ACUPUNCTURE AND ANXIETY

British Acupuncture Council

About ANXIETY

Accurate information about the incidence and prevalence of anxiety disorders is difficult to obtain; a survey by the Office of National Statistics (ONS 2000) found that 164 people per 1,000 had a neurotic disorder in the week before interview, which represents about 1 in 6 of all adults. They found that the most prevalent neurotic disorder among the population as a whole was mixed anxiety and depressive disorder (88 people per 1,000).

Anxiety disorders include generalised anxiety disorder, panic disorder, phobias, obsessive compulsive disorder (OCD) and post traumatic stress disorder (NICE 2007; Clinical Evidence 2007). They can be chronic and cause considerable distress and disability; if left untreated, are costly to both the individual and society (NICE 2007). As well as emotional symptoms such as worry, disturbed sleep, irritability and poor concentration, anxiety can cause physical symptoms such as sweating, nausea, diarrhoea, dry mouth, palpitations, shortness of breath, dizziness, cold hands, muscle tension and aches, trembling and twitching (American Psychiatric Association, 2000; WHO 2007). Also, the symptoms of many physical conditions can become worse with stress, for example, irritable bowel syndrome, migraines and tension headaches, and back pain (Clinical Evidence 2007).

Treatments recognised as useful for anxiety disorders include psychological therapies such as cognitive behavioural therapy (CBT) and applied relaxation, and medication such as some antidepressants and benzodiazepines (NICE 2007). All the drug treatments have side effects, and many may cause withdrawal or discontinuation symptoms (British National Formulary 2009).

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How acupuncture can help

The best evidence for acupuncture's effectiveness (Pikington 2010; Pilkington 2007) comes in specific acute anxiety situations such as around medical operations (Mora 2007; Wang 2007; Gioia 2006) or dentistry (Karst 2007).
There is surprisingly little research with a primary focus on acupuncture for generalised anxiety disorder. Those studies published so far are mostly small and methodologically flawed, hence the reluctance of reviewers to draw conclusions (Pilkington 2010; Pilkington 2007).
There are also preliminary positive findings for treating chronic anxiety associated with post-traumatic stress disorder (Hollifield 2007), substance misuse (Chae 2008; Courbasson 2007; Grusser 2005), eating disorders (Fogarty 2010), hyperventilation (Gibson 2007), asthma (Scheewe 2008), insomnia (Nordio 2008), post-stroke ((Wu 2008), musculo-skeletal pain (Hansson 2007; He 2005) and various other conditions where anxiety has been measured as a secondary rather than primary outcome.
Although the overall evidence is patchy, it does lie promisingly in a positive direction, and, given the very low level of side effects and lack of demonstrably superior outcomes from other interventions, acupuncture could be considered as one possible therapeutic option alongside the existing repertoire.

In general, acupuncture is believed to stimulate the nervous system and cause the release of neurochemical messenger molecules. The resulting biochemical changes influence the body's homeostatic mechanisms, thus promoting physical and emotional well-being.

Research has shown that acupuncture treatment may specifically benefit anxiety disorders and symptoms of anxiety

by:

- Acting on areas of the brain known to reduce sensitivity to pain and stress, as well as promoting relaxation and deactivating the 'analytical' brain, which is responsible for anxiety and worry (Hui 2010).
- Regulating levels of neurotransmitters (or their modulators) and hormones such as serotonin, noradrenaline, dopamine, GABA, neuropeptide Y and ACTH; hence altering the brains's mood chemistry to help to combat negative affective states (Lee 2009; Samuels 2008; Zhou 2008; Yuan 2007).
- Stimulating production of endogenous opioids that affect the autonomic nervous system (Arranz 2007). Stress activates the sympathetic nervous system, while acupuncture can activate the opposing parasympathetic nervous system, which initiates the relaxation response.
- Reversing pathological changes in levels of inflammatory cytokines that are associated with anxiety (Arranz 2007)
- Reversing stress-induced changes in behaviour and biochemistry (Kim 2009).

Acupuncture can be safely combined with conventional treatments such as medication or psycho-educational therapy, possibly enhancing their beneficial effects (Courbasson 2007) and reducing unwanted side-effects (Yuan 2007).

About traditional acupuncture

Acupuncture is a tried and tested system of traditional medicine, which has been used in China and other eastern cultures for thousands of years to restore, promote and maintain good health. Its benefits are now widely acknowledged all over the world and in the past decade traditional acupuncture has begun to feature more prominently in mainstream healthcare in the UK. In conjunction with needling, the practitioner may use techniques such as moxibustion, cupping, massage or electro-acupuncture. They may also suggest dietary or lifestyle changes.

