

Collected Scientific Research Relating to the Use of Osteopathy with Headaches and migraine

Important:

1) Osteopathy involves helping people's own self-healing abilities to work better, rather than focussing primarily on particular conditions.

2) Each person is different, and osteopathy treats them differently.

Therefore people respond to osteopathic treatment in different ways. Treatments that work for one person cannot be guaranteed to work for another person in the same way. The fact that there is scientific research supporting a treatment in a group of people does not mean that it will always work in the same way (which is probably true of all research).

A number of things make research into osteopathy challenging. These include the two aspects of osteopathy mentioned above, and also the lack of major commercial interests to provide funding in expectation of financial returns. At the same time, there is an emerging body of research demonstrating the usefulness of osteopathic treatment.

More research is being done all of the time. I am not aware of any research which shows that osteopathic treatment, delivered by a qualified osteopath, is ineffective in relation to this area. If you are aware of any studies that show that, please bring them to my attention.

Please note: there is room for debate about the classifications used for these studies. Please let John Smartt know if you believe that any of these classifications are incorrect.

These studies are from peer-reviewed journals

Number
of studies:
24

Clinically and statistically significant results

Number
of studies:
23

Systematic reviews

Number of studies: 2

Bryans R, Descarreaux M, Duranleau M, Marcoux H, Potter B, Ruegg R, Shaw L, Watkin R, White E 2011 **Evidence-based guidelines for the chiropractic treatment of adults with headache.** *J Manipulative Physiol Ther Jun;34(5):274-89* <https://www.ncbi.nlm.nih.gov/pubmed/21640251>

"OBJECTIVE:

The purpose of this manuscript is to provide evidence-informed practice recommendations for the chiropractic treatment of headache in adults.

METHODS:

Systematic literature searches of controlled clinical trials published through August 2009 relevant to chiropractic practice were conducted using the databases MEDLINE; EMBASE; Allied and Complementary Medicine; the Cumulative Index to Nursing and Allied Health Literature; Manual, Alternative, and Natural Therapy Index System; Alt HealthWatch; Index to Chiropractic Literature; and the Cochrane Library. The number, quality, and consistency of findings were considered to assign an overall strength of evidence (strong, moderate, limited, or conflicting) and to formulate practice recommendations.

RESULTS:

Twenty-one articles met inclusion criteria and were used to develop recommendations. Evidence did not exceed a moderate level. For migraine, spinal manipulation and multimodal multidisciplinary interventions including massage are recommended for management of patients with episodic or chronic migraine. For tension-type headache, spinal manipulation cannot be recommended for the management of episodic tension-type headache. A recommendation cannot be made for or against the use of spinal manipulation for patients with chronic tension-type headache. Low-load craniocervical mobilization may be beneficial for longer term management of patients with episodic or chronic tension-type headaches. For cervicogenic headache, spinal manipulation is recommended. Joint mobilization or deep neck flexor exercises may improve symptoms. There is no consistently additive benefit of combining joint mobilization and deep neck flexor exercises for patients with cervicogenic headache. Adverse events were not addressed in most clinical trials; and if they were, there were none or they were minor.

CONCLUSIONS:

Evidence suggests that chiropractic care, including spinal manipulation, improves migraine and cervicogenic headaches. The type, frequency, dosage, and duration of treatment(s) should be based on guideline recommendations, clinical experience, and findings. Evidence for the use of spinal manipulation as an isolated intervention for patients with tension-type headache remains equivocal."

Bronfort G, Assendelft WJ, Evans R, Haas M, Bouter L 2001 **Efficacy of spinal manipulation for chronic headache: a systematic review.** *Journal of Manipulative and Physiological Therapeutics Sep;24(7):457-66* <http://www.ncbi.nlm.nih.gov/pubmed/11562654>

"Randomized clinical trials on chronic headache (tension, migraine and cervicogenic) were included in the review if they compared SMT [spinal manipulative therapy] with other interventions or placebo. The trials had to have at least 1 patient-rated outcome measure such as pain severity, frequency, duration, improvement, use of analgesics, disability, or quality of life."

