

Collected Scientific Research Relating to the Use of Osteopathy with Hospital length of stay

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: 12

Clinically and statistically significant results

Number of studies: 12

Systematic reviews

Number of studies: 1

Lanaro D, Ruffini N, Manzotti A, Lista G 2017 **Osteopathic manipulative treatment showed reduction of length of stay and costs in preterm infants: A systematic review and meta-analysis.** *Medicine (Baltimore)* Mar;96(12):e6408 http://journals.lww.com/md-journal/Fulltext/2017/03240/Osteopathic_manipulative_treatment_showed.43.aspx

"Background: Osteopathic medicine is an emerging and complementary method used in neonatology.

Methods: Outcomes were the mean difference in length of stay (LOS) and costs between osteopathy and alternative treatment group. A comprehensive literature search of (quasi)-randomized controlled trials (RCTs), was conducted from journal inception to May, 2015.

Eligible studies must have treated preterm infants directly in the crib or bed and Osteopathic Manipulative Treatment (OMT) must have been performed by osteopaths. A rigorous Cochrane-like method was used for study screening and selection, risk of bias assessment and data reporting. Fixed effect meta-analysis was performed to synthesize data.

Results: 5 trials enrolling 1306 infants met our inclusion criteria. Although the heterogeneity was moderate ($I^2=61\%$, $P=0.03$), meta-analysis of all five studies showed that preterm infants treated with OMT had a significant reduction of LOS by 2.71 days (95% CI -3.99 , -1.43 ; $P<0.001$). Considering costs, meta-analysis showed reduction in the OMT group ($-1,545.66\text{€}$, $-1,888.03\text{€}$, $-1,203.29\text{€}$, $P<0.0001$). All studies reported no adverse events associated to OMT.

Subgroup analysis showed that the benefit of OMT is inversely associated to gestational age.

Conclusions: The present systematic review showed the clinical effectiveness of OMT on the reduction of LOS and costs in a large population of preterm infants."

Racca V, Bordoni B, Castiglioni P, Modica M, Ferratini M 2017 **Osteopathic Manipulative Treatment Improves Heart Surgery Outcomes: A Randomized Controlled Trial.** *Ann Thorac Surg* Jan 18 <https://www.ncbi.nlm.nih.gov/pubmed/28109570>

"At the start of rehabilitation, the control group and the OMT group had similar Visual Analogue Scale median scores (controls 4, interquartile range [IQR]: 2 to 5; OMT 4, IQR: 3 to 5; $p =$ not significant) and mean inspiratory volumes (controls 825 ± 381 mL; OMT 744 ± 291 mL; $p =$ not significant). At the end of rehabilitation, the OMT group had a lower Visual Analogue Scale median score (controls 3, IQR: 2 to 4; OMT 1, IQR: 1 to 2; $p < 0.01$) and higher mean inspiratory volume (controls $1,400 \pm 588$ mL; OMT $1,781 \pm 633$ mL; $p < 0.01$). The analgesic drug intake was similar in the two groups. The hospitalization was shorter in the OMT group than in the control group (19.1 ± 4.8 versus 21.7 ± 6.3 days; $p < 0.05$).

CONCLUSIONS: The combination of standard care with OMT is effective in inducing pain relief and functional recovery, and significantly improves the management of patients after heart surgery with sternotomy."

Noll DR, Degenhardt BF, Johnson JC 2016 **Multicenter Osteopathic Pneumonia Study in the Elderly: Subgroup Analysis on Hospital Length of Stay, Ventilator-Dependent Respiratory Failure Rate, and In-hospital Mortality Rate.** *J Am Osteopath Assoc* Sep 1;116(9):574-87 <http://jaoa.org/Issue.aspx#issueid=935682>

"Context: Osteopathic manipulative treatment (OMT) is a promising adjunctive treatment for older adults hospitalized for pneumonia.

