

Developing Osteopathic Competencies in Geriatrics for Medical Students

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Context: Minimum core competencies for allopathic medical students in the specialty area of geriatrics have been developed, comprising 26 competencies divided into 8 topical domains. These competencies are appropriate for osteopathic medical students, but they do not include competencies relating to osteopathic principles and practice (OPP) in geriatrics. There remains a need within the osteopathic profession to develop specialty-specific competencies specific to OPP.

Objective: To develop more specific and comprehensive minimum competencies in OPP for osteopathic medical students in the field of geriatric medicine.

Methods: The Delphi technique (a structured communication technique that uses a panel of experts to reach consensus) was adapted to generate new core competencies relating to OPP. Osteopathic geriatricians and members of the Educational Council on Osteopathic Principles (ECOP) of the American Association of Colleges of Osteopathic Medicine participated in a breakout session and 2 rounds of surveys. Proposed competencies with 80% of the participants ranking it as "very important and should be added as a competency" were retained. Participants were also asked if they agreed that competencies in OPP should include specific types of osteopathic manipulative treatment techniques for the elderly.

Results: Responses were received from 26 osteopathic physician experts: 17 ECOP members and 9 geriatricians. Fourteen proposed competencies were developed: 7 related to the existing topic domains, and 7 were placed into a new domain of osteopathic manipulative medicine (OMM). Six proposed competencies were retained, all of which were in the new OMM domain. These competencies related to using OMM for gait and balance assessment, knowing adverse events and contraindications of OMM, using OMM for pain relief and end-of-life care, using OMM in the hospital and nursing home setting, adapting OMM to fit an elderly individual, and using OMM to address limited range of motion and ability to perform activities of daily living. Thirteen of 22 participants (59%) agreed that OPP competencies should include specific osteopathic manipulative treatment techniques.

Conclusions: The Delphi consensus building process was used to create 6 new minimum competencies in OMM for osteopathic medical students for the specialty area of geriatrics. Using data from this consensus, medical schools, residencies, and fellowships can create standards and expectations for osteopathic physicians regarding the best care of geriatric patients.

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The graying of America is expected to dramatically alter the population profile of the United States over the next 4 decades as the baby boomers mature. In 2050, the number of US individuals aged 65 years or older will increase to more than double the number in 2010.¹ These individuals will constitute 20% of the total population in 2050 compared with 13% in 2010.¹ Likewise, the sheer number of those aged 85 years or older will also increase and constitute 4.3% of the total population in 2050 compared with 1.7% in 2010.² In addition, in 2050, those aged 85 years or older will account for 21% of all individuals aged 65 years or older, up from 14% in 2010.^{1,2}

These projections suggest that physicians from nearly every specialty will be caring for an increased number of older patients, some of whom by virtue of their age will require a more extensive level of support. Consequently, the Institute of Medicine,^{3,4} the Association of American Medical Colleges (AAMC),⁵ and the American Geriatrics Society (AGS)⁶ have each called for more geriatric-focused training in medical education, making recommendations such as “all licensure, certification, and maintenance of certification for health care professionals should include demonstration of competence in care of older adults as a criterion.”⁴ As a result, a number of initiatives have been undertaken at all levels of medical education to identify competencies and provide curricular guidelines to train the next generation of physicians to better care for the elderly.

Specific to undergraduate medical education, in 2000 the AGS was among the first to attempt to identify “core competencies” (ie, basic attitudes, knowledge, and skills that were deemed necessary to care for older patients). The recommendations of the AGS Education Committee⁷ were intended as a framework for medical schools to develop geriatric curricula and evaluation strategies. Leipzig et al⁸ undertook another initiative, which reframed the question about geriatric competencies for medical students in a way not previously asked: “What are the minimum geriatrics competencies needed by a

new intern to adequately care for older adults?” Leipzig et al⁸ focused on performance, particularly the application of the graduates’ knowledge, skills, and attitudes. Participants in this subsequent initiative to define competencies for graduating medical students included faculty from almost half of US medical schools and representatives of several major organizations such as the AAMC, the AGS, the Canadian Geriatrics Society, the Association of Directors of Geriatric Academic Programs, geriatric interest groups of the Society of General Internal Medicine and Society of Teachers of Family Medicine, and American Medical Directors Association, as well as other key informants and stakeholders in medical education. Several domains surfaced from the systematic, multimethod consensus process. Twenty-six minimum competencies emerged, spread over 8 content domains: medication management; cognitive and behavioral disorders; self-care capacity; falls, balance, and gait disorders; health care planning and promotion; atypical presentation of disease; palliative care; and hospital care for elders (*Figure*).⁸