"Nine trials involving 683 patients with chronic headache were included. The methodological quality (validity) scores ranged from 21 to 87 (100-point scale)."

"SMT appears to have a better effect than massage for cervicogenic headache. It also appears that SMT has an effect comparable to commonly used first-line prophylactic prescription medications for tension-type headache and migraine headache."

Other reviews

Number of studies: 1

Grimshaw DN 2001 **Cervicogenic headache: manual and manipulative therapies**. *Curr Pain Headache Rep* Aug;5(4):369-75 <http://www.ncbi.nlm.nih.gov/pubmed/11403741>

"This article reviews current literature on the role of manual medicine in the diagnosis and treatment of cervicogenic headache. Manual diagnostic procedures and treatment procedures are described for the cervical spine. Emphasis is placed on accurate diagnosis using a biomechanical model and precise localization of forces. Muscle energy technique is suggested as a safe and effective treatment when somatic dysfunction of the cervical spine is found in association with the diagnostic criteria for cervicogenic headache. Lastly, a suggested clinical approach to this problem from a manual medicine perspective is given."

Randomised controlled trials

Number of studies: 14

Dunning JR, Butts R, Mourad F, Young I, Fernandez-de-Las Peñas C, Hagins M, Stanislawski T, Donley J, Buck D, Hooks TR, Cleland JA 2016 **Upper cervical and upper thoracic manipulation versus mobilization and exercise in patients with cervicogenic headache: a multi-center randomized clinical trial**. *BMC Musculoskelet Disord* Feb 6;17(1):64 <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4744384/>

"One hundred and ten participants (n = 110) with CH were randomized to receive both cervical and thoracic manipulation (n = 58) or mobilization and exercise (n = 52). The primary outcome was headache intensity as measured by the Numeric Pain Rating Scale (NPRS). Secondary outcomes included headache frequency, headache duration, disability as measured by the Neck Disability Index (NDI), medication intake, and the Global Rating of Change (GRC). The treatment period was 4 weeks with follow-up assessment at 1 week, 4 weeks, and 3 months after initial treatment session."

"The 2X4 ANOVA demonstrated that individuals with CH who received both cervical and thoracic manipulation experienced significantly greater reductions in headache intensity (p < 0.001) and disability (p < 0.001) than those who received mobilization and exercise at a 3-month follow-up. Individuals in the upper cervical and upper thoracic manipulation group also experienced less frequent headaches and shorter duration of headaches at each follow-up period (p < 0.001 for all). Additionally, patient perceived improvement was significantly greater at 1 and 4-week follow-up periods in favor of the manipulation group (p < 0.001)."

"Six to eight sessions of upper cervical and upper thoracic manipulation were shown to be more effective than mobilization and exercise in patients with CH, and the effects were maintained at 3 months."

Rolle G, Tremolizzo L, Somalvico F, Ferrarese C, Bressan LC 2014 **Pilot trial of osteopathic manipulative therapy for patients with frequent episodic tension-type headache**. *J Am Osteopath Assoc* Sep;114(9):678-85 <http://www.ncbi.nlm.nih.gov/pubmed/25170037>

"Briefly, the OMTh techniques were focused on correcting osteopathic dysfunctions found during the initial evaluation; structural (including myofascial release and high-velocity, low-amplitude), visceral, and craniosacral techniques were performed as appropriate."

"The OMTh [osteopathic manipulative therapy] group had a significant reduction in headache frequency over time that persisted 1 month (approximate reduction, 40%; $P < .001$) and 3 months (approximate reduction, 50%; $P < .001$) after the end of treatment. Moreover, there was an absolute difference between the 2 treatment groups at the end of the study, with a 33% lower frequency of headache in the OMTh group ($P < .001$)."

"This feasibility study demonstrated the efficacy of OMTh in the management of frequent episodic TTH [tension type headaches], compared with sham therapy in a control group. Osteopathic manipulative therapy may be preferred over other treatment modalities and may benefit patients who have adverse effects to medications or who have difficulty complying with pharmacologic regimens."

