

***** ACUPUNCTURE/MASSAGE – Cost Effectiveness Research**

1: Am J Epidemiol. 2009 Jan 6.

Cost-Effectiveness of Acupuncture in Women and Men With Allergic Rhinitis: A Randomized Controlled Study in Usual Care.

Witt CM, Reinhold T, Jena S, Brinkhaus B, Willich SN.

To assess quality of life and cost-effectiveness of additional acupuncture treatment for allergic rhinitis, patients were randomly allocated to 2 groups; both received usual care, but one group received an additional 10 acupuncture sessions. Quality of life (according to the SF-36 Health Survey), and direct and indirect costs, were assessed at baseline and after 3 months, and the incremental cost-effectiveness ratio of acupuncture treatment was calculated. This German study (December 2000-June 2004) involved 981 patients (64% women, mean age 40.9 years (standard deviation, 11.2); 36% men, mean age 43.2 years (standard deviation, 13.0)). At 3 months, quality of life was higher in the acupuncture group than in the control group (mean Physical Component Score 51.99 (standard error (SE), 0.33) vs. 48.25 (SE, 0.33), $P < 0.001$; mean Mental Component Score 48.55 (SE, 0.42) vs. 45.35 (SE, 0.42), respectively, $P < 0.001$). Overall costs in the acupuncture group were significantly higher than those in the control group (Euro (euro; euro1 = US \$1.27)763, 95% confidence interval: 683, 844 vs. euro332, 95% confidence interval: 252, 412; mean difference euro432, 95% confidence interval: 318, 545). The incremental cost-effectiveness ratio was euro17,377 per quality-adjusted life year (women, euro10,155; men, euro44,871) and was robust in sensitivity analyses. Acupuncture, supplementary to routine care, was beneficial and, according to international benchmarks, cost-effective. However, because of the study design, it remains unclear whether the effects are acupuncture specific.

PMID: 19126587 [PubMed - as supplied by publisher]

2: Cephalalgia. 2008 Apr; 28(4): 334-45.

Cost-effectiveness of acupuncture treatment in patients with

headache.

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The aim was to assess costs and cost-effectiveness of additional acupuncture treatment in patients with headache compared with patients receiving routine care alone. A randomized, controlled trial was conducted, including patients (> or =18 years old) with primary headache (more than 12 months, at least two headaches/month). Outcome parameters were quality of life (Short Form 36), direct and indirect costs differences during the 3-month study period and the incremental cost-effectiveness ratio (ICER) of acupuncture treatment. A total of 3182 patients (1613 acupuncture; 1569 controls) with headache were included (77.4% women, mean age and standard deviation 42.6 +/- 12.3; 22.6% men, 47.2 +/- 13.4). Over 3 months costs were higher in the acupuncture group compared with the control [euro857.47; 95% confidence interval 790.86, 924.07, vs. euro527.34 (459.81, 594.88), $P < 0.001$, mean difference: euro330.12 (235.27, 424.98)]. This cost increase was primarily due to costs of acupuncture [euro365.64 (362.19, 369.10)]. The ICER was euro11 657 per QALY gained. According to international cost-effectiveness threshold values, acupuncture is a cost-effective treatment in patients with primary headache.

Publication Types:

- Multicenter Study
- Randomized Controlled Trial
- Research Support, Non-U.S. Gov't

PMID: 18315686 [PubMed - indexed for MEDLINE]

3: Am J Obstet Gynecol. 2008 Feb;198(2):166.e1-8.

Acupuncture in patients with dysmenorrhea: a randomized study on clinical effectiveness and cost-effectiveness in usual care.

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OBJECTIVE: To investigate the clinical effectiveness and cost-effectiveness of acupuncture in patients with dysmenorrhea. **STUDY DESIGN:** In a randomized controlled trial plus non-randomized cohort, patients with dysmenorrhea were randomized to acupuncture (15 sessions over three months) or to a control group (no acupuncture). Patients who declined randomization received acupuncture treatment. All subjects were allowed to receive usual medical care. **RESULTS:** Of 649 women (mean age 36.1 +/- 7.1 years), 201 were randomized. After three months, the average pain intensity (NRS 0-10) was lower in the acupuncture compared to the control group: 3.1 (95% CI 2.7; 3.6) vs. 5.4 (4.9; 5.9), difference -2.3 (-2.9; -1.6); $P < .001$. The acupuncture group had better quality of life and higher costs. (overall ICER 3,011 euros per QALY). **CONCLUSION:** Additional acupuncture in patients with dysmenorrhea was associated with improvements in pain and quality of life as compared to treatment with usual care alone and was cost-effective within usual thresholds.

