

Manual medicine diversity: research pitfalls and the emerging medical paradigm

ERIC A. MEIN, MD; PHILIP E. GREENMAN, DO; DAVID L. McMILLIN, MA; DOUGLAS G. RICHARDS, PhD; CARL D. NELSON, DC

Recent studies published in leading medical journals have concluded that chiropractic treatment is not particularly helpful for relieving asthma and migraine symptoms because even though study participants showed notable improvement in symptoms, those subjects who received sham manual medicine treatments also showed improvement. Yet the sham treatment received by control groups in these studies is reminiscent in many ways of traditional osteopathic manipulation. This seems to represent not only a failure to recognize the value of many manual medicine techniques but also an ignorance of the broad spectrum of manual medicine techniques used by various practitioners, from osteopathic physicians to chiropractors to physical therapists. Such blind spots compromise research methodology with regard to manual medicine studies, which could, in turn, diminish the role of manual medicine in clinical practice. Osteopathic manipulative treatment provides an excellent model for recognizing and integrating the full range of manual medicine techniques into research and clinical applications because of the wide range of techniques employed. The potential exists for these techniques to contribute much to medical research and clinical practice—provided that osteopathic physicians and other manual medicine practitioners work to alleviate ignorance about the efficacy of various forms of manipulation.

(Key words: osteopathic manipulative treatment, chiropractic, research design, alternative medicine)

Manual medicine covers a broad spectrum of techniques, including soft tissue treatment and high-velocity low-amplitude (HVLA) thrusting. In osteopathic terminology, these and many other manual medicine techniques as a whole are commonly referred to as osteopathic manipulative treatment (OMT).¹

Although many osteopathic physicians take the variety of techniques for granted because of the rich heritage of their profession, there remains ignorance of manual medicine diversity in the healthcare community at large, and this has led to serious shortcomings in current research methodology with regard to manipulation. Consequently, the role of manual medicine in the emerging medical paradigm is uncertain.

Healthcare services that use manual medicine include osteopathic medicine, chiropractic, physical therapy, and massage therapy. Specific types of practitioners often rely more often on certain techniques or sets of techniques than do other practitioners (for example, long-lever techniques with osteopathic physi-

cians, HVLA adjustments with chiropractors), but there remains considerable diversity within manual medicine-oriented professions and significant overlap between them. However, the research literature often fails to reflect this diversity. For example, one recent study of treatments for low back pain refers simply to “chiropractic” in the abstract and throughout most of the article, as if a general set of modalities were being applied (the article only noted briefly that side-posture, HVLA adjustments were the only chiropractic modality used).²

Early osteopathic physicians used a variety of articular and nonarticular approaches to achieve their goal of normalizing blood flow. They used general mobilizations (the osteopathic “general treatment”), long- and short-lever manipulations of the entire musculoskeletal system, strain-counterstrain, and specific pressures (“stimulation” and “inhibition”) to influence and regulate sympathetic nervous system functions. Also, drainage techniques were part of commonly accepted practice.³

Early chiropractors, with the goal of normalizing nerve function by reducing the vertebral subluxation, were somewhat more limited in their approach, relying primarily on HVLA thrusts. As time has passed, chiropractors have added considerably to their body of therapeutic applications, broadening their range of manual articular techniques; adding manual reflex and muscle relaxation techniques; and incorporating nonmanual therapeutic modalities, such as electrical and thermal modes of therapy, bracing, casts, support, traction, and nutritional counseling—all of which have been beneficial. However, in their research approach to demonstrate the validity of manual medicine, chiropractors have focused almost entirely on the HVLA spinal adjustment, ignoring the diversity of other manual techniques with claims of effectiveness.⁴

Problematic research methodology

Two well-publicized studies reported in leading medical journals illustrate the potential methodologic problems associ-

Dr Mein is medical director at Meridian Institute, Virginia Beach, Virginia, where Mr McMillin is program director, Dr Richards is director of research, and Dr Nelson is a clinical researcher. Dr Greenman is professor emeritus at Michigan State University College of Osteopathic Medicine, East Lansing, Mich.

Correspondence to Eric A. Mein, MD, Meridian Institute, 1853 Old Donation Parkway, Suite 1, Virginia Beach, VA 23454.