Espí-López GV, Gómez-Conesa A, Gómez AA, Martínez JB, Pascual-Vaca ÁO, Blanco CR 2014 **Treatment of tension-type headache with articular and suboccipital soft tissue therapy: A double-blind, randomized, placebo-controlled clinical trial** Journal of Bodywork and Movement Therapies October Volume 18, Issue 4, Pages 576–585 [http://www.bodyworkmovementtherapies.com/article/S1360-8592\(14\)00002-3/abstract](http://www.bodyworkmovementtherapies.com/article/S1360-8592(14)00002-3/abstract)

"This study researches the effectiveness of two manual therapy treatments focused on the suboccipital region for tension-type headache.

A randomized double-blind clinical trial was conducted over a period of four weeks with a follow-up at one month. Eighty-four patients with a mean age of 39.7 years (SD 11.4) with tension-type headache were assigned to 4 groups which included the following manual therapy treatment: suboccipital soft tissue inhibition; occiput-atlas-axis global manipulation; combination of both techniques; and a control group.

The primary assessment consisted of collecting socio-demographic data and headache characteristics in a one-month base period, data such as age, gender, severity of pain, intensity and frequency of headache, among other. Outcome secondary assessment were: impact of headache, disability, ranges of motion of the craniocervical junction, frequency and intensity of headache, and pericranial tenderness.

In the month prior to the study, average pain intensity, was rated at 6.49 (SD 1.69), and 66.7% subjects suffered headaches of moderate intensity. After 8 weeks, statistically significant improvements were noted. OAA manipulative treatment and combined therapy treatments proved to be more effective than suboccipital soft tissue inhibition for tension-type headache.

The treatment with suboccipital soft tissue inhibition, despite producing less significant results, also has positive effects on different aspects of headache."

Cerritelli F, Caprari E, Vincenzo MD, Ginevri LR, Messi G, Renzetti C, Cozzolino V, Frattesi C, Barlafante G, Foschi N, 2013 **Is osteopathic manipulative treatment effective in migraine?** International Journal of Osteopathic Medicine March Volume 16, Issue 1, Pages e1–e2 [http://www.journalofosteopathicmedicine.com/article/S1746-0689\(13\)00002-3/abstract](http://www.journalofosteopathicmedicine.com/article/S1746-0689(13)00002-3/abstract)

"Tukey post-hoc comparisons of the three groups indicate that sham group was not statistically different from drug group ($M = -4.25$; 95% CI: $-11.80, 3.30$; $p = 0.36$), whilst OMT [osteopathic manipulative therapy] group was statistically different from drug group ($M = -11.70$; 95% CI: $-19.72, -3.69$; $p = 0.003$); and from sham group ($M = -7.45$; 95% CI: $-14.30, -0.61$; $p = 0.03$)."

"The present study showed a significant difference between OMT group compared to drug and sham therapy groups, suggesting that OMT can be considered a valid procedure for the management of patients with migraine."

Arnadottir TS, Sigurdardottir AK 2013 **Is craniosacral therapy effective for migraine? Tested with HIT-6 Questionnaire.** Complementary Therapies in Clinical Practice Feb;19(1):11-4 [http://www.journalofosteopathicmedicine.com/article/S1746-0689\(13\)00002-3/abstract](http://www.journalofosteopathicmedicine.com/article/S1746-0689(13)00002-3/abstract)

"Immediately after treatments and one month afterwards there was significant lowering in HIT-6 scorings compared with prior to treatment. There was also significant difference in HIT-6 scorings between Times 1 and 4 ($p = 0.004$). The effect size was 0.43-0.55."

"The results indicate that craniosacral treatment can alleviate migraine symptoms."

Voigt K, Liebnitzky J, Burmeister U, Sihvonen-Riemenschneider H, Beck M, Voigt R, Bergmann A, 2011 **Efficacy of Osteopathic Manipulative Treatment of Female Patients with Migraine: Results of a Randomized Controlled Trial** *The Journal of Alternative and Complementary Medicine* March 17(3): 225-230 <http://online.liebertpub.com/doi/abs/10.1089/acm.2009.0673>

"The intervention group received five 50-minute osteopathic manipulative treatments (OMT) over a 10-week period. The control group did not receive OMT, sham treatment, or physical therapy. Patients of this group only filled the questionnaires. Both groups continued with previously prescribed medication."