Publication Types:

- Randomized Controlled Trial
- Research Support, Non-U.S. Gov't

PMID: 18226614 [PubMed - indexed for MEDLINE]

4: Eur J Health Econ. 2008 Aug;9(3):209-19. Epub 2007 Jul 19.

Quality of life and cost-effectiveness of acupuncture treatment in patients with osteoarthritis pain.

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To assess quality of life (QoL), costs, and cost-effectiveness of acupuncture treatment plus routine care versus routine care alone in osteoarthritis patients, a randomised, controlled trial was conducted in 255 general practices in Germany. Four hundred and eighty-nine patients with chronic pain due to osteoarthritis of the knee or hip were included to evaluate QoL and costs at baseline and after 3 months

using health insurance funds data and standardized questionnaires. Patients receiving acupuncture had an improved QoL associated with significantly higher costs over the 3 months treatment period compared to routine care alone (mean cost-difference: 469.50 euros [95%CI 135.80-803.19 euros]). This increase in costs was primarily due to the costs of acupuncture. The overall ICER was 17,845 euros per QALY gained. The degree of cost-effectiveness was influenced by gender, with female patients achieving a better cost-effectiveness ratio than men. In conclusion, acupuncture was a cost-effective treatment strategy in patients with chronic osteoarthritis pain.

Publication Types:

- Clinical Trial
- Multicenter Study
- Randomized Controlled Trial
- Research Support, Non-U.S. Gov't

PMID: 17638034 [PubMed - indexed for MEDLINE]

5: BMJ. 2006 Sep 23;333(7569):626. Epub 2006 Sep 15.

Comment in:

- BMJ. 2006 Sep 23;333(7569):611-2.

A randomised controlled trial of acupuncture care for persistent low back pain: cost effectiveness analysis.

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OBJECTIVE: To evaluate the cost effectiveness of acupuncture in the management of persistent non-specific low back pain. **DESIGN:** Cost effectiveness analysis of a randomised controlled trial. **SETTING:** Three private acupuncture clinics and 18 general practices in York, England. **PARTICIPANTS:** 241 adults aged 18-65 with non-specific low back pain of 4-52 weeks' duration. **INTERVENTIONS:** Ten individualised acupuncture treatments over three months from acupuncturists trained in traditional Chinese medicine (n = 160) or usual care only (n = 81). **MAIN OUTCOME MEASURE:** Incremental cost per quality adjusted life year (QALY) gained over two years. **RESULTS:** Total costs to the United Kingdom's health service during the two year study

period were higher on average for the acupuncture group (460 pounds sterling; 673 euros; 859 dollars) than for the usual care group (345 pounds sterling) because of the costs associated with initial treatment. The mean incremental health gain from acupuncture at 12 months was 0.012 QALYs (95% confidence interval -0.033 to 0.058) and at 24 months was 0.027 QALYs (-0.056 to 0.110), leading to a base case estimate of 4241 pounds sterling per QALY gained. This result was robust to sensitivity analysis. The probabilistic sensitivity analysis showed acupuncture to have a more than 90% chance of being cost effective at a pound20 000 cost per QALY threshold. CONCLUSION: A short course of traditional acupuncture for persistent non-specific low back pain in primary care confers a modest health benefit for minor extra cost to the NHS compared with usual care. Acupuncture care for low back pain seems to be cost effective in the longer term. TRIAL REGISTRATION: ISRCTN80764175 [controlled-trials.com].

Publication Types:

- Multicenter Study
- Randomized Controlled Trial
- Research Support, Non-U.S. Gov't

PMID: 16980315 [PubMed - indexed for MEDLINE]

PMCID: PMC1570795

6: Pain. 2006 Nov;125(1-2):107-13. Epub 2006 Jul 13.

Cost-effectiveness of acupuncture treatment in patients with chronic neck pain.

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Acupuncture is increasingly used in patients with chronic pain, but there is a lack of evidence on the cost-benefit relationship of this treatment strategy. The objective of this study was to assess costs and cost-effectiveness of additional acupuncture treatment in patients with chronic neck pain compared to patients receiving routine care alone. A randomized controlled trial including patients (18 years of age) with chronic neck pain (>6 months) was carried out. We assessed the resource use and health related quality of life (SF-36) at baseline and

after 3 months using complete social health insurance funds and standardized questionnaires, respectively. The main outcome parameters were direct and indirect cost differences during the 3 months study period and the incremental cost-effectiveness ratio (ICER) of acupuncture treatment. A total of 3,451 patients (1,753 acupuncture-group, 1,698 control-group) were randomized (31% men, age 53.5+/-12.9 years; 69% women, 49.2+/-12.7 years). Acupuncture treatment was associated with significantly higher costs over the 3 months study duration compared to routine care (925.53+/-1,551.06 euros vs. 648.06+/-1,459.13 euros; mean difference: 277.47 euros [95% CI: 175.71 euros-379.23 euros]). This cost increase was mainly due to costs of acupuncture (361.76+/-90.16 euros). The ICER was 12,469 euros per QALY gained and proved robust in additional sensitivity analyses. Since health insurance databases were used, private medical expenses such as over the counter medication were not included. Beyond the 3 months study duration, acupuncture might be associated with further health economic effects. According to international cost-effectiveness threshold values, acupuncture is a cost-effective treatment strategy in patients with chronic neck pain.