Nonetheless, these 26 minimum competencies in geriatrics were developed for allopathic medical students. Although appropriate for osteopathic medical students, these competencies obviously were not developed with osteopathic principles and practice (OPP) in mind. “Osteopathic principles” refers to the philosophy of the profession, whereas “practice” refers to the application of this philosophy to general clinical practice, and more specifically to osteopathic manipulative treatment (OMT). Osteopathic philosophy includes 4 key principles⁹: (1) the body is a unit; the person is a unity of body, mind, and spirit; (2) the body is capable of self-regulation, self-healing, and health maintenance; (3) structure and function are reciprocally interrelated; and (4) rational therapy is based on an understanding of the basic principles of body unity, self-regulation, and the interrelationship of structure and function. The American Osteopathic Association (AOA) House of Delegates and *The Journal of the American Osteopathic*

<p>Medication Management</p> <ol style="list-style-type: none"> 1. Explain impact of age-related changes on drug selection and dose based on knowledge of age-related changes in renal and hepatic function, body composition, and central nervous system sensitivity. 2. Identify medications, including anticholinergic, psychoactive, anticoagulant, analgesic, hypoglycemic, and cardiovascular drugs that should be avoided or used with caution in older adults and explain the problems associated with each. 3. Document a patient's complete medication list—including prescribed, herbal, and over-the-counter medications—and for each medication provide the dose, frequency, indication, benefit, side effects, and an assessment of adherence.
<p>Cognitive and Behavioral Disorders</p> <ol style="list-style-type: none"> 4. Define and distinguish among the clinical presentations of delirium, dementia, and depression. 5. Formulate a differential diagnosis and implement initial evaluation in a patient who exhibits dementia, delirium, or depression. 6. In an older patient with delirium, urgently initiate a diagnostic work-up to determine the root cause (etiology). 7. Perform and interpret a cognitive assessment in older patients for whom there are concerns regarding memory or function. 8. Develop an evaluation and non-pharmacologic management plan for agitated, demented or delirious patients.
<p>Self-Care Capacity</p> <ol style="list-style-type: none"> 9. Assess and describe baseline and current functional abilities (instrumental activities of daily living, activities of daily living, and special senses) in an older patient by collecting historical data from multiple sources and performing a confirmatory physical examination. 10. Develop a preliminary management plan for patients presenting with functional deficits, including adaptive interventions and involvement of interdisciplinary team members from appropriate disciplines, such as social work, nursing, rehabilitation, nutrition, and pharmacy. 11. Identify and assess safety risks in the home environment, and make recommendations to mitigate these.
<p>Falls, Balance, and Gait Disorders</p> <ol style="list-style-type: none"> 12. Ask all patients >65 years old, or their caregivers, about falls in the last year, watch the patient rise from a chair and walk (or transfer), then record and interpret the findings. 13. In a patient who has fallen, construct a differential diagnosis and evaluation plan that addresses the multiple etiologies identified by history, physical examination and functional assessment.

(continued)

Figure.

Minimum geriatric competencies for medical students as determined with a systematic multimethod consensus process in 2007. Used with permission from Leipzig et al. Keeping granny safe on July 1: a consensus on minimum geriatrics competencies for graduating medical students. *Acad Med.* 2009;84(5):604-610.⁸ Competencies are printed as presented by Leipzig et al and have not been edited for JAOA style.

*Association*¹⁰ have officially adopted these tenets.¹⁰ Within the osteopathic medical profession there is a movement to more deeply integrate OPP into osteopathic medical education, the presumption being OPP enhances patient care and the profession's long-term viability. Therefore, OPP should be moved from the periphery toward the center of osteopathic medical education.¹¹ One step toward this goal is the development of minimal OPP competencies for osteopathic medi-

cal students that are specific to each specialty area.^{11,12} This approach was endorsed by the AOA Core Competency Task Force.¹² In 2008, Gugliucci and Giovanis¹³ published curricula standards for osteopathic medical students in geriatric medicine that included competencies relating to OPP. However, these OPP-related competencies say only that osteopathic medical students should know about osteopathic manipulative methods, prevention strategies appropriate for the elderly, and

