Osteopathic Manipulative Treatment for Older Patients: A National Survey of Osteopathic Physicians

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Financial Disclosures: None reported.

Support: Funding for this project was provided by the Osteopathic Heritage Foundation.

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Submitted November 6, 2014; revision received March 20, 2015; accepted June 12, 2015.

Context: The mission of the American Academy of Osteopathy (AAO) emphasizes "the integration of osteopathic principles, practices and manipulative treatment in patient care." Osteopathic manipulative treatment (OMT) can be used to address serious conditions affecting older persons (≥65 years). However, the percentage of osteopathic physicians who use OMT in older patients, the differences in conditions for which OMT is used, and the OMT techniques used in older patients compared with younger patients are unknown.

Objective: To determine the use of OMT by osteopathic physicians in older patients compared with younger patients.

Methods: Members of the AAO were invited, via 3 e-mail messages sent over the course of a 4-month period, to participate in an anonymous online survey. The survey asked physicians to report the percentage of patients by age group (<65 years, 65-79 years, and ≥80 years) to whom they provided OMT, the types of musculoskeletal and system-based conditions for which OMT was used, and the specific OMT techniques used.

Results: A total of 197 of 629 AAO members (31.3%) responded to the survey. Respondents indicated that OMT was used at approximately the same rate in all patients in the 3 age groups. Osteopathic manipulative treatment was frequently used to manage a variety of musculoskeletal conditions, with the exception of osteoporosis, in all patients in the 3 age groups. The system-based conditions most often managed with OMT were respiratory and neurologic conditions. Various OMT techniques were used to treat patients in the 3 age groups; however, high-velocity, low-amplitude (HVLA) was usually avoided in patients aged 65 years or older.

Conclusion: Osteopathic physicians who used OMT in their practice administered OMT for a variety of musculoskeletal and system-based conditions in patients of all ages. Various OMT techniques were used by these physicians for patients of all ages, with the exception of HVLA, which was mainly used in patients younger than 65 years.

J Am Osteopath Assoc. 2016;116(3):136-143
doi:10.7556/jaoa.2016.030

The number of older persons (age ≥65 years) in the United States is projected to increase from 13% as reported in 2010 to 19.3% by 2030 and 20.2% by 2050.[1] Patients in this age group tend to have an increase in health problems, chronic pain, and gait and balance disturbances.[2-4]

The large number and increasing prevalence of multiple chronic conditions among older persons[2] is of concern because many of these conditions are managed by multiple medications. Polypharmacy not only places older persons at risk for adverse drug effects and drug-disease interactions[5,6] but also increases the potential for falls,[7] frailty,[8] hospitalization,[9] and rehospitalization.[10,11] To address concerns about polypharmacy, recommendations for nonpharmacologic interventions have been made to address some of the medical needs of older patients.[12] Osteopathic manipulative treatment (OMT) has been shown to reduce medication use in patients, especially in those with low back pain[13,14] and pneumonia.[15-17]

The prevalence of chronic pain is estimated to be between 25% and 75% among community-dwelling older persons and between 83% and 93% among older persons living in institutional settings.[3] Chronic pain can limit participation in daily activities, contribute to sleep disturbances, and increase the risk for depression and its sequelae (eg, poor physical functioning, disability, social isolation, suicidal ideation).[18] The American Geriatrics Society has stated that pharmacologic pain management methods used in conjunction with nonpharmacologic methods can relieve persistent pain among older adults.[19] Osteopathic manipulative treatment is a nonpharmacologic way of addressing chronic pain in older persons.[20-22]

Gait and balance disorders are a common cause of falls in this population.[4] Many older persons who fall have some form of injury as a result.[23] Fall-related injuries can be superficial, but falls among older persons can result in fractures, traumatic brain injuries, or death.[24] Falls among older persons also contribute considerably to increased health care costs.[24,25] There is a small but growing body of evidence demonstrating that older persons with gait and balance disorders may benefit from OMT.[26,27] For example, a prospective study of older persons without gait problems found that those who received OMT exhibited improved postural stability, whereas those in a comparison group who did not receive OMT demonstrated no improvements in gait and balance.[27]

Although research has shown that OMT can have a positive effect on conditions commonly found among older persons, the percentage of osteopathic physicians who use OMT to treat older persons has not been reported, to our knowledge. Furthermore, the musculoskeletal and system-based conditions for which OMT is used have not been compared across age groups, nor have the OMT techniques themselves been compared across age groups, to our knowledge. Surveys of osteopathic physicians have documented multiple aspects of OMT use in their practices, including the percentage of patients on whom OMT is used,[28,29] how frequently OMT is administered,[30] how frequently certain techniques are used,[31] the conditions for which OMT techniques target,[29] and how frequently conditions are managed with OMT.[32] However, these surveys have not explored the use of OMT techniques in older persons and compared it with that in younger persons.