Objective: To report subgroup analyses from the Multicenter Osteopathic Pneumonia Study in the Elderly (MOPSE) relating to hospital length of stay (LOS), ventilator-dependent respiratory failure rate, and in-hospital mortality rate.

Design: Multicenter randomized controlled trial. Setting: Seven community hospitals.

Participants: Three hundred eighty-seven patients aged 50 years or older who met specific criteria for pneumonia on hospital admission.

Interventions: Participants were randomly assigned to 1 of 3 groups that received an adjunctive OMT protocol ($n=130$), a light touch (LT) protocol ($n=124$), or conventional care only (CCO) ($n=133$).

Main Outcome Measures: Outcomes for subgroup analyses were LOS, ventilator-dependent respiratory failure rate, and in-hospital mortality rate. Subgroups were age (50-74 years or ≥ 75 years), Pneumonia Severity Index (PSI) class (I-II, III, IV, or V), and type of pneumonia (community-acquired or nursing-home acquired). Data were analyzed by intention-to-treat and per-protocol analyses using stratified Cox proportional hazards models and Cochran-Mantel-Haenszel tests for general association. Results: By per-protocol analysis of the younger age subgroup, LOS was shorter for the OMT group (median, 2.9 days; $n=43$) than the LT (median, 3.7 days; $n=45$) and CCO (median, 4.0 days; $n=65$) groups ($P=.006$). By intention-to-treat analysis of the older age subgroup, in-hospital mortality rates were lower for the OMT (1 of 66 [2%]) and LT (2 of 68 [3%]) groups than the CCO group (9 of 67 [13%]) ($P=.005$). By per-protocol analysis of the PSI class IV subgroup, the OMT group had a shorter LOS than the CCO group (median, 3.8 days [$n=40$] vs 5.0 days [$n=50$]; $P=.01$) and a lower ventilator-dependent respiratory failure rate than the CCO group (0 of 40 [0%] vs 5 of 50 [10%]; $P=.05$). By intention-to-treat analysis, in-hospital mortality rates in the PSI class V subgroup were lower ($P=.05$) for the OMT group (1 of 22 [5%]) than the CCO group (6 of 19 [32%]) but not the LT group (2 of 15 [13%]).

Conclusion: Subgroup analyses suggested adjunctive OMT for pneumonia reduced LOS in adults aged 50 to 74 years and lowered in-hospital mortality rates in adults aged 75 years or older. Adjunctive OMT may also reduce LOS and in-hospital mortality rates in older adults with more severe pneumonia. Interestingly, LT also reduced in-hospital mortality rates in adults aged 75 years or older relative to CCO. (ClinicalTrials.gov number NCT00258661)"

Noll DR, Degenhardt BF, Morley TF, Blais FX, Hortos KA, Hensel K, Johnson JC, Pasta DJ, Stoll ST. 2010 **Efficacy of osteopathic manipulation as an adjunctive treatment for hospitalized patients with pneumonia: a randomized controlled trial.** *Osteopathic medicine and primary care* Mar 19;4:2 <http://www.ncbi.nlm.nih.gov/pubmed/20302619>

"The Multicenter Osteopathic Pneumonia Study in the Elderly (MOPSE) is a registered, double-blinded, randomized, controlled trial designed to assess the efficacy of osteopathic manipulative treatment (OMT) as an adjunctive treatment in elderly patients with pneumonia."

"406 subjects aged \geq 50 years hospitalized with pneumonia at 7 community hospitals were randomized using concealed allocation to conventional care only (CCO), light-touch treatment (LT), or OMT groups. All subjects received conventional treatment for pneumonia. OMT and LT groups received group-specific protocols for 15 minutes, twice daily until discharge, cessation of antibiotics, respiratory failure, death, or withdrawal from the study. The primary outcomes were hospital length of stay (LOS), time to clinical stability, and a symptomatic and functional recovery score."