Publication Types:

- Multicenter Study
- Randomized Controlled Trial
- Research Support, Non-U.S. Gov't

PMID: 16842918 [PubMed - indexed for MEDLINE]

7: BMJ. 2004 Mar 27;328(7442):747. Epub 2004 Mar 15.

Cost effectiveness analysis of a randomised trial of acupuncture for chronic headache in primary care.

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OBJECTIVE: To evaluate the cost effectiveness of acupuncture in the management of chronic headache. **DESIGN:** Cost effectiveness analysis of a randomised controlled trial. **SETTING:** General practices in England and Wales. **PARTICIPANTS:** 401 patients with chronic headache, predominantly migraine. **Interventions** Patients were

randomly allocated to receive up to 12 acupuncture treatments over three months from appropriately trained physiotherapists, or to usual care alone. MAIN OUTCOME MEASURE: Incremental cost per quality adjusted life year (QALY) gained. RESULTS: Total costs during the one year period of the study were on average higher for the acupuncture group (403 pounds sterling; 768 dollars; 598 euros) than for controls (217 pounds sterling) because of the acupuncture practitioners' costs. The mean health gain from acupuncture during the one year of the trial was 0.021 quality adjusted life years (QALYs), leading to a base case estimate of 9180 pounds sterling per QALY gained. This result was robust to sensitivity analysis. Cost per QALY dropped substantially when the analysis incorporated likely QALY differences for the years after the trial. CONCLUSIONS: Acupuncture for chronic headache improves health related quality of life at a small additional cost; it is relatively cost effective compared with a number of other interventions provided by the NHS.

Publication Types:

- Clinical Trial
- Multicenter Study
- Randomized Controlled Trial
- Research Support, Non-U.S. Gov't

PMID: 15023830 [PubMed - indexed for MEDLINE]

PMCID: PMC381327

8: Ann Intern Med. 2003 Jun 3;138(11):898-906.

A review of the evidence for the effectiveness, safety, and cost of acupuncture, massage therapy, and spinal manipulation for back pain.

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BACKGROUND: Few treatments for back pain are supported by strong scientific evidence. Conventional treatments, although widely used, have had limited success. Dissatisfied patients have, therefore, turned to complementary and alternative medical therapies and providers for care for back pain. PURPOSE: To provide a rigorous and balanced summary of the best available evidence about the effectiveness, safety, and costs of the most popular complementary and alternative

medical therapies used to treat back pain. DATA SOURCES: MEDLINE, EMBASE, and the Cochrane Controlled Trials Register. STUDY SELECTION: Systematic reviews of randomized, controlled trials (RCTs) that were published since 1995 and that evaluated acupuncture, massage therapy, or spinal manipulation for nonspecific back pain and RCTs published since the reviews were conducted. DATA EXTRACTION: Two authors independently extracted data from the reviews (including number of RCTs, type of back pain, quality assessment, and conclusions) and original articles (including type of pain, comparison treatments, sample size, outcomes, follow-up intervals, loss to follow-up, and authors' conclusions). DATA SYNTHESIS: Because the quality of the 20 RCTs that evaluated acupuncture was generally poor, the effectiveness of acupuncture for treating acute or chronic back pain is unclear. The three RCTs that evaluated massage reported that this therapy is effective for subacute and chronic back pain. A meta-regression analysis of the results of 26 RCTs evaluating spinal manipulation for acute and chronic back pain reported that spinal manipulation was superior to sham therapies and therapies judged to have no evidence of a benefit but was not superior to effective conventional treatments. CONCLUSIONS: Initial studies have found massage to be effective for persistent back pain. Spinal manipulation has small clinical benefits that are equivalent to those of other commonly used therapies. The effectiveness of acupuncture remains unclear. All of these treatments seem to be relatively safe. Preliminary evidence suggests that massage, but not acupuncture or spinal manipulation, may reduce the costs of care after an initial course of therapy.

Publication Types:

- Research Support, U.S. Gov't, P.H.S.
- Review

PMID: 12779300 [PubMed - indexed for MEDLINE]

9: Altern Ther Health Med. 2001 Jul-Aug; 7(4):66-70.

Utilization, patient satisfaction, and cost implications of acupuncture, massage, and naturopathic medicine offered as covered health benefits: a comparison of two delivery models.