"The total MIDAS [migraine disability assessment] score, pain intensity, and disturbance in occupation due to migraine as well as number of days of disablements were also significantly reduced. The control group showed insignificant differences in these areas."

"This study affirms the effects of OMT [osteopathic manipulative therapy] on migraine headache in regard to decreased pain intensity and the reduction of number of days with migraine as well as working disability, and partly on improvement of HRQoL [health related quality of life]."

Ajimsha MS 2011 **Effectiveness of direct vs indirect technique myofascial release in the management of tension-type headache.** *Journal of Bodywork and Movement Therapies* Oct;15 (4):431-5 <http://www.ncbi.nlm.nih.gov/pubmed/21943616>

BACKGROUND:

Tension-type headache (TTH) is essentially defined as bilateral headache of a pressing or tightening quality without a known medical cause. Myofascial release (MFR) is currently being applied for patients with TTH but its efficacy has not been evaluated formally.

OBJECTIVE:

To investigate whether direct technique myofascial release (DT-MFR) reduces the frequency of headache more effectively than the indirect technique myofascial release (IDT-MFR) in comparison to a Control Group receiving slow soft stroking.

DESIGN:

Randomized, controlled, single blinded trial.

SETTING:

The clinical wing of Myofascial Therapy and Research Foundation, Kerala, India.

PARTICIPANTS:

63 patients with episodic or chronic tension-type headache.

INTERVENTIONS:

DT-MFR, IDT-MFR or Control. The techniques were administered by certified myofascial release practitioners and consisted of 24 sessions per patient over 12 weeks.

MAIN OUTCOME MEASURE:

Difference in numbers of days with headache between Weeks 1-4 (i.e. 4 weeks prior to start of Intervention) and Weeks 17-20, following 12 weeks of Intervention between Weeks 5-16 as recorded by participants in headache diaries.

RESULTS:

The number of days with headache per 4 weeks decreased by 7.1 (2.6) [mean (SD)] days in the DT-MFR group compared with 6.7 (1.8) days in the IDT-MFR group and 1.6 (0.5) days in the control group, ($P < 0.001$). Patients in the DT-MFR Group, IDT-MFR Group and Control Group reported a 59.2%, 54% and 13.3% reduction in their headache frequency in Weeks 17-20 compared to that in Weeks 1-4.

CONCLUSIONS:

This study provides evidence that Direct Technique or Indirect Technique Myofascial Release is more effective than the Control Intervention for tension headache."

Aarts M, Sterenberg A, Wijnen U 2009 **Migraine in children and adolescents. A randomized control trial** *Akademie für Osteopathie (AFO), Deutschland* October, 01 <http://www.osteopathic->

"Objective:

Evaluation of the effectiveness of osteopathic treatment in children and adolescents suffering from migraine.

Study design:

Randomized controlled trial including a Follow-up.

Setting:

The study was performed by three at the "College Sutherland" qualified osteopaths in their private practices.

Patients:

28 children and adolescents suffering from migraine aged between 8 and 15 years (average age 11.6 ± 2.2 years) participate in the study. By means of randomization 13 children were allocated to the intervention group and 15 to the control group. In each group one dropout was recorded.

Intervention:

The children of the intervention group received four osteopathic treatments in three-weeks intervals. Six month after treatment initiation a Follow-up was conducted. In both groups continuing medication intake was admitted, completion date of migraine-prophylactic drugs had to be 12 month backdated. The children of the control group stayed untreated otherwise.

Outcome parameters:

Frequency, duration and intensity of migraine seizures as primary outcome parameters were recorded by keeping a migraine-diary extended by a visual analogue scale. Secondary parameters were localization of headache/migraine, other discomforts previous or during the migraine, nausea/emesis, vision disorders, sensitivity to light and/or noise and medication intake collected by the migraine-diary and via specific questionnaires.