Health Care Planning and Promotion
14. Define and differentiate among types of code status, health care proxies, and advanced directives in the state where one is training.
15. Accurately identify clinical situations where life expectancy, functional status, patient preference, or goals of care should override standard recommendations for screening tests in older adults.
16. Accurately identify clinical situations where life expectancy, functional status, patient preference, or goals of care should override standard recommendations for treatment in older adults.
Atypical Presentation of Disease
17. Identify at least 3 physiologic changes of aging for each organ system and their impact on the patient, including their contribution to homeostenosis (age-related narrowing of homeostatic reserve mechanisms).
18. Generate a differential diagnosis based on recognition of the unique presentations of common conditions in older adults, including acute coronary syndrome, dehydration, urinary tract infection, acute abdomen, and pneumonia.
Palliative Care
19. Assess and provide initial management of pain and key nonpain symptoms based on patient's goals of care.
20. Identify the psychological, social, and spiritual needs of patients with advanced illness and their family members, and link these identified needs with the appropriate interdisciplinary team members.
21. Discuss palliative care (including hospice) as a positive, active treatment option for a patient with advanced disease.
Hospital Care for Elders
22. Identify potential hazards of hospitalization for all older adult patients (including immobility, delirium, medication side effects, malnutrition, pressure ulcers, procedures, perioperative and postoperative periods, and hospital-acquired infections) and identify potential prevention strategies.
23. Explain the risks, indications, alternatives, and contraindications for indwelling (ie, Foley) catheter use in the older adult patient.
24. Explain the risks, indications, alternatives, and contraindications for physical and pharmacological restraint use.
25. Communicate the key components of a safe discharge plan (eg, accurate medication list, plan for follow-up), including comparing/contrasting potential sites for discharge.
26. Conduct a surveillance examination of areas of the skin at high risk for pressure ulcers and describe existing ulcers.

Figure (continued).

Minimum geriatric competencies for medical students as determined with a systematic multimethod consensus process in 2007. Used with permission from Leipzig et al. Keeping granny safe on July 1: a consensus on minimum geriatrics competencies for graduating medical students. *Acad Med.* 2009;84(5):604-610.⁸ Competencies are printed as presented by Leipzig et al and have not been edited for *JAOA* style.

interrelationships of structure and function.^{13,14} While this is a good beginning, these suggested competencies lack specificity and are limited in scope.

Therefore, in the current study, we developed more specific and comprehensive minimum competencies in OPP for osteopathic medical students in the field of geriatric medicine. These proposed competencies were endorsed by the Educational Council on Osteopathic Principles (ECOP) of the American Association of

Colleges of Osteopathic Medicine (AACOM) at the fall 2011 meeting. Because the AAMC-endorsed 26 geriatric competencies are both appropriate for osteopathic medical students and already widely accepted, we chose to add the new, proposed OPP competencies to this existing list. To do this, we used a consensus-building process between osteopathic geriatricians and members of ECOP.

Methods

We developed a survey of proposed OPP competencies which used the *Delphi technique*.¹⁵ The Delphi technique uses multiple rounds of responses to establish consensus on an issue or topic, starting from a series of items that are sent to experts, who are then asked to rate or rank the items. The information is then collated and re-sent so that the experts see the group preferences and are given an opportunity to re-evaluate the items in light of the latest information. In general, 2 or 3 rounds are usually used to develop consensus.

We surveyed 2 groups of osteopathic physician experts: geriatric medicine specialists and specialists in neuromusculoskeletal medicine-osteopathic manipulative medicine (NMM/OMM) who have served as members of ECOP, which is a council of AACOM. This council is responsible for discussing ideas pertaining to the teaching of OPP for the member institutions of AACOM and developing consensus guidelines in the teaching of OPP. Osteopathic manipulative medicine (OMM) department chairs, or their representatives, from every COM in the United States serve on ECOP. Approximately 36 physicians are members or alternate representatives of ECOP, including an AACOM representative.

We recruited 10 osteopathic physicians who are also academic geriatricians. We chose these physicians on the basis of their active career commitment to geriatric medical education, with many having served as department chair or dean at a medical school. Because of their roles as current educators of osteopathic medical students, these 2 groups of academic physicians qualified as experts in the topic area and thus were best qualified to define new competencies. The number of participants is consistent with the numbers recommended by de Villiers et al¹⁵ for use of the Delphi technique.

Consistent with the Delphi technique, the 2 ways of creating the first questionnaire are by (1) pooling ideas from the authors after they study the literature and (2) offering the expert panel open-ended options to elicit their opinions. Both approaches were incorporated in

the present study. First, a draft of geriatric competencies for osteopathic medical students was developed by 2 of the authors (D.R.N. and M.K.C.). The list was then reviewed by all of the authors, which included faculty with expertise in geriatric medicine, OMM, research, and education. The competency statements were refined and edited for clarity and consistency in format.

The competencies were then presented to a breakout session of ECOP members at the fall 2010 meeting. Approximately 7 people were part of the breakout session. The group was asked to review the competencies that were developed by the authors, to generate additional competencies, and/or to identify concepts to be included in additional competencies. These ideas were brought back to the entire council for additional feedback. Ideas generated were summarized through flip charts or the electronic equivalent, without identifying who generated the various ideas.

After the competencies and concepts were identified at the ECOP meeting, the information was summarized and collated by the authors. Specific competencies were edited and created by them (created competencies were based on comments received from ECOP participants). The list of competencies was sent to the ECOP participants and the geriatricians via Survey Gizmo