E-mail: meridian@meridianinstitute.com

ated with manual medicine diversity. One such example is a study that compared “active” and “simulated” chiropractic manipulation as adjunctive treatment for childhood asthma, conducted by Balon and others.⁵

The active treatment consisted of “manual contact with spinal or pelvic joints followed by high-velocity low-amplitude directional push often associated with joint opening, creating a cavitation, or ‘pop.’” This treatment is a standard HVLA technique used by a wide variety of practitioners, such as osteopathic physicians, chiropractors, and physical therapists.

The simulated treatment involved the following parameters: (1) providing “soft-tissue massage and gentle palpation” to the spine, paraspinal muscles, and shoulders; (2) “turning the subject’s head from one side to the other”; (3) providing “a nondirectional push, or impulse” to the gluteal area with the subject lying on one side and then the other; (4) placing the subject in a prone position so that “a similar impulse was applied bilaterally to the scapulae”; (5) putting the subject in a supine position “with the head rotated slightly to each side, and an impulse applied to the external occipital protuberance”; and (6) applying low-amplitude, low-velocity impulses “in all these nontherapeutic contacts, with adequate joint slack so that no joint opening or cavitation occurred.”

Jongeward⁶ and Rossner⁷ have questioned the appropriateness of such simulated treatment, noting that standard chiropractic practice can include soft tissue work. Another problem is that the simulated treatment bears a marked similarity to a traditional general osteopathic treatment.^{8,9,10(pp85-86)}

Balon and colleagues⁵ summarized the simulated treatment by stating, “Hence, the comparison of treatments was between active spinal manipulation as routinely performed by chiropractors and hands-on procedures without adjustments or manipulation.” Based on the conclusions of the researchers, it would seem they were unaware of the early osteopathic works addressing asthma⁸⁻¹⁰ and the more recent literature on OMT for

respiratory conditions, particularly by Kuchera and Kuchera.¹¹ The methodologic limitations of the study by Balon and others with regard to manual medicine diversity have been noted.¹² Balon and coworkers responded that they were unconvinced by the evidence supporting the efficacy of their “simulated treatment.”¹³

The results as reported by the researchers were “Symptoms of asthma and use of β -agonists decreased and the quality of life increased in both groups, with no significant differences between the groups.” The conclusion was that “the addition of chiropractic spinal manipulation to usual medical care provided no benefit.”⁵

Thus, the conclusion suggests an apparent failure of chiropractic to address systemic dysfunction, such as asthma. Although technically this conclusion is limited to HVLA spinal adjustments, the fallout will, for all practical purpose, probably affect attitudes toward all types of manual medicine and manual medicine practitioners. The problem is that while the study is widely perceived as indicating a failure of manual medicine for the treatment of systemic dysfunction, it may instead be indicative that the subjects in both groups benefited—but from two distinct forms of manual medicine. Ignorance (whether by lack of knowledge or by the choice to ignore the available information) has severely distorted the findings of this widely publicized study.

This study is not the only example of such confusion. A similar study¹⁴ demonstrates a comparable ignorance of manual medicine diversity, duplicating the methodologic flaws, favorable outcomes, and unfounded conclusions of the study by Balon and others. The researchers in this study compared two forms of manual therapy for the treatment of tension headache. The experimental treatment consisted of standard HVLA chiropractic treatment and deep friction massage, plus trigger point therapy if indicated. The subjects receiving this intervention were designated as the “manipulation” group. The control group received deep friction massage plus low-power laser light (considered not to be efficacious for tension

headache). Thus, essentially, one form of manual medicine is again compared to another. The researchers observed that “by week 7, each group experienced significant reductions in mean daily headache hours...and mean number of analgesics per day.”¹⁴ Because both groups benefited equally, the authors concluded that “As an isolated intervention, spinal manipulation does not seem to have a positive effect on episodic tension-type headaches.”¹⁴

Both studies were reported in the mass media with the simplistic conclusion that chiropractic does not work for such conditions as childhood asthma and tension headache. The design and outcome of the studies do not allow us to draw such conclusions, however. Perhaps a more accurate conclusion should have been that we do not know if HVLA adjustments are specifically helpful or not. Although the favorable outcomes could have resulted from chance or placebo effects, a reasonable person might also justifiably conclude that various forms of manual medicine can be helpful for these conditions. Kuchera¹⁵ recently discussed in detail the mechanisms by which OMT could be used in treatment of headaches of various types. Ignorance of the diversity and validity of the full spectrum of manual therapy applications confounds the issue. More research is desperately needed—research which seriously considers the full spectrum of manual medicine options from a variety of health-care professions.