Results:

During the 12-week study period the number of migraine-days in the control group was more than twice as much compared to the intervention group (26 days vs. 11 days, $p=0.07$). Over the last acquisition period of the study a statistically significant difference could be detected with 1.5 migraine-days in the intervention group compared to 7.5 in the control group ($p=0.01$). Duration of migraine seizures decreased in the intervention group from 0.8 hours to 0.3 hours and both maximal and average intensity reduced. Long-term results after six month showed an extensive stability of the improvements. The results of the secondary parameters present a lower medication intake in the intervention group (3 days with medication use vs. 11 days in the control group). With reference to the other parameters no conspicuous differences between groups could be observed.

Conclusion:

Longo C, Rizzo R, Inzitari MT, Scumaci G, Caroleo S, Iocco M. 2006 **Chronic tension-type headache non conventional therapy with manual lymphatic drainage**. *Recenti Prog Med* Sep;97(9):462-5. <http://www.ncbi.nlm.nih.gov/pubmed/17017296>

"The aim of the present study was to evaluate the outcomes of patients undergoing manual lymphatic drainage treatment for CTTH [chronic tension-type headache]. The findings demonstrate that headache patients reported a reduction in pain frequency and intensity."

Anderson RE, Seniscal C 2006 **A comparison of selected osteopathic treatment and relaxation for tension-type headaches**. *Headache* Sep;46(8):1273-80 <http://www.ncbi.nlm.nih.gov/pubmed/16942472>

"The objective of this study was to compare the effects of osteopathic treatment and progressive muscular relaxation (PMR) exercises on patients with tension-type headache (TTH).

BACKGROUND:

Relaxation is generally accepted as a treatment for TTH. Osteopathy is considered by some practitioners to be useful for headache management but there is limited scientific evidence regarding the effectiveness. This study compares relaxation and relaxation plus selected

osteopathic techniques in the treatment of people with TTH.

DESIGN:

This was a single-blind, randomized, clinical study using an experimental design. Twenty-nine patients with TTH according to the International Headache Classification Subcommittee, 2004, were recruited for this study and randomly placed in either a control or experimental group. Both groups practiced PMR exercises at home while the experimental group also received 3 osteopathic treatments.

METHOD:

All participants recorded headache frequency and intensity in a headache diary (HD) for 2 weeks pretreatment, and continued recording during the treatment period until reassessment for a total of 6 to 7 weeks. All tests of significance were set at $P \leq .05$.

RESULTS:

Twenty-six people completed the study. Results indicated that the number of Headache Free Days Per Week was significantly improved ($P = .016$) in the experimental group. Two other measures, the Headache Degree of Improvement ($P = .075$) and the HD rating ($P = .059$), which combine headache frequency and intensity, did not meet our criteria for statistical significance but both scores are $< .10$ indicating a trend toward improvement in the experimental group that is clinically significant. The HD Rating also showed that the experimental group improved 57.5%, while the control group improved 15.6%. The intensity of headache did not show a significant improvement ($P = .264$).

CONCLUSION:

The people in this study who did relaxation exercises and received 3 osteopathy treatments had significantly more days per week without headache than those who did only relaxation exercises."

Hanten WP, Olson SL, Hodson JL, Imler VL, Knab VM, Magee JL 1999 **The effectiveness of CV-4 and resting position techniques on subjects with tension-type headaches** J Man Manip Ther 7(2) 64-70 <https://www.sciencedirect.com/science/article/pii/S1443846101800046>