"Analysis found significant reductions in LOS [length of stay], duration of intravenous antibiotics, and respiratory failure or death when OMT was compared to CCO [conventional care only]. "

Noll DR, Shores JH, Gamber RG, Herron KM, Swift J Jr. 2000 **Benefits of osteopathic manipulative treatment for hospitalized elderly patients with pneumonia.** *J Am Osteopath Assoc* Dec;100(12):776-82 <http://www.ncbi.nlm.nih.gov/pubmed/11213665>

"While osteopathic manipulative treatment (OMT) is thought to be beneficial for patients with pneumonia, there have been few clinical trials--especially in the elderly. The authors' pilot study suggested that duration of intravenous antibiotic use and length of hospital stay were promising measures of outcome. Therefore, a larger randomized controlled study was conducted. Elderly patients hospitalized with acute pneumonia were recruited and randomly placed into two groups: 28 in the treatment group and 30 in the control group. The treatment group received a standardized OMT protocol, while the control group received a light touch protocol. There was no statistical difference between groups for age, sex, or simplified acute physiology scores. The treatment group had a significantly shorter duration of intravenous antibiotic treatment and a shorter hospital stay."

Cerritelli F, Pizzolorusso G, Renzetti C, Cozzolino V, D'Orazio M, Lupacchini M, Marinelli B, Accorsi A, Lucci C, Lancellotti J, Ballabio S, Castelli C, Molteni D, Besana R, Tubaldi L, Perri FP, Fusilli P, D'Incecco C, Barlafante G. 2015 **A multicenter, randomized, controlled trial of osteopathic manipulative treatment on preterms.** *PLoS One* May 14;10(5):e0127370 <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0127370>

"The present multi-center randomized single blind parallel group clinical trial enrolled newborns who met the criteria for gestational age between 29 and 37 weeks, without any congenital complication from 3 different public neonatal intensive care units. Preterm infants were randomly assigned to usual prenatal care (control group) or osteopathic manipulative treatment (study group). The primary outcome was the mean difference in length of hospital stay between groups."

"A total of 695 newborns were randomly assigned to either the study group (n= 352) or the control group (n=343). A statistical significant difference was observed between the two groups for the primary outcome (13.8 and 17.5 days for the study and control group respectively, $p < 0.001$, effect size: 0.31). Multivariate analysis showed a reduction of the length of stay of 3.9 days (95% CI -5.5 to -2.3, $p < 0.001$). Furthermore, there were significant reductions with treatment as compared to usual care in cost (difference between study and control group: 1,586.01€; 95% CI 1,087.18 to 6,277.28; $p < 0.001$) but not in daily weight gain. There were no complications associated to the intervention."

"Osteopathic treatment reduced significantly the number of days of hospitalization and is cost-effective on a large cohort of preterm infants."

Pizzolorusso G, Cerritelli F, Accorsi A, Lucci C, Tubaldi L, Lancellotti J, Barlafante G, Renzetti C,

D'Incecco C, Perri FP 2014 **The Effect of Optimally Timed Osteopathic Manipulative Treatment on Length of Hospital Stay in Moderate and Late Preterm Infants: Results from a RCT.** Journal of Evidence-Based Complementary & Alternative Medicine 2014:243539 <http://www.ncbi.nlm.nih.gov/pubmed/25506381>

"Little research has been conducted looking at the effects of osteopathic manipulative treatment (OMT) on preterm infants. Aim of the Study. This study hypothesized that osteopathic care is effective in reducing length of hospital stay and that early OMT produces the most pronounced benefit, compared to moderately early and late OMT. A secondary outcome was to estimate hospital cost savings by the use of OMT. Methods. 110 newborns ranging from 32- to 37-week gestation were randomized to receive either OMT or usual pediatric care. Early, moderately early, and late OMT were defined as <4, <9, and <14 days from birth, respectively. Result. Hospital stay was shorter in infants receiving late OMT (-2.03; 95% CI -3.15, -0.91; P < 0.01) than controls. Subgroup analysis of infants receiving early and moderately early OMT resulted in shorter LOS (early OMT: -4.16; -6.05, -2.27; P < 0.001; moderately early OMT: -3.12; -4.36, -1.89; P < 0.001). Costs analysis showed that OMT significantly produced a net saving of €740 (-1309.54, -170.33; P = 0.01) per newborn per LOS. Conclusions. This study shows evidence that the sooner OMT is provided, the shorter their hospital stay is. There is also a positive association of OMT with overall reduction in cost of care."