The current study sought to fill these gaps in the literature by comparing the use of OMT in patients in different age groups. The objective of the study was to assess the percentage of osteopathic physicians who use OMT to treat patients in 3 age groups (<65 years, 65-79 years, and ≥80 years), the percentage of osteopathic physicians who use OMT to manage musculoskeletal and system-based conditions, and the percentage of osteopathic physicians who use various OMT techniques.

Methods

The membership of the American Academy of Osteopathy (AAO) was selected to serve as the survey population because the mission of the AAO[33] is consistent with the purpose of this study, and the AAO's membership represents a group of osteopathic physicians who integrate OMT into their practice of medicine. In 2012, the Louisa Burns Osteopathic Research Committee of the AAO agreed to allow the survey to be disseminated to its members who are board certified in neuromusculoskeletal medicine/osteopathic manipulative medicine (NMM/OMM) or who have certification or special proficiency in osteopathic manipulative medicine (C-SPOMM). The survey and all study procedures were reviewed and approved by the Institutional Review Board of the Rowan University School of Osteopathic Medicine in Stratford, New Jersey.

Survey

The online survey was developed in SurveyGizmo, LLC. Responses were anonymous, and 1 response per person was permitted. The first section of the survey described the purposes of the survey, the types of questions that would be asked, the anonymity of responses, and the voluntary nature of participation, which could be ceased at any time. Respondents were also informed that participation in the survey served as consent to be in the study. The second section contained the survey questions. Respondents were asked to report their demographic characteristics (ie, age, sex, year of residency completion, board certification specialty, state in which they currently practiced, percentage of patients who were aged 65 years or older [≤25%, 26%-50%, 51%-75%, or 76%-100%]) and their use of OMT.

The OMT-related questions asked respondents to indicate the extent to which they used OMT in their practice, the types of musculoskeletal (eg, ankle pain, arthritis, back pain) and system-based (eg, cardiac, gastrointestinal, neurologic) conditions for which they administered OMT, and the OMT techniques they used for patients in 3 age groups (<65 years, 65-79 years, and ≥80 years). For questions regarding both musculoskeletal and system-based conditions, respondents were able to indicate whether they did not use OMT to manage each of the listed conditions and were able to type in additional conditions for which they used OMT if the condition was not included among those already listed. For questions regarding which OMT techniques respondents used, respondents were able to indicate they did not use each of the listed techniques and were able to type in additional techniques they used if the technique was not included among those already listed.

During a 4-month period in 2012, AAO members who met the inclusion criteria were e-mailed 3 invitations to participate in the study. The invitation contained a short description of the survey and a link to the survey.

Data Management and Statistical Analyses

Survey data were extracted from SurveyGizmo, LLC into an Excel (Microsoft Corporation) spreadsheet and then transferred into a database. SPSS version 20 (IBM Corporation) was used to perform all statistical analyses. Responses were reported as numbers and percentages. Differences in respondents' use of OMT for the types of musculoskeletal and system-based conditions and the types of techniques used were explored using the Cochran Q test. Multiple comparisons were accounted for with a Bonferroni correction, which adjusted the α level according to the number of conditions or techniques tested.

Results

Of the 629 AAO members e-mailed, 197 osteopathic physicians from 36 states responded to the survey for a response rate of 31.3%. The mean (SD) age of respon-

dents was 51 (10.3) years, and 117 (59.4%) were men. The mean (SD) number of years since they completed their residency was 15.8 (9.1). A total of 158 respondents (80.2%) were board certified in NMM/OMM, 34 (17.3%) had C-SPOMM, and 5 (2.5%) met both criteria. The percentage of older patients seen by respondents was less than or equal to 25% for 78 respondents (39.6%), 26% to 50% for 84 (42.6%), 51% to 75% for 31 (15.7%), and 76% to 100% for 4 (2%).

All 197 respondents reported using OMT in their practice (*Table 1*). Many respondents indicated that they used OMT to manage a variety of musculoskeletal conditions, and the use did not vary by patient age group in most cases (*Table 2*). Respondents indicated that they used OMT to treat the following conditions in 90% or more of their patients in the 3 age groups: ankle pain, arthritis, back pain (upper and middle), chronic pain, elbow pain, gait abnormalities, headache, hip pain, knee pain, low back pain, neck pain, paresthesia, and shoulder pain. A notable exception was osteoporosis. The Cochran Q test indicated that statistically significant differences in OMT use were found across the 3 age groups for ankle pain (χ^2_2=15.60; P=.000), carpal tunnel syndrome (χ^2_2=27.25; P=.000), elbow pain (χ^2_2=14.38; P=.001), knee pain (χ^2_2=12.82; P=.002), and paresthesia (χ^2_2=14.78 P=.001). A total of 51 respondents (28%) did not use OMT to manage osteoporosis.

