on acupuncture provision at two mental health day centres. Patients were given 8 acupuncture treatments and asked, "What effect has acupuncture had on your overall health?". To gauge perspective, the acupuncturist and the client's key-worker were also asked to evaluate the effect of the treatment using a similar scale. The patients receiving the acupuncture were impressed with the treatment, and found that it had effected a "marked improvement" in their condition. The acupuncturist and key-workers agreed more modestly that there had been a minor improvement. Whilst the numbers involved in the study are low, and the study not audited by an external assessor, the results reflect a very positive reception of traditional acupuncture provision in mental healthcare services.

A recent user-led investigation into the effects of auricular acupuncture on women with long-term mental health problems found that treatment not only produced clear benefits in terms of mental health, but also positive effects and outcomes in other areas of their lives such as sleep, confidence and motivation (Miller, 2001). Once again this is a very small study (11 patients), so the results should be viewed with considerable caution.

Case Studies

Rampes et al (1996) published a single case study of a 33-year-old English woman with generalised anxiety disorder who received six weekly acupuncture treatments (points Liv3, Sp6, St36, TB16, Ren13, with electric current applied to LI4). The General Health Questionnaire and Zung Self Rating Anxiety Scale were used at baseline, 8 weeks, 3 months and 6 months. By the end of the course she was almost symptom free and continued to improve throughout the 3 month and 6 month measurements. The authors felt convinced that the acupuncture had a specific therapeutic benefit, and whilst being aware that non-specific factors of placebo and sitting quietly every week may have had an effect, they express their hope of acupuncture's future role in psychiatry. It is interesting to note that the therapeutic success in this study was achieved through a short course of weekly treatments, as is usually the case in private practise in the west.

Table 2: Outcome Studies of Acupuncture for Depression/Anxiety

Study	Sample Size	Focus of Study	Number of tx	Acupuncture	Outcome measures	Results
Chen, 1992	85	Reactive depression from chronic illness	Initial trial of 6 daily, then less frequently as condition improved	“Sequential Electric Acupuncture” for 20 mins daily. Points for depression included Du20, Yintang, GB20, P6, He7, St36, Sp6 and Ki3. Points for the physical disorder added according to TCM pattern discrimination	Self-assessment using author’s own scale, plus American Psychiatric Association Depression Scale and Beck Depression Scale	77.1% of sample found depression improved. 78.8% experienced improvement in physical disorder.
Dong 1993	68	Anxiety and depression complicating chronic illness.	Not given	“Standard” acupuncture points based on differential diagnosis (no further details given)	Ratings compared pre and 1 month post-acupuncture using Hospital Anxiety and Depression Scale.	Depression reduced to normal levels in 90% of sample. Anxiety reduced to normal levels in 70% of sample.
Hougham 1997	7	Effect of acupuncture on “overall health” of mental health service-users	8	Five Element based traditional acupuncture	Self-assessment using questionnaire designed by Hougham.	Patients reported a “marked improvement” in overall health.
Miller 2001	11 women	Effects of ear acupuncture on long-term users of mental health services	Between 5 and 33	NADA (National Auricular Acupuncture Detoxification Association) 5 point protocol	Monthly interviews and self assessment using defined rating scales	Sample reported clear benefits of treatment in many areas of their lives, including anxiety and depression.

Conclusion

The findings from these studies suggest that acupuncture could play a significant role in the treatment of depression and anxiety. The papers included here show acupuncture consistently effecting significant improvement in these conditions. Fortunately for research-purposes, a number of internationally recognised observer-rating scales for anxiety and depression have been created, which are used in both western and eastern trials to define inclusion criteria and to assess progress. However, variability in the type of acupuncture used in the trials raises questions. There is a significant difference between electro acupuncture using two points on the head, as used in two of the Chinese trials, and the traditional 5-element-based, individually-tailored treatments used by Hougham (1997). Indeed, the former, despite its effectiveness, bears little resemblance to acupuncture as practised by most members of the British Acupuncture Council. It may communicate as much about the therapeutic effects of electricity as it does about acupuncture.

The results from the trial of Roschke et al (1999) raise the usual questions about sham acupuncture (for example, to what extent is it an active treatment rather than a placebo), but the other German RCT manages to demonstrate superiority of the real over the sham version. In truth, neither study was large enough to provide other than suggestive evidence. The Arizona trial design is exemplary in successfully navigating the problems which typically hamper acupuncture research (how to ensure an appropriate control group, how to provide differential diagnosis whilst maintaining controlled conditions, and how to successfully blind both practitioners and patients to treatment). A full-scale trial run along similar lines is currently in progress in the US and, given the scale of mental health problems and the encouraging results found so far with acupuncture, others will surely follow.

There has been little serious investigation into the longer term effects of acupuncture treatment of chronic mental health conditions. There are two aspects to this:

- a) building-in sufficient follow-up assessment after the completion of a trial. The large Chinese study (Luo et al, 1990) commendably instituted a two to four year follow-up, but apparently retrieved only 60% of the subjects. Most studies have had no such follow-up.
- b) considering whether continuing treatment is needed on a medium to long-term basis, and if so, what the nature of such a regimen might be. This is not an area where RCTs have trod, nor are likely to do so: a wider research approach would be required.

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