

Osteopathic Manipulative Treatment Techniques Preferred by Contemporary Osteopathic Physicians

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Data presented in this study were gathered through a national mail survey of 3000 randomly selected osteopathic physicians. A total of 955 questionnaires were usable for analysis. Osteopathic physicians' likelihood of using eleven osteopathic manipulative treatment (OMT) techniques (articulatory, counterstrain, cranial, facilitated positional release, fascial ligamentous release, functional, high-velocity low-amplitude thrust, lymphatic, muscle energy, myofascial/integrated neuromuscular release, and soft tissue) was determined. The relative frequency of use from most (soft tissue) to least (cranial) used was also determined.

Respondents were more likely to use direct techniques than indirect or direct-indirect techniques. Demographic variables of gender, age, and specialty training were found to be related to the techniques used most. Female osteopathic physicians and older osteopathic physicians were more likely to use indirect techniques, whereas male and younger physicians preferred direct techniques. Moreover, OMT specialists used a broader range of techniques than other osteopathic physicians, and family physicians were more apt to use high-velocity low-amplitude thrust than other primary care or non-primary care osteopathic physicians.

These results not only have implications for curricular planning in all phases of osteopathic undergraduate medical education, graduate medical education, and continuing medical education programs, but also for research on the quality and effectiveness of various OMT techniques.

The term *osteopathic manipulative treatment* (OMT) currently encompasses approximately twenty-five types of osteopathic physician-performed manual treatments designed to

improve physiologic function and to support homeostasis. These techniques are used to treat somatic dysfunction and altered or impaired function within the body's framework, including skeletal, arthroal, and myofascial structures and associated vascular, lymphatic, and neural components.¹ Diagnostic criteria for somatic dysfunction focus on tissue texture abnormalities such as changes in stability, laxity, effusions, and tone; asymmetry and misalignment of bony landmarks; restriction of and change in range of motion or contractures; and temperature changes, tenderness, pain, and soreness in the anatomic regions.^{2(pp483-488),3} In treating patients with somatic dysfunction, osteopathic physicians use OMT not only to address dysfunction in body structures and aid in healing visceral diseases, but also to influence quality-of-life measures through pain reduction; increased range of motion; enhanced ability to sit, stand, bend, and move with ease; increased blood flow; and improved neurovascular and lymphatic function.^{4,5}

Since the beginning of the osteopathic medical profession, OMT techniques have undergone changes and refinements. Today, the model for the contemporary osteopathic physician is eclectic, requiring knowledge and skill in a broad spectrum of techniques.^{2(pp483-488)} For instance, the treatments for somatic dysfunction are varied and more than one method may be used to achieve the treatment objective. The choice of OMT technique is based on multiple factors including age and physical condition of the patient, effectiveness of previous treatment, and the physician's experience and expertise with various methods.^{2(pp483-488),6,7} While OMT is used by many osteopathic physicians, the level of usage associated with the application of the various techniques is not known. To investigate this issue, this study focuses on OMT techniques preferred by osteopathic physicians as well as the factors that influence the use of various OMT techniques.

Methods and Sample

Three thousand osteopathic physicians were randomly selected from the members of the American Osteopathic Association (AOA) included in the physician master file. Students, interns, and retired osteopathic physicians were excluded in the selection process. "Primary care specialists," as identified by the AOA, practice in the following medical areas: family practice,

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ORIGINAL CONTRIBUTION

Table 1
Relative Frequency With Which Osteopathic Physicians Use Manipulative Techniques on a Patient for Whom Osteopathic Manipulative Treatment Is Indicated (N = 955)