Developing an appropriate research methodology is a challenge. Consideration must be given not only to the diversity of potentially effective manual techniques, but to the difficulty of identifying a simulated treatment with no physical effects. Even light stroking of the skin may have significant effects on physiology.¹⁶ In contrast to randomized clinical trials of drugs, double-blind methodology is not possible with manual medicine research; the therapist is always aware of the technique being applied. Even blinding patients is problematic, particularly if they have previous exposure to manual techniques. Rather than a treatment/placebo comparison, perhaps the only possible com-

parison will be between active treatment methods. This then raises the problem of individualization of treatment; even the study by Balon and others⁵ acknowledges that the therapists tailored their treatments to the needs of the individual patients. A wider discussion of the methodologic issues inherent in the study of manual therapy is necessary to counter the application of overly simplistic and inappropriate methodologies in studies of manual medicine and in the media coverage of such studies.

Manual medicine and the emerging medical paradigm

So what does this have to do with osteopathic medicine? It would seem that chiropractors and many members of the medical establishment involved in reporting these studies are simply ignorant of the osteopathic medical perspective. While this type of misunderstanding is neither new nor surprising, it has tremendous implications for the future.

We are in the midst of a medical revolution, and in this revolution, many questions are being asked about manual medicine and other techniques that are sometimes referred to as "alternative" medicine. What is the role of manual medicine in the emerging medical paradigm? Will manual medicine be limited to relieving musculoskeletal pain? Will osteopathic manipulative treatment remain a self-contained system of healing? Is there a legitimate role for the full spectrum of manipulative techniques in the treatment of systemic dysfunction?

Osteopathic medicine has a great deal to offer. Because of its rich heritage of philosophy, research, and clinical techniques, the profession can influence the direction of healthcare in a positive manner. Osteopathic medicine has integrated the diversity of manual medicine techniques into its own system in the form of OMT. Thus, osteopathic medicine is the single best representative of manual medicine diversity currently available to researchers and clinicians.

Another primary factor driving the current changes in healthcare is economics. Not only must treatment options be safe and efficacious, they must be cost-

effective. The diversity of manual medicine techniques provides a variety of approaches that could have significant cost-saving potential. This is particularly true for simple regulatory techniques, as contrasted with corrective techniques. For example, inhibitive pressure and thoracic lymphatic pump applications can be easily adapted for application by lay persons and therapists.

In a study on labor pain during contractions of gravid uterus at term, lumbar inhibitory pressure was shown to be effective in reducing pain in a group of 175 women. This simple technique was applied by husbands and other family members, as well as by nurses and physicians. "Since back pressure in a high percentage of cases was administered by the husband, this suggests that training of husbands in the proper technique would minimize staff time required in labor and delivery, as well as the need for medication."¹⁷

Also, thoracic lymphatic pumping (TLP) has been shown to be at least as effective as incentive spirometry in preventing atelectasis in patients who have undergone cholecystectomy. In addition to its treatment efficacy, the authors noted that TLP costs were lower than those for incentive spirometry and that "the TLP treatment costs could be further reduced by training a respiratory therapist to administer the treatment."¹⁸

There is historical precedent for involving lay persons and therapists in the less technical manual therapy applications. The early osteopathic physicians recognized a hierarchy of expertise with regard to technique. One early osteopathic textbook was specifically written with the lower end of this hierarchy in mind. In the preface to the second edition of his book, Eduard Goetz acknowledged the accessibility of simple manual medicine applications when he wrote, "The mere reading of the book cannot possibly result in one's becoming a full fledged osteopath. The intention is simply to impart sufficient knowledge of the mode of procedure to enable the careful reader to apply the treatment in his home in case of emergency and until such a time as a regular practicing osteopath can be called in

should that be found necessary."¹⁰ (For those interested in the work of Goetz and other early osteopathic physicians, some of their texts are now available on the Early American Manual Therapy Web site at www.meridianinstitute.com.)