Respondents reported that they used OMT to manage each of the system-based conditions in 80% or more of their patients in the 3 age groups (*Table 3*). The Cochran Q test indicated that statistically significant differences in OMT use were found across the 3 groups for cardiac (χ^2_2=11.22; P=.004), endocrine (χ^2_2=12.67; P=.002), gastrointestinal (χ^2_2=15.18; P=.001), and neurologic (χ^2_2=35.59; P=.000) conditions. For neurologic and respiratory conditions, 6 (3.1%) and 3 (1.6%) respondents, respectively, indicated that they did not use OMT to manage these conditions.

The OMT techniques that respondents used are presented in *Table 4*. Although the number of respondents who used high-velocity, low-amplitude (HVLA) in patients younger than 65 years (149 [99.3%]) was comparable to the number of respondents who used the other techniques in this age group, the use of HVLA was dramatically lower in the 2 older age groups. In comparison with the number of respondents who used the other OMT techniques, the number of respondents who used HVLA was substantially lower in patients aged 65 to 79 years (90 [60%]) and 80 years or older (48 [32%]). The Cochran Q test indicated that statistically significant differences were found in OMT use across the 3 age groups for HVLA (χ^2_2=149.96; P=.000), muscle energy techniques (χ^2_2=31.14; P=.000), and the Still technique (χ^2_2=18.17; P=.000).

Table 1.
A National Survey of Osteopathic Physicians:
Rate of OMT Applied to Older Patients by Age Group (N=197)

	Rate of OMT Use, No. (%)				
Percent Age Group	**0%**	**1%-25%**	**26%-50%**	**51%-75%**	**76%-100%**
<65 y	0	7 (3.6)	20 (10.2)	16 (8.1)	154 (78.2)
65-79 y	1 (0.5)	11 (5.6)	19 (9.6)	14 (7.1)	152 (77.2)
≥80 y	2 (1)	21 (10.7)	16 (8.1)	8 (4.1)	150 (76.1)

Abbreviation: OMT, osteopathic manipulative treatment.

Table 2.
A National Survey of Osteopathic Physicians:
OMT Applied to Older Patients by Musculoskeletal Condition

Musculoskeletal Condition	Total Responses	No. Who Use OMT	Patient Age, No. (%)[a]			*P* Value[b]
			<65 y	65-79 y	≥80 y	
Ankle pain	191	190	186 (97.9)	176 (92.6)	172 (90.5)	.000
Arthritis	192	186	177 (95.2)	177 (95.2)	177 (95.2)	>.99
Carpal tunnel	192	190	186 (97.9)	172 (90.5)	162 (85.3)	.000
Chronic pain	193	188	181 (96.3)	181 (96.3)	176 (93.6)	.27
Elbow pain	192	191	187 (97.9)	178 (93.2)	173 (90.6)	.001
Gait abnormalities	191	183	176 (96.2)	176 (96.2)	173 (94.5)	.59
Headache	193	193	189 (97.9)	183 (94.8)	179 (92.7)	.02
Hip pain	194	193	190 (98.4)	184 (95.3)	183 (94.8)	.05
Knee pain	193	191	188 (98.4)	181 (94.8)	176 (92.1)	.002
Low back pain	194	194	191 (98.5)	190 (97.9)	187 (96.4)	.24
Neck pain	192	192	188 (97.9)	186 (96.9)	186 (96.9)	.67
Osteoporosis	180	129	113 (87.6)	125 (96.9)	116 (89.9)	.008
Paresthesia	192	189	186 (98.4)	182 (96.3)	173 (91.5)	.001
Shoulder pain	194	194	189 (97.4)	188 (96.9)	186 (95.9)	.56
Upper/middle back pain	194	194	190 (97.9)	189 (97.4)	181 (93.3)	.01
Other[c]	96	69	66 (95.7)	62 (89.9)	64 (92.8)	.22

[a] Percentages are out of the total number of respondents who used OMT for this condition.
[b] A Bonferroni correction adjusted the α level to account for the number of comparisons (.05/16 conditions). *P* values <.003 were considered statistically significant.
[c] Other responses most often referred to the use of OMT for a wide array of complications, symptoms, and diagnoses.

Abbreviation: OMT, osteopathic manipulative treatment.

Discussion

Osteopathic physicians who regularly incorporate OMT into patient care see OMT as safe and effective for patients of all ages, with respondents using OMT in more than 75% of their patients. Older age did not inhibit respondents' use of OMT, which respondents applied broadly for both musculoskeletal and system-based conditions. Although statistically significant differences were found in the use of OMT techniques among the 3 age groups, the technique used least often in the 2 older age groups was HVLA. Because HVLA is relatively contraindicated in patients with osteoporosis,[34,35] and older persons are more likely to have osteoporosis, it was to be expected that physicians would be less likely to use HVLA in this population.