Technique*	Never	Seldom	Sometimes	Often	Very Often
	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)
Articulatory	174 (27.3)	112 (17.6)	129 (20.2)	99 (15.5)	124 (19.4)
Counterstrain	104 (15.6)	110 (16.5)	195 (29.2)	156 (23.4)	103 (15.4)
Cranial	400 (60.3)	123 (18.6)	57 (8.6)	36 (5.4)	47 (7.1)
Facilitated positional release	226 (35.3)	132 (20.6)	169 (26.4)	85 (13.3)	29 (4.5)
Fascial ligamentous release	217 (34.0)	124 (19.4)	147 (23.0)	108 (16.9)	43 (6.7)
Functional	188 (32.0)	107 (18.2)	147 (25.0)	95 (16.2)	50 (8.5)
High-velocity low-amplitude thrust	56 (8.2)	75 (10.9)	120 (17.5)	180 (26.2)	255 (37.2)
Lymphatic	138 (21.4)	200 (31.0)	161 (24.9)	111 (17.2)	36 (5.6)
Muscle energy	49 (7.2)	70 (10.3)	146 (21.6)	213 (31.5)	199 (29.4)
Myofascial/integrated neuromuscular release	148 (23.5)	106 (16.8)	123 (19.5)	145 (23.0)	109 (17.3)
Soft tissue	24 (3.6)	45 (6.7)	121 (18.0)	219 (32.5)	264 (39.2)

*Denominator variable.

internal medicine, obstetrics and gynecology, pediatrics, and osteopathic manipulative medicine. For the purpose of this study, the authors grouped osteopathic physicians as family physicians, other primary care physicians (pediatrics, internal medicine, obstetrics and gynecology), osteopathic manipulative specialists, and non-primary care specialists (all other specialties).

Information on use of OMT by osteopathic physicians was obtained through the use of a two-page, self-administered questionnaire. Demographic information was elicited on age, gender, race or ethnic identification, college of osteopathic medicine, date of graduation, specialty/subspecialty, years of practice, and type of practice. Respondents were asked to indicate if their specialty training had been conducted in an osteopathic medical school, an allopathic medical school, or an institution that maintained both affiliations. In addition, osteopathic physicians were asked to indicate the percentage of patients on whom they used OMT and the diagnoses precipitating the application of these procedures. Respondents were also asked to provide the relative frequencies with which they use specific OMT procedures—primarily those featured in *Foundations for Osteopathic Medicine*.²

Twenty-four questionnaire items addressed various aspects of physicians' attitudes toward the use of OMT, adequacy of training regarding OMT use, protocols relating to specific applications, and perceived barriers to use of OMT in practice. Respondents were also asked several open-ended

questions requesting additional information that related to the use of OMT, and, moreover, to provide specific characteristics that distinguished osteopathic physicians from allopathic physicians with respect to philosophy and consequent treatment approaches.

The two-page questionnaire, a cover letter explaining the study, an addressed prepaid return envelope, and a return postcard were mailed in April 1998. The return card indicated that the questionnaire had been returned under separate cover. The respondent's zip code (and name if more than one had the same zip code) was written on the card so that a follow-up mailing could be sent to nonresponders while maintaining their anonymity. A second mailing was sent in May 1998 to those who had not returned the postcard. The appropriate university committee on research involving human subjects approved the survey instrument and the study protocol.

The results of this survey are presented in other articles⁸⁻¹⁰ as well as in this article. This article focuses on the information obtained from respondents regarding the relative frequency with which osteopathic practitioners use various OMT techniques and factors that influenced selection of those techniques.

Basic descriptive statistics (means, standard deviations, frequencies, and correlations) were computed for all study variables. Next, the responses were tabulated for the following question: "If presented with a patient for whom you believe OMT is indicated, please estimate the relative frequency with

Osteopathic Manipulative Treatment Techniques	Mean (SD)
Soft tissue	3.97 (1.08)
High-velocity low-amplitude thrust	3.73 (1.28)
Muscle energy	3.65 (1.21)
Counterstrain	3.07 (1.28)
Myofascial/integrated neuromuscular release	2.94 (1.42)
Articulatory	2.82 (1.47)
Lymphatic	2.55 (1.16)
Functional	2.51 (1.31)
Fascial ligamentous release	2.43 (1.29)
Facilitated positional release	2.31 (1.21)
Cranial	1.80 (1.23)
Direct	3.57 (0.86)
Direct-indirect	2.75 (1.10)
Indirect	2.45 (0.96)

*Scale: 1, Never; 2, Seldom; 3, Sometimes; 4, Often; 5, Very often.

which you would likely use each of the following: articulatory, counterstrain, cranial, facilitated positional release, fascial ligamentous release, functional, high-velocity low-amplitude thrust, lymphatic, muscle energy, myofascial/integrated neuromuscular release, soft tissue, and other." Each technique was accompanied by a five-point scale (1, never; 5, very often) on which respondents circled their assessments regarding the likely frequency of use of each technique.