When considering the relatively low level of expertise required to perform deep friction massage and soft-tissue techniques, such as those used as control treatments in the previously discussed asthma and tension headache studies, one wonders if there might be a role for family members or massage therapists in treating conditions like asthma and headache. Theoretically, the physician could become an educator, trainer, and supervisor of the treatment regimen for certain conditions. With the increased emphasis on home health and cost-effectiveness, this could be a workable model in the new medical paradigm—so long as issues of training and safety are addressed.

Osteopathic medicine is now presented with the opportunity to contribute to the broader emerging medical paradigm with regard to research into manual medicine and clinical applications of manual techniques. Osteopathic physicians are in an excellent position to shape the new paradigm, but they also face the danger of sitting quietly on the sidelines while others determine the role of manual medicine in the evolving health-care system.

References

1. *Glossary of Osteopathic Terminology*. Kirksville, Mo: Kirksville College of Osteopathic Medicine; 1990.
2. Cherkin DC, Deyo RA, Battie M, Street J, Barlow W. A comparison of physical therapy, chiropractic manipulation, and provision of an educational booklet for the treatment of patients with low-back pain. *N Engl J Med* 1998;339:1021-1029.
3. Mein EA, Richards DG, McMillin DL, McPartland JM, Nelson CD. Physiologic regulation through manual therapy. *Phys Med Rehab* 2000;14:27-42.
4. Nelson CD, McMillin DL, Richards DG, Mein EA, Redwood D. Manual healing diversity and other challenges to chiropractic integration. *J Manipulative Physiol Ther* 2000;23:202-207.

5. Balon J, Aker PD, Crowther ER, Danielson C, Cox PG, O'Shaughnessy D, et al. A comparison of active and simulated chiropractic manipulation as adjunctive treatment for childhood asthma. *N Engl J Med* 1998;339:1013-1020.
6. Jongeward BV. Chiropractic manipulation for childhood asthma. *N Engl J Med* 1999; 340: 391-392.
7. Rossner A. Scratching where it itches: core issues in chiropractic research. *Dynamic Chiropractic* 1999;17:16,22.
8. Hazzard C. *The Practice and Applied Therapeutics of Osteopathy*. 3rd ed. Kirksville, Mo: Journal Printing Company; 1905: 75-80.
9. Barber ED. *Osteopathy Complete*. 4th ed. Kansas City, Mo: Hudson-Kimberly Publishing Co; 1898:60-68.
10. Goetz EW. *A Manual of Osteopathy*. 2nd ed. Cincinnati, Ohio: Nature's Cure Co; 1909: 85-86.
11. Kuchera M, Kuchera WA. *Osteopathic Considerations in Systemic Dysfunction*. Kirksville, Mo: Kirksville College of Osteopathic Medicine; 1991.
12. Richards DG, Mein EA, Nelson CD. Chiropractic manipulation for childhood asthma. *N Engl J Med* 1999;340:391-392.
13. Balon J, Crowther ER, Sears MR. Chiropractic manipulation for childhood asthma. *N Engl J Med* 1999;340:392.
14. Bove G, Nilsson N. Spinal manipulation in the treatment of episodic tension-type headache. *JAMA* 1998;280:1576-1579.
15. Kuchera ML. Osteopathic principles and practice/osteopathic manipulative treatment considerations in cephalgia. *JAOA* 1998;98(suppl):514-519.
16. Kurz I. *Textbook of Dr. Vodder's Manual Lymph Drainage*. Vol 2. Brussels, Belgium: Haug International; 1986.
17. Guthrie RA. Lumbar inhibitory pressure for lumbar myalgia during contractions of the gravid uterus at term. *JAOA* 1980;80:264-266.
18. Sleszynski SL, Kelso AF. Comparison of thoracic manipulation with incentive spirometry in preventing postoperative atelectasis. *JAOA* 1993;93:834-845.