"Sixty adults between the ages of 21 and 65 ($X=36$, $SD=12$) who were experiencing a TTH [tension-type headache] were randomly assigned to groups. Subjects in the first group received a 10-minute session wherein multiple still points were induced using the CV-4 craniosacral technique. Subjects in the second group were placed supine in a resting position with the head and neck positioned for ten minutes in the most comfortable points in the ranges of protraction-retraction and flexion-extension. Subjects in the third group received no treatment; they lay quietly for 10 minutes. Pain intensity and the affective component of pain were measured before and after the treatments using visual analog scales. To determine if significant differences existed between the groups, a one-way multivariate analysis of covariance (MANCOVA) was used, followed by univariate tests and post-hoc tests. The MANCOVA was significant ($F=3.59$; $df=4$, 108; $p<0.05$). Analysis of covariance for the variables of pain intensity and affect revealed significant differences among the groups ($F=5.38$; $df=2,56$; $p<0.05$ for intensity and $F=4.45$; $df=2,56$; $p<0.05$ for affect). Tukey tests revealed a significant improvement, in both intensity and affect scores, between the group receiving the CV-4 treatment and the no-treatment group and no significant difference between the group using only the resting position and the group receiving no treatment. The CV-4 technique is an effective technique for treating patients with TTH."

Boline PD, Kassak K, Bronfort G, Nelson C, Anderson AV 1995 **Spinal manipulation vs. amitriptyline for the treatment of chronic tension-type headaches: a randomized clinical trial** Journal of Manipulative and Physiological Therapeutics 18:148–54 <http://www.ncbi.nlm.nih.gov/pubmed/7790794>

"Patients in the spinal manipulation group were treated twice weekly for 6 wk. Each therapy session typically lasted 20 min. The spinal manipulation group received spinal manipulation of a type described as short-lever, low-amplitude, high-velocity thrust techniques. At each visit, the treating doctor determined, by manual palpation, the cervical, thoracic or lumbar spinal segments to be manipulated. The investigative team thought that the greatest therapeutic effect would be achieved by paying particular attention to the upper three cervical segments. In preparation for the spinal manipulation, an average of 5-10 min of moist heat and 2 min of light

massage were administered to the cervicothoracic musculature. "

"The results of this study show that spinal manipulative therapy is an effective treatment for tension headaches. Amitriptyline therapy was slightly more effective in reducing pain at the end of the treatment period but was associated with more side effects. Four weeks after the cessation of treatment, however, the patients who received spinal manipulative therapy experienced a sustained therapeutic benefit in all major outcomes in contrast to the patients that received amitriptyline therapy, who reverted to baseline values. The sustained therapeutic benefit associated with spinal manipulation seemed to result in a decreased need for over-the-counter medication."

Hoyt WH, Shaffer F, Bard DA, Benesler JS, Blankenhorn GD, Gray JH, Hartman WT, Hughes LC. 1979 **Osteopathic manipulation in the treatment of muscle-contraction headache**. J Am Osteopath Assoc Jan;78(5):322-5 <http://jaoa.org/article.aspx?articleid=2097399>

"The twenty-two subjects... had a history of dull, non-throbbing bilateral headaches recurring over months or years with posterior cervical discomfort."

"The experimental data suggested that osteopathic manipulation can reduce the severity of muscle-contraction headache."

Cerritelli F, Ginevri L, Messi G, Caprari E, Di Vincenzo M, Renzetti C, Cozzolino V, Barlafante G, Foschi N, Provinciali L. 2015 **Clinical effectiveness of osteopathic treatment in chronic migraine: 3-Armed randomized controlled trial**. Complementary Therapies in Medicine Apr;23(2):149-56 <http://www.sciencedirect.com/science/article/pii/S0965229915000126>

"Patients were randomly divided into three groups: (1) OMT [osteopathic manipulative therapy] +medication therapy, (2) sham+medication therapy and (3) medication therapy only. Patients received 8 treatments in a study period of 6 months."

"Techniques used were myofascial release, balanced ligamentous tension, balanced membranous tension and cranial-sacrum"

"These findings suggest that OMT may be considered a valid procedure for the management of migraineurs."