The eleven techniques were grouped into three categories: direct techniques that engage the restrictive barrier (articulatory, high-velocity low-amplitude thrust, muscle energy, soft tissue), indirect techniques applied away from the restrictive barrier (counterstrain, cranial, facilitated positional release, functional, fascial ligamentous release), and direct-indirect techniques (myofascial/integrated neuromuscular release, lymphatic).^{1,2} A scale was computed for each category by determining the mean response for the items in the group. A reliability analysis (Cronbach's alpha) revealed reliabilities of $\alpha=0.58$, $\alpha=0.79$, and $\alpha=0.57$, respectively, for the direct, indirect, and direct-indirect techniques. Analysis of variance was used to test for differences in mean scores according to gender, college of osteopathic medicine, practice type, area of specialization, and orientation of residency training (allopathic or osteopathic) for each individual technique as well as for direct,

Technique	Estimated Marginal Mean		P value
	Male	Female	
Counterstrain	3.132	3.518	.005
Cranial	2.005	2.376	.001
High-velocity low-amplitude thrust	3.694	2.822	<.001
Lymphatic	2.419	2.876	<.001
Muscle energy	3.867	4.225	.004
Myofascial/integrated neuromuscular release	2.446	3.006	<.001
Soft tissue	3.714	4.015	.008
Indirect	2.598	2.853	.010
Direct-indirect	2.504	3.062	<.001

Technique	Regression Coefficient for Age		P value
Facilitate positional release	0.0131	.030	
Fascial ligamentous release	0.0185	.004	
Functional	0.0141	.041	
High-velocity low-amplitude thrust	-0.0138	.017	
Muscle energy	-0.0265	<.001	
Direct	-0.0087	.030	
Indirect	0.0101	.025	

*Scale: 1, Never; 2, Seldom; 3, Sometimes; 4, Often; 5, Very often.

indirect, and direct-indirect techniques. When testing for differences in means between categories of the various factors, the Bonferroni adjustment for multiple comparisons was used. Age was included as a covariate in each analysis.

Results

Of the 3000 osteopathic physicians contacted, 54 questionnaires were returned undelivered and 4 questionnaires were returned after the cutoff date for receipt of responses. Responses were received from 979, for a response rate of 33.4%. Nine hundred fifty-five were complete and usable for the analyses. Of the physicians responding to the survey, 77.6% were men and 22.4% were women. Thirty-nine percent were family physicians, 16% were other primary care physicians, 5% were OMT specialists, and 39.7% were non-primary care specialists. Average age was 44.2 years, with the oldest respondent 86 years of age and the youngest 27 years of age. The physicians

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Table 4
Comparison of Preferred Osteopathic Manipulative Treatment Techniques Among Specialties (N = 955)

Specialty	Osteopathic Manipulative Treatment Techniques	P value		
		Family Practice	Other Primary Care Specialists	Non-Primary Care Specialists
Osteopathic manipulative medicine	Cranial	.007	.001	.004
	Fascial ligamentous	.043	.008	.021
	Articulatary		.047	
	Lymphatic		.008	
	Direct		.040	
	Indirect		.001	.004
	Indirect-direct		.034	
Family practice	High-velocity low-amplitude thrust		.001	.001
	Lymphatic		.001	
	Muscle energy		.009	
	Direct		<.001	
	Direct-indirect		.001	

*Denominator variable.

were predominately Caucasian (92.6%), followed by Asian (3%), Hispanic (2.1%), African American (1.6%), and Native American (1.6%). All colleges of osteopathic medicine were represented in the sample, and there was diversity in terms of age, year of graduation, specialty, type of practice, orientation of residency training, and number of years in practice.