The current study contributes to the literature on the use of OMT techniques to conservatively manage medical conditions in patients aged 65 years or older.[28-32] Investigating how OMT is used to treat patients in this age group is important given that this segment of the population is projected to continue increasing for the foreseeable future.[1]

Table 3.
A National Survey of Osteopathic Physicians: OMT Applied to Older Patients by System-Based Condition

System-Based Condition	Total Responses	No. Who Use OMT	Patient Age, No. (%)[a]			*P* Value[b]
			<65 y	65-79 y	≥80 y	
Cardiac	183	146	129 (88.4)	142 (97.3)	134 (91.8)	.004
Endocrine	173	104	103 (99)	97 (93.3)	93 (89.4)	.002
Gastrointestinal	187	177	176 (99.4)	168 (94.9)	163 (92.1)	.001
Neurologic	191	185	183 (98.9)	173 (93.5)	157 (84.9)	.000
Renal	174	112	109 (97.3)	104 (92.9)	103 (92)	.08
Respiratory	188	185	182 (98.4)	179 (96.8)	172 (93)	.007
Other[c]	67	42	41 (97.6)	38 (90.5)	39 (92.9)	.17

[a] Percentages are out of the total number of respondents who used OMT for this system-based condition.
[b] A Bonferroni correction adjusted the α level to account for the number of comparisons (.05/7 systems). *P* values <.007 were considered statistically significant.
[c] Other responses most often referred to the use of OMT for a wide array of complications, symptoms, and diagnoses.

Abbreviation: OMT, osteopathic manipulative treatment.

Table 4.
A National Survey of Osteopathic Physicians: OMT Techniques Applied to Older Patients

OMT Technique	Total Responses	No. Who Use OMT	Patient Age, No. (%)[a]			*P* Value[b]
			<65 y	65-79 y	≥80 y	
BLT	185	173	173 (100)	169 (97.7)	168 (97.1)	.02
Counterstrain	184	162	160 (98.8)	156 (96.3)	154 (95.1)	.06
Cranial	197	196	187 (95.4)	183 (93.4)	180 (91.8)	.06
HVLA	177	150	149 (99.3)	90 (60)	48 (32.0)	.000
Lymphatics	182	170	168 (98.8)	162 (95.3)	164 (96.5)	.05
Muscle energy	187	177	175 (98.9)	165 (93.2)	151 (85.3)	.000
Rib raising	180	160	157 (98.1)	152 (95)	150 (93.8)	.06
Soft tissue	189	189	187 (98.9)	183 (96.8)	183 (96.8)	.2
Still technique	177	148	148 (100)	143 (96.6)	136 (91.9)	.000
Other[c]	69	51	48 (94.1)	46 (90.2)	45 (88.2)	.46

[a] Percentages are out of the total number of respondents who used this OMT technique.
[b] A Bonferroni correction adjusted the α level to account for the number of comparisons (.05/10 techniques). *P* values <.005 were considered statistically significant.
[c] Other responses most often referred to a wide array of other techniques.

Abbreviations: BLT, balanced ligamentous tension; HVLA, high-velocity, low-amplitude; OMT, osteopathic manipulative treatment.

More than 75% of respondents in the current study reported using OMT in 76% to 100% of their patients in the 3 age groups. The degree of OMT use was found to be higher than previously reported by another survey of osteopathic physicians, in which 53.5% of respondents indicated they used OMT in less than 5% of patients.[28] The differences in the rate of OMT use between that study and the current study can be accounted for by the different groups surveyed. Our survey was disseminated to the members of the AAO, an organization that emphasizes the "integration of osteopathic principles, practices and manipulative treatment in patient care."[33] The previous survey was distributed to a random list of osteopathic physicians from the American Osteopathic Association Physician Masterfile.[28]

A limitation of this survey is that its findings may not reflect the way OMT is used in the larger osteopathic medical community. As previously mentioned, the AAO member's dedication to the inclusion of OMT in patient care may reflect greater OMT use in this population than in the general osteopathic medical community. Another limitation of this survey is the low response rate (31.3%). However, this rate is consistent with response rates of previous surveys of osteopathic physicians regarding their use of OMT, which have yielded rates of 33% to 38%.[28-32]

Conclusion

In general, osteopathic physicians who use OMT use it to treat patients of all ages. Only HVLA techniques are avoided for patients aged 65 years or older. Respondents indicated that other OMT techniques were used for these patients, however. Future research should explore the use of OMT to treat older persons in a broader sample of osteopathic physicians.

Author Contributions

All authors provided substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data; all authors drafted the article or revised it critically for important intellectual content; all authors gave final approval of the version of the article to be published; and all authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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