Cerritelli F, Pizzolorusso G, Ciardelli F, La Mola E, Cozzolino V, Renzetti C, D'Incecco C, Fusilli P, Sabatino G, Barlafante G 2013 **Effect of osteopathic manipulative treatment on length of stay in a population of preterm infants: a randomized controlled trial.** BMC Pediatr Apr 26;13:65 <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3648440/>

"The term osteopathic manipulative treatment (OMT) currently encompasses more than twenty types of osteopath-performed manual treatments. The OMT techniques of choice in treating preterm infants are myofascial release, balanced ligamentous/membranous tension, indirect fluidic and v-spread."

"In the present study, 8 osteopathic practitioners were involved and randomly divided in two groups: 4 osteopaths performing the evaluation (group A), and 4 osteopaths performing the evaluation and the treatment (group B). Osteopaths from group A and B entered to the NICU in different hours of the schedule days, to provide blinding and to avoid possible confounding. None of the osteopathic practitioners were involved in the study design, data entry or statistical analysis. In addition all practitioners, except for the treating osteopath, were unaware of patients allocation."

"Results showed a significant association between OMT [osteopathic manipulative therapy] and LOS [length of stay] reduction (mean difference between treated and control group: -5.906; 95% C.I. -7.944, -3.869; p<0.001). OMT was not associated to any change in daily weight gain."

"The present study suggests that OMT may have an important role in the management of preterm infants hospitalization."

Cerritelli F, Pizzolorusso G, Ciardelli F, Mola EL, Renzetti C, Cozzolino V, Barlafante G 2012 **Neonatology-Osteopathy (Ne-O) Study: RCT on the Effect of Osteopathic Manipulative Treatment on Length of Stay** BMC Complement Altern Med 12(Suppl 1): O36 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3373670/>

"Background and Aims The use of osteopathic manipulative treatment (OMT) in preterm infants has been documented and results from previous studies suggest the association between OMT and length of stay (LOS) reduction, as well as significant improvement in several clinical outcomes. The aim of the present study is to show the effect of OMT on LOS in a sample of premature infants.

Methods A double blinded randomized controlled trial was conducted on preterm newborns admitted in a single NICU between 2010–2011. N=51 subjects free of medical complications and with gestational age >28 and < 38 weeks were enrolled and randomized in two groups: study group (N=21) and control group (N=30). All subjects received routine pediatric care and OMT was performed to the study group for the entire period of hospitalization. Endpoints of the study included differences in LOS and daily weight gain.

Results Results showed a significant association between OMT and LOS reduction (mean difference between treated and control group: -1.787 ; 95% c.i. $-3.555, -0.0015$; $p < 0.05$). OMT was not associated to any change in daily weight gain.

Conclusions The present study confirms that OMT could play an important role in the management of preterm infants hospitalization."