Data on the relative frequency with which osteopathic physicians use manipulative techniques on a patient for whom OMT is indicated are presented in *Table 1*. Twenty-six percent of the sample indicated that they did not use OMT techniques, and the remaining respondents differed in the degree to which they responded to their use of each technique. Some respondents only rated those techniques they would use and did not avail themselves of the “never” option on the scale; thus, the “N” for the various techniques is variable.

The mean scores and standard deviations for the extent to which the physicians use the individual OMT techniques are presented in *Table 2*. Soft tissue was the most frequently used technique and cranial the least used. When the techniques were grouped as direct, indirect, or direct-indirect, direct techniques were used most frequently.

Based on an analysis of variance, women were more likely than men to use counterstrain, cranial, lymphatic, muscle energy, myofascial/integrated neuromuscular release, and soft tissue, while men were more likely to use high-velocity low-amplitude thrust. Older physicians were more likely to use facilitated positional release, fascial ligamentous release, and functional techniques, while younger physicians were more likely to use high-velocity low-amplitude thrust and muscle energy techniques. With respect to the broader groupings, women were more likely than men to use indirect or direct-indi-

rect techniques, and younger physicians preferred direct techniques, while older physicians preferred indirect techniques. Pairwise comparisons for these scale variables are presented in *Table 3*.

Significant variation existed among specialty groups for the use of OMT techniques. Osteopathic manipulative specialists were more likely than family physicians, other primary care physicians, and non-primary care physicians to use cranial techniques and fascial ligamentous release techniques. Similarly, OMT specialists were more likely than other primary care physicians to use articulartory and lymphatic techniques. Family physicians were more apt than other primary care physicians to use high-velocity low-amplitude thrust, lymphatic, or muscle energy techniques, while family physicians were also more likely to use high-velocity low-amplitude thrust than non-primary care specialists. Finally, with respect to the broader groupings, OMT specialists were more likely than other primary care physicians to use direct techniques, indirect techniques, and direct-indirect techniques. Correspondingly, family physicians were more likely than other primary care physicians to use direct techniques and direct-indirect techniques, and osteopathic manipulative specialists were more likely than non-primary care specialists to use indirect techniques. Pairwise comparisons for these scale variables are presented in *Table 4*.

The only difference correlated with the college from which the physicians graduated was that graduates of Des Moines University—College of Osteopathic Medicine and Surgery were more likely to use the lymphatic technique than were graduates of the Michigan State University College of Osteopathic Medicine ($P < .001$). Other demographic variables of

race/ethnic identification, date of graduation, years of practice, and allopathic or osteopathic orientation of residency training were unrelated in this study.

Comments

Diminishing use of OMT by osteopathic physicians has been substantiated in several recent articles.^{8,9,11} Nevertheless, while 50% of the respondents to this survey indicated that they used OMT on less than 5% of their patients, approximately 70% of the respondents used OMT for an average of 3.3 conditions/diagnoses.⁹ Despite a decrement in usage, OMT remains the major identifying feature associated with the osteopathic medical profession.¹² In *Foundations for Osteopathic Medicine*,² over half of the text addresses the important aspects of palpatory diagnosis and treatment, which clearly suggests the level of importance the profession associates with these treatment procedures.

It is fair to state that diverse OMT techniques have had various levels of popularity among osteopathic physicians. Data from this survey revealed that respondents most often use direct techniques to treat a patient for whom OMT is indicated rather than indirect or direct-indirect. Soft tissue, high-velocity low-amplitude thrust, and muscle energy techniques are the top three treatments of choice. Evidence from this study, however, suggests that gender and age are highly influential factors in determining the treatment of choice, with female osteopathic physicians and older osteopathic physicians more comfortable with indirect techniques, and male and younger osteopathic physicians more partial to direct techniques. This phenomenon may relate to the comparative ease with which the techniques can be performed and the degree of physical strength and exertion required.