Traditional acupuncture takes a holistic approach to health and regards illness as a sign that the body is out of balance. The exact pattern and degree of imbalance is unique to each individual. The traditional acupuncturist's skill lies in identifying the precise nature of the underlying disharmony and selecting the most effective treatment. The choice of acupuncture points will be specific to each patient's needs. Traditional acupuncture can also be used as a preventive measure to strengthen the constitution and promote general well-being.

An increasing weight of evidence from Western scientific research (see overleaf) is demonstrating the effectiveness of acupuncture for treating a wide variety of conditions. From a biomedical viewpoint, acupuncture is believed to stimulate the nervous system, influencing the production of the body's communication substances - hormones and neurotransmitters. The resulting biochemical changes activate the body's self-regulating homeostatic systems, stimulating its natural healing abilities and promoting physical and emotional well-being.

About the British Acupuncture Council

With over 3000 members, the British Acupuncture Council (BAcC) is the UK's largest professional body for traditional acupuncturists. Membership of the BAcC guarantees excellence in training, safe practice and professional conduct. To find a qualified traditional acupuncturist, contact the BAcC on 020 8735 0400 or visit

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The evidence

Research	Conclusion
Reviews	
Pilkington K. Anxiety, depression and acupuncture: A review of the clinical research. Auton Neurosci. 2010 Oct 28;157(1-2):91-5.	Updated the 2007 anxiety review and located 3 further Chinese trials for generalised anxiety disorder. These found acupuncture to be similarly effective to drugs, but had small sample sizes. Overall the review concluded that the trials are too heterogeneous and of insufficiently high quality to be able draw firm conclusions. There is promising evidence for acute, short-term anxiety but the relevance of this to chronic anxiety conditions is unknown.
Samuels N et al. Acupuncture for psychiatric illness: a literature review. *Behav Med* 2008; 34: 55-64.	A literature review of acupuncture for psychiatric illness, which presents research that found acupuncture to increase central nervous system hormones, including ACTH, beta-endorphins, serotonin, and noradrenaline. It concludes that acupuncture can have positive effects on depression and anxiety.
Pilkington K et al. Acupuncture for anxiety and anxiety disorders - A systematic literature review. *Acupuncture in Medicine* 2007; 25: 1-10.	A systematic review (search to July 2004) including 12 controlled trials that evaluated the evidence for the efficacy of acupuncture in the treatment of anxiety and anxiety disorders. Ten of the trials were randomised, four focused on acupuncture in generalised anxiety disorder or anxiety neurosis, and six focused on anxiety in the perioperative period. No studies were located on the use of acupuncture specifically for panic disorder, phobias or obsessive compulsive disorder. The reviewers concluded that there are positive findings acupuncture in the treatment of generalised anxiety disorder or anxiety neurosis but that there was insufficient evidence for firm conclusions, and that there was some limited evidence in favour of ear acupuncture for perioperative anxiety.
Clinical studies	
Fogarty S, Harris D, Zaslawski C, McAinch AJ, Stojanovska L Acupuncture as an adjunct therapy in the treatment of eating disorders: a randomised cross-over pilot study. Complement Ther Med. 2010 Dec;18(6):233-40	A randomised cross-over study of acupuncture as adjunctive therapy for eating disorders. Nine women (5 with Anorexia, 4 with Bulimia) were recruited from a multi-disciplinary outpatient eating disorder centre, which provided the standard treatment in the trial. phase of the cross-over. aged (mean and SD) 23.7 (9.6) years, participated in the study. As well as improvements in the Eating Disorder Quality of Life scale there was also evidence of decreases in anxiety (both State and Trait as measured by the State Trait Anxiety Intervention)
Wu P, Liu S. Clinical observation on post-stroke anxiety neurosis treated by acupuncture. *J Tradit Chin Med 2008*; 28: 186-8.	A randomised controlled trial assessing the effect of acupuncture on post-stroke anxiety neurosis, in which 34 patients received acupuncture treatment supplemented by electroacupuncture and 33 patients had oral alprazolam. Anxiety symptoms (measured using the Hamilton Anxiety scale [HAMA]) were relieved in 82.35% of patients given acupuncture, with no difference as compared with the alprazolam group. The researchers concluded that acupuncture is a safe, effective and important method for treating post-stroke anxiety neurosis.
Yuan Q. Li J.-N. Liu B. Wu Z.-F. Jin R. Effect of Jin-3-needling therapy on plasma corticosteroid, adrenocorticotropic hormone and platelet 5-HT levels in patients with generalized anxiety disorder. Chinese Journal of Integrative Medicine.2007; 13 (4): 264-268.	A 6-week randomised controlled trial that compared acupuncture with anti-anxiety drugs and with acupuncture and drugs combined, in 86 patients with generalised anxiety disorder. Both clinical and biochemical effects were measured before and after treatment. Anxiety levels on the clinical global impression scale were similar in the three groups, though favoured acupuncture in the efficacy component. The platelet concentration of serotonin and plasma ACTH fell significantly but similarly in all groups, while corticosterone levels did not change. The reviewers concluded that acupuncture had a similar anti-anxiety effect to routine Western medicine but with less unwanted effects, and that this effect may be realised through regulating serotonin and ACTH.
Hollifield M et al. Acupuncture for posttraumatic stress disorder: a randomized controlled pilot trial. *J Nerv Ment Dis* 2007; 195: 504-13.	A randomised controlled trial assessing acupuncture for post traumatic stress disorder, in which participants were allocated to acupuncture treatment, group cognitive-behavioural therapy (CBT) or a waiting-list control group. Acupuncture resulted in an improvement in symptoms similar in magnitude to those with group CBT, and both treatment groups improved more than the waiting-list control group ($p < 0.01$). Symptom reductions were maintained at 3-month follow-up for both interventions. The researchers concluded that acupuncture may be an effective and acceptable nonexposure treatment option for post traumatic stress disorder.
Mora B et al. Auricular acupressure as a treatment for anxiety before extracorporeal shock wave lithotripsy in the elderly. *J Urol* 2007; 178: 160-4.	A randomised controlled trial of ear acupuncture for anxiety in 100 older patients with renal calculi about to undergo extracorporeal shock wave lithotripsy. Patients were randomised to ear acupuncture or a sham group and given treatment on the way to hospital. Anxiety was measured using a visual analog scale. The acupuncture group had significantly decreased anxiety scores on arrival at hospital, as well as a lower anticipation of pain scores than the sham treated group ($p=0.001$). After the lithotripsy, the ear acupuncture group also had less anxiety than the sham group ($p=0.001$). The researchers concluded that the older patients who received ear acupressure while being transported to the hospital were less anxious, anticipated less pain and were more optimistic about the treatment outcome than the sham