Other controlled clinical trials

Number of studies: 1

von Stülpnagel C, Reilich P, Straube A, Schäfer J, Blaschek A, Lee SH, Müller-Felber W, Henschel V, Mansmann U, Heinen F 2009 **Myofascial trigger points in children with tension-type headache: a new diagnostic and therapeutic option**. J Child Neurol Apr;24(4):406-9 <https://www.ncbi.nlm.nih.gov/pubmed/19339283>

There was no independent control group in this study

The goal of this pilot study was to evaluate the effect of a trigger point-specific physiotherapy on headache frequency, intensity, and duration in children with episodic or chronic tension-type headache. Patients were recruited from the special headache outpatient clinic. A total of 9 girls (mean age 13.1 years; range, 5-15 years) with the diagnosis of tension-type headache participated in the pilot study from May to September 2006 and received trigger point-specific physiotherapy twice a week by a trained physiotherapist. After an average number of 6.5 therapeutic sessions, the headache frequency had been reduced by 67.7%, intensity by 74.3%, and duration by 77.3%. No side effects were noted during the treatment. These preliminary findings suggest a role for active trigger points in children with tension-type headache. Trigger point-specific physiotherapy seems to be an effective therapy in these children. Further prospective and controlled studies in a larger cohort are warranted.

Schoensee SK, Jensen G, Nicholson G, Gossman M, Katholi C. 1995 **The effect of mobilization on cervical headaches.** *J Orthop Sports Phys Ther* Apr;21(4):184-96 <http://www.ncbi.nlm.nih.gov/pubmed/7773270>

"Headaches of cervical origin are often treated with mobilization. Mobilization of the upper cervical spine, occiput-C3, and effect on frequency, duration, and intensity of cervical headaches were studied utilizing an A-B-A single case design. Ten subjects who met the operational criteria of cervical headaches completed the study. A headache log was used to document headache frequency, duration, and intensity throughout all three phases (A-B-A). The baseline phase (A) lasted approximately 1 month, and no intervention was performed. The intervention phase (B) consisted of 9-12 treatment sessions, two times per week for 3-4 weeks. Visual analysis of data plots revealed a decrease in headache frequency, duration, and intensity from the baseline phase to the treatment phase. This improvement continued through the second A phase for frequency but leveled off for both duration and intensity. A one-way analysis of variance supported the findings from the visual analysis. In these 10 subjects, mobilization had a therapeutic effect on cervical headaches."

D'Ippolito M, Tramontano M, Buzzi MG. 2017 **Effects of Osteopathic Manipulative Therapy on Pain and Mood Disorders in Patients With High-Frequency Migraine.** *J Am Osteopath Assoc* Jun 1;117(6):365-369 <https://www.ncbi.nlm.nih.gov/pubmed/28556858>

"CONTEXT: The substantial functional impairment associated with migraine has both physical and emotional ramifications. Mood disorders are often comorbid in patients with migraine and are known to adversely affect migraine activity.
OBJECTIVES: To explore the effects of osteopathic manipulative therapy (OMTh; manipulative care provided by foreign-trained osteopaths) on pain and mood disorders in patients with high-frequency migraine.
METHODS: Retrospective review of the medical records of patients with high-frequency migraine who were treated with OMTh at the Headache Istituto di Ricovero e Cura a Carattere Scientifico Fondazione Santa Lucia from 2011 to 2015. Clinical assessments were made using the Headache Disability Inventory (HDI), the Headache Impact Test (HIT-6), the Hamilton Depression Rating Scale (HDRS), and the State-Trait Anxiety Inventory (STAI) forms X-1 and X-2.
RESULTS: Medical records of 11 patients (6 women; mean age, 47.5 [7.8] years) with a diagnosis of high-frequency migraine who participated in an OMTh program met the inclusion criteria and were included in the study. When the questionnaire scores obtained at the first visit (T0) and after 4 OMTh sessions (T1) were compared, significant improvement in scores were observed on STAI X-2 (T0: 43.18 [2.47]; T1: 39.45 [2.52]; P<.05), HIT-6 (T0: 63 [2.20]; T1: 56.27 [2.24]; P<.05), and HDI (T0: 58.72 [6.75]; T1: 45.09 [7.01]; P<.05).
CONCLUSION: This preliminary study revealed that patients with high-frequency migraine and comorbid mood disorders showed significant improvement after four 45-minute OMTh sessions. Further investigation into the effects of OMTh on pain and mood disorders in patients with high-frequency migraine is needed."