Obvious specialty differences were evident when other physicians were compared with OMT specialists. Osteopathic manipulative treatment specialists were significantly more willing to use a broader spectrum of techniques, including direct, indirect, and direct-indirect. Differences were especially evident in the use of cranial, fascial ligamentous release, articular, and lymphatic techniques. Additional training in the nuances of performing a range of OMT techniques may have contributed to greater comfort with these procedures by OMT specialists. Furthermore, OMT specialists may have found advantages associated with being proficient in the broad range of manipulative techniques necessary to address the complex somatic dysfunctions of patients referred to them.

Family physicians revealed a greater propensity to use high-velocity low-amplitude thrust than other primary care physicians or non-primary care specialists. It is important to note that family physicians in this study had a much higher use of OMT than these other practitioners. Seventy percent of family physicians used OMT on 5% or more of their patients, compared with 31% of other primary care specialists and 23% of non-primary care specialists. It may be that in busy practices with a high volume of patients (many of whom would benefit

from OMT), family physicians have found the direct techniques, especially high-velocity low-amplitude thrust, to be less time-consuming and more efficient and effective.

Finally, our data suggest that colleges of osteopathic medicine seem to be producing graduates who are virtually indistinguishable with respect to their choice of OMT techniques. This outcome may be attributed to the educational efforts of the osteopathic medical profession to create a standardized glossary of osteopathic terminology and to facilitate the presentation of common instruction on osteopathic principles and practice within all predoctoral colleges.

Conclusion

Ninety-six percent of the osteopathic physicians in this study perceived OMT as an efficacious treatment modality, but varied in the extent to which they would prefer to use various treatments. Among the many techniques, a precise answer to the treatment of choice does not exist.^{2(pp483-488)} The degree to which practitioners use various techniques may be influenced by many organizational factors, including the educational continuum to which they have been exposed, time available for treating patients requiring OMT, physically and philosophically supportive facilities for OMT, and reasonable reimbursement for the time and effort to provide OMT for selected patients. However, data from this study suggest that the physician's sense of competence and comfort level with his or her own abilities may be a key factor in determining whether OMT is the treatment of choice as opposed to nonmanipulative options.

Successful integration of OMT into a practice requires that a physician have the ability to respond to the acuity or chronicity of a diagnosis and to the variable health status of individual patients. This can be achieved if the physician has a sufficiently broad armamentarium from which to select the procedure or procedures that in his or her experience best fits the situation.⁶

Selection of treatment methods and the implications of such choices on the quality and effectiveness of care should be investigated. Educational institutions involved in osteopathic undergraduate medical education, graduate medical education, and continuing medical education should note the variables revealed in this study that may influence the comfort zone and flexibility of graduates in applying OMT. Undergraduate medical education and graduate medical education programs must be modified to encourage greater use of OMT in a variety of medical settings to reverse the documented trend of diminished use of OMT within the osteopathic medical profession. Failing to take definitive action to ensure the viability of OMT as an efficacious treatment option will give impetus to the ongoing erosion and ultimate disappearance of the osteopathic profession's most defining and identifiable entity.

ORIGINAL CONTRIBUTION

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Proposed Amendments to the CODE OF ETHICS of the American Osteopathic Association

(Old material crossed out; new material in CAPITALS)

Section 11

In any dispute between or among physicians regarding the diagnosis and treatment of a patient, the attending physician has the responsibility for final decisions, consistent with any applicable ~~osteopathic~~ hospital rules or regulations.

Section 17 (NEW)

FROM TIME TO TIME, INDUSTRY MAY PROVIDE SOME AOA MEMBERS WITH GIFTS AS AN INDUCEMENT TO USE THEIR PRODUCTS OR SERVICES. MEMBERS WHO USE THESE PRODUCTS AND SERVICES AS A RESULT OF THESE GIFTS, RATHER THAN SIMPLY FOR THE BETTERMENT OF THEIR PATIENTS AND THE IMPROVEMENT OF THE CARE RENDERED IN THEIR PRACTICES, SHALL BE CONSIDERED TO HAVE ACTED IN AN UNETHICAL MANNER.

Note:

The above will be voted on the AOA House of Delegates at its July 18-20, 2003, meeting in Chicago, Illinois.