	group, and claimed that ear acupuncture is an effective treatment for anxiety.
Karst M et al. Auricular acupuncture for dental anxiety: A randomized controlled trial. *Anesthesia and Analgesia* 2007; 104: 295-300.	A randomised controlled trial comparing ear acupuncture with intranasal midazolam, placebo acupuncture, and no treatment for reducing dental anxiety in 67 patients having dental extractions Anxiety was assessed before the interventions, at 30 min, and after the dental extraction. Physiological variables were assessed continuously. With the no treatment group as control, the auricular acupuncture group, and the midazolam group were significantly less anxious at 30 min compared with patients in the placebo acupuncture group (P = 0.012 and <0.001, respectively). In addition, patient compliance assessed by the dentist was significantly improved if auricular acupuncture or application of intranasal midazolam had been performed (P = 0.032 and 0.049, respectively). The researchers concluded that ear acupuncture and intranasal midazolam were similarly effective for the treatment of dental anxiety.
Wang S-M et al. Acupuncture as an adjunct for sedation during lithotripsy. *J Alt Comp Med* 2007; 13: 241-6.	A randomised controlled trial comparing preprocedural ear acupuncture plus intraprocedural electroacupuncture with sham acupuncture as adjuncts for the preprocedural anxiety and pain management in 56 adult patients undergoing lithotripsy procedures. Patients in the acupuncture group were less anxious before the procedure than those in the sham group (p = 0.029), used less alfentanil (p = 0.040) and reported lower pain scores (p = 0.014). The researchers concluded that a combination of ear and body acupuncture can be used as an adjunct treatment to decrease preprocedural anxiety and intraprocedural analgesia in patients undergoing lithotripsy.
Gibson D et al. Effects of acupuncture as a treatment for hyperventilation syndrome: A pilot, randomized crossover trial. *J Alt Comp Med* 2007; 13: 39-46.	A single-blind randomised controlled trial that compared 4 weeks of acupuncture and breathing retraining in 10 patients with hyperventilation syndrome to reduce anxiety. The patients were randomised in to two groups, both of which received both treatments with a washout period of 1 week. Acupuncture reduced anxiety (using the HADA measure) more than breathing retraining (p = 0.02) and, in those who received acupuncture first, there was a reduction in anxiety levels that persisted through the washout period, suggesting that there may have been some carryover effect from this treatment. The researchers concluded that acupuncture may be beneficial in the management of hyperventilation syndrome in terms of reducing anxiety levels and symptom severity.
Courbasson CM. et al .Acupuncture treatment for women with concurrent substance use and anxiety/depression: an effective alternative therapy? Family & Community Health.2007;30(2):112-2	Auricular acupuncture was added to a 21-day outpatient structured psychoeducational treatment program for women with concurrent substance use problems, anxiety, and depression. The women (n=185) reported reduced physiological cravings for substances and felt significantly less depressed and less anxious than those in a control group (n=101). It was found that auricular acupuncture, as an adjunct therapy to a comprehensive psychoeducational treatment program for women with addictions, shows promise in being an effective, more viable treatment alternative to anxiolytics.
Gioia L et al. Sedative effect of acupuncture during cataract surgery. Prospective randomized double-blind study. *Journal of Cataract and Refractive Surgery 2006*; 32: 1951-4.	A double-blind randomised controlled trial comparing no acupuncture, true acupuncture and sham acupuncture (both given 20 minutes before surgery) for reducing anxiety in 25 patients having cataract surgery under local anaesthesia. Preoperative anxiety levels were lower with true acupuncture than with no acupuncture (P = 0.001) or sham acupuncture (P = 0.037). Postoperative anxiety levels were lower with true acupuncture than with no acupuncture (P = 0.003). The reviewers concluded that acupuncture was effective in reducing anxiety related to cataract surgery under topical anaesthesia.
Physiological studies	
Hui KK et al. Acupuncture, the limbic system, and the anticorrelated networks of the brain. Auton Neurosci. 2010 Oct 28;157(1-2):81-90.	Studies have shown that acupuncture stimulation, when associated with sensations comprising deqi, evokes deactivation of a limbic-paralimbic-neocortical network, as well as activation of somatosensory brain regions. These networks closely match the default mode network and the anti-correlated task-positive network. The effect of acupuncture on the brain is integrated at multiple levels, down to the brainstem and cerebellum and appears to go beyond either simple placebo or somatosensory needling effects. Needling needs to be done carefully, as very strong or painful sensations can attenuate or even reverse the desired effects. Their results suggest that acupuncture mobilizes the functionally anti-correlated networks of the brain to mediate its actions, and that the effect is dependent on the psychophysical response. They discuss potential clinical application to disease states including chronic pain, major depression, schizophrenia, autism, and Alzheimer's disease.
Kim H et al. The effects of acupuncture stimulation at PC6 (Neiguan) on chronic mild stress-induced biochemical and behavioral responses. Neuroscience Letters. 2009; 460 (1) (pp 56-60)	The effects of acupuncture on the behavioral responses induced by chronic mild stress (CMS) were evaluated in rats by using a maze and a sucrose intake test. C-fos expression in the brain was examined by immunohistochemistry. Acupuncture stimulation at point P6 (3 min) (but not at point SJ5) reversed stress-induced behavioural changes and significantly attenuated c-fos expression in the hypothalamus, suggesting that acupuncture has a therapeutic effect on chronic stress-related diseases such as depression and anxiety
Lee B et al. Effects of acupuncture on chronic corticosterone-induced depression-like behavior and expression of neuropeptide Y in the rats. *Neuroscience Letters* 2009; 453: 151-6.	In animal studies, acupuncture has been found to significantly reduce anxiety-like behaviour, and increase brain levels of neuropeptide Y, the brain levels of which appear to correlate with reported anxiety.