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CONTEXT: Increasing numbers of health plans in the United States offer complementary and alternative medicine (CAM) benefits despite limited information. OBJECTIVE: To determine the utilization rates and costs associated with providing CAM services in 2 benefit designs, and to determine the satisfaction of patients in both plans. DESIGN: Two health plans were identified: a traditional indemnity plan offered through a defined preferred provider organization (PPO) of CAM providers and a health maintenance organization (HMO). Costs and utilization rates for CAM services were compared during a 1-year period of coverage beginning November 1, 1996. SETTING AND PARTICIPANTS: 1091 patients in both plans who used CAM services during the month of May 1997 in Washington state. RESULTS: Only 1% of all patients covered for CAM accessed these services during the study period. A significantly higher percentage of patients in the PPO plan (1.2%) used CAM services compared to the HMO plan (0.6%) ($P < .001$). However, the average total cost of annual CAM services (plan benefit + user contribution) was similar (\$347 in the HMO and \$376 in the PPO), and the price per member per month was nearly identical (\$0.20 in the HMO and \$0.19 in the PPO). Most users perceived these services as helpful. CONCLUSIONS: Utilization of CAM services and per member per month costs were lower than expected given the high interest in CAM services reported in consumer surveys. The high level of satisfaction with CAM services and self-reported decrease in the use of pain medications suggests the need for prospective studies examining the effect of CAM treatments.

Publication Types:

- Comparative Study

PMID: 11452569 [PubMed - indexed for MEDLINE]

10: J Altern Complement Med. 1999 Oct;5(5):405-13.

Addition of acupuncture and self-care education in the treatment of patients with severe angina pectoris may be cost beneficial: an open, prospective study.

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OBJECTIVES: A cost-benefit analysis of acupuncture and self-care

education in the treatment of patients with angina pectoris. DESIGN: An open prospective study on an unselected group of patients. For comparison of risk three control groups were used: (1) published data concerning medical and invasive treatments; (2) an age- and sex matched group obtained from a randomly selected Danish population of 14,000 people; and (3) the 211 patients in this group with angina pectoris symptoms. SETTING: The treatment was carried out on an outpatient basis in a private research clinic. SUBJECTS: 105 patients with angina pectoris, 73 candidates for invasive treatment, and 32 for whom this was rejected. INTERVENTIONS: Acupuncture and self-care education was added to the pharmaceutical treatment. OUTCOME MEASURES: Healthcare expenses, a satisfactory medical status defined as New York Heart Association (NYHA) classification 0-I and/or no use of antianginal medication, and risk measured as cardiac death or myocardial infarction. RESULTS: The estimated cost savings during 5 years were \$32,000 (U.S.) per patient, mainly due to a 90% reduction in hospitalization and 70% reduction in needed surgery. Compared to 8% before treatment, 53% of the patients achieved a life without limitations (NYHA 0-I) 1 year after treatment, as did 69% after 5 years. No increased risk for myocardial infarction or cardiac death was observed. CONCLUSIONS: The addition of acupuncture and self-care education was found to be cost beneficial in patients with advanced angina pectoris. The results invite further testing in a randomized controlled trial.

Publication Types:

- Clinical Trial
- Comparative Study
- Randomized Controlled Trial
- Research Support, Non-U.S. Gov't

PMID: 10537240 [PubMed - indexed for MEDLINE]

11: Acupunct Electrother Res. 1996 Jul-Dec;21(3-4):187-97.

Cost-benefit of combined use of acupuncture, Shiatsu and lifestyle adjustment for treatment of patients with severe angina pectoris.

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Sixty-nine patients with severe angina pectoris were treated with acupuncture, Shiatsu and lifestyle adjustments, and were followed for 2 years. Forty-nine patients were candidates for coronary-artery bypass grafting (CABG), whereas bypass grafting was rejected in the remaining 20 patients. We compared our endpoint findings with those of a large prospective, randomized trial comparing CABG with percutaneous transluminal coronary angioplasty (PTCA). The incidence of death and myocardial infarction was 21% among the patients undergoing CABG, 15% among the patients undergoing PTCA and 7% among our patients. No significant difference was found concerning pain relief between the three groups. Invasive treatment was postponed in 61% of our patients due to clinical improvement, and the annual number of in-hospital days was reduced by 90%, bringing about an estimated economic saving of 12,000 US \$ for each of our patients. Despite the fact that the men in the present study, had significantly less positive expectations towards the outcome of the treatment, when compared to the women, there was no significant difference concerning the effect. The study suggests that the combined treatment with acupuncture, Shiatsu and lifestyle adjustment may be highly cost effective for patients with advanced angina products.

Publication Types:

- Research Support, Non-U.S. Gov't

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