Cohort studies

Number of studies: 1

Baltazar GA, Betler MP, Akella K, Khatri R, Asaro R, Chendrasekhar A. 2013 **Effect of osteopathic manipulative treatment on incidence of postoperative ileus and hospital length of stay in general surgical patients.** *J Am Osteopath Assoc* Mar;113(3):204-9 <http://www.ncbi.nlm.nih.gov/pubmed/23485980>

"Of the 55 patients who met the study criteria, 17 had received postoperative OMT and 38 had not. The mean age was 60.3 years in the OMT group and 62.1 years in the non-OMT group ($P = .70$). The 2 groups were similar in terms of American Society of Anesthesiologists class, number of comorbid conditions and of postoperative complications, presence of electrolyte abnormalities, and narcotic use. The time to bowel movement and to clear liquid diet did not differ significantly between the groups. The mean (standard deviation [SD]) time to flatus was 4.7 (0.4) days in the non-OMT group and 3.1 (0.6) days in the OMT group ($P = .035$). The mean (SD) postoperative hospital LOS was also reduced significantly with OMT, from 11.5 (1.0) days in the non-OMT group to 6.1 (1.7) days in the OMT group ($P = .006$)."

"Osteopathic manipulative treatment applied after a major gastrointestinal operation is associated with decreased time to flatus and decreased postoperative hospital LOS [length of stay]"

Case reports

Number of studies: 2

Goyal M, Goyal K, Narkeesh K, Samuel AJ, Arumugam N, Chatterjee S, Sharma S 2017 **Efficacy of Osteopathic Manipulative Treatment Approach in the Patient with Pulmonary Fibrosis in Critical Care Outpatient Department** *Indian Journal of Critical Care Medicine* Jul; 21(7): 469–472 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5538099/>

"The purpose of the present case study was to explore the efficacy of osteopathic manipulative treatment (OMT) in patient with pulmonary fibrosis (PF) in the critical care outpatient department. Here, we present a 48-year-old male case with breathlessness, increased frequency of defecation, and pain in and around the nape of neck with diagnosed pulmonary fibrosis. He scored 3 on a patient-reported modified Medical Research Council (mMRC) dyspnea scale. Osteopathic examination reveals multiple somatic findings across the chest and abdominal region and treated by OMT. Pre- and post-intervention changes were assessed by the 13-item shortness of breath with daily activities (13iSOBDA). 27.2, 22, 16.4, and 11.8 were noted at the end of 1st, 2nd, 3rd, and 4th week of intervention, respectively, on 13iSOBDA while mMRC decreased from 3 to 1. OMT may be a feasible option in decreasing the symptoms of the PPF in the critical care outpatient department."

Berkowitz MR 2012 **Application of osteopathic manipulative treatment to a patient with unremitting chest pain and shortness of breath undergoing "Rule-Out Myocardial Infarction" protocol for one week** *International Journal of Osteopathic Medicine* June, Issue 2, pp 73-77 [http://www.journalofosteopathicmedicine.com/article/S1746-0689\(11\)00126-X/abstract](http://www.journalofosteopathicmedicine.com/article/S1746-0689(11)00126-X/abstract)

"Chest pain and shortness of breath are both common complaints of patients presenting to an emergency room (ER) or urgent care facility. A 67-year-old married white female was seen in the ER complaining of chest pain and shortness of breath. Our education and training has us admit these patients where they may be monitored and assessed according to protocols

developed to rule-out serious etiologies. Accordingly, the patient was admitted to the cardiac care unit and placed on the "Rule-Out Myocardial Infarction" protocol. The patient's symptoms persisted despite adherence to rigorous diagnostic and therapeutic regimens and which stymied attempts to arrive at a definitive diagnosis and provide care. The case presented here demonstrates how an osteopathic approach can enable us to provide appropriate care and resolve some problems that appear to be otherwise unremitting. There is potential for savings in terms of actual costs and utilization of resources. The use of an osteopathic structural exam identified an abnormality that could be easily treated with Osteopathic Manipulative Treatment (OMT), which completely resolved the patient's presenting complaints. Had this been done earlier in the course of managing this patient, preferably as part of the admission work-up, the patient's confinement would have been drastically reduced, and repeated expensive tests would not have had to have been performed. The application of OMT to reducing patient morbidity is instructive of the efficacy of the osteopathic approach in this case and suggests that further research is warranted."