Zhou Q et al. The effect of electro-acupuncture on the imbalance between monoamine neurotransmitters and GABA in the CNS of rats with chronic emotional stress-induced anxiety. *Int J Clin Acupunct* 2008 ;17: 79-84.	A study of the regulatory effect of electro-acupuncture on the imbalance between monoamine neurotransmitters and GABA in the central nervous system of rats with chronic emotional stress-induced anxiety. The levels of serotonin, noradrenaline and dopamine fell significantly, while GABA levels were significantly higher in the rats given acupuncture ($P<0.05$, or $P<0.0$). The researchers concluded that the anti-anxiety effect of electro-acupuncture may relate to its regulation of the imbalance of neurotransmitters.
Arranz L et al. Effect of acupuncture treatment on the immune function impairment found in anxious women. American Journal of Chinese Medicine. 2007;35(1):35-51	34 women with anxiety received 10 acupuncture treatments over a year, until complete remission. 20 healthy, non-anxious women formed the controls. Impaired immune functions in anxious women (chemotaxis, phagocytosis, lymphoproliferation and NK activity) were significantly improved by acupuncture, coming to the values of the healthy controls. The effects peaked 72 hours after a session and lasted up to a month after the course finished. In an earlier paper (Arranz et al, 2007) the authors had reported that acupuncture reversed the lowering of IL-2 levels and elevating of TNF-alpha and cortisol seen in anxious women. Therefore, these may be some of the parameters by which acupuncture could exert its therapeutic action on anxiety.

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