Harrison RE, Page JS 2011 **Multipractitioner Upledger CranioSacral Therapy: descriptive outcome study 2007-2008.** *The Journal of Alternative and Complementary Medicine* Jan;17(1):13-7 <http://www.ncbi.nlm.nih.gov/pubmed/21214395>

"Outcome by diagnostic groups suggested that UCST [Upledger craniosacral therapy] is particularly effective for patients with headaches and migraine, neck and back pain, anxiety and depression, and unsettled babies. Seventy percent (70%) of patients on medication decreased or discontinued it, and patients' average general practitioner consultation rate fell by 60% in the 6 months following treatment."
"Patients' ages ranged from neonates to 68 years. Seventy-four percent (74%) of patients

reported a valuable improvement in their presenting problem. Sixty-seven percent (67%) also reported a valuable improvement in their general well-being and/or a second health problem. Outcome by diagnostic groups suggested that UCST is particularly effective for patients with headaches and migraine, neck and back pain, anxiety and depression, and unsettled babies."

Case series

Number of studies: 1

Berkowitz MR 2009 **Application of Osteopathy in the Cranial Field to Successfully Treat Vertigo:A Case Series** The AAO Journal 19(3) 27-32 http://works.bepress.com/murray_berkowitz/30/

"These cases also demonstrate that the longer-standing and more chronic the presenting problem, the more treatments that may be necessary. This fits the generally accepted paradigm. They also show that even extremely chronic cases may be successfully treated with application of osteopathy in the cranial field in a relatively finite number of treatments; an osteopathic approach renders definitive care of vertigo and co- morbid tinnitus possible."

Case reports

Number of studies: 1

Barke L, Gelman S, Lipton JA 1997 **A successful use of cranial-sacral osteopathy in the treatment of post-traumatic headache following subarachnoid hemorrhage** AAO Journal Summer, 22-23 https://www.iahe.com/docs/articles/Successful_use_of_cranial-sacral_osteopathy_-_headache_and_hemorrhage.pdf

"In this case the physical medicine approach, including osteopathic manipulative medicine, was a benefit to the patient in the treatment of a posttraumatic headache."

Mixed results (significant for some outcomes, not others)

Number
of studies:
1

Schabert E, Crow WT. 2009 **Impact of osteopathic manipulative treatment on cost of care for patients with migraine headache: a retrospective review of patient records.** J Am Osteopath Assoc Aug;109(8):403-7 <http://www.ncbi.nlm.nih.gov/pubmed/19706829>

"To determine whether the use of osteopathic manipulative treatment (OMT) at an osteopathic family practice residency clinic affected the cost of treating patients with migraine headache, compared with non-OMT care at the osteopathic clinic and care at an allopathic family practice residency clinic."

"A retrospective review of electronic medical records from patients treated for migraine at two residency clinics within the Florida Hospital organization from July 1, 2002, to June 30, 2007. One of the clinics was osteopathic and offered OMT services, and the other clinic was allopathic and did not offer OMT. All costs compiled during the office visits and costs of prescribed medications were tabulated for each patient. Patients' pain-severity ratings, as reported in office visits in 2006 and 2007, were also tabulated."

"Electronic medical records from 631 patients, representing 1427 migraine-related office visits, were analyzed. Average cost per patient visit was approximately 50% less at the osteopathic clinic than at the allopathic clinic (\$195.63 vs \$363.84, respectively; $P < .001$). This observed difference was entirely attributable to the difference in the average number of medications prescribed per visit at the two clinics, with 0.696 prescriptions at the osteopathic clinic and 1.285 prescriptions at the allopathic clinic ($P < .001$). This difference in prescription number resulted in a lower average medication cost per visit at the osteopathic clinic than at the allopathic clinic (\$106.94 vs \$284.93, respectively; $P < .001$)."

"No statistically significant difference was observed between the two practices in patients' ratings of pain severity."

"The inclusion of OMT in a treatment regimen for patients with migraine headache may lower the cost of the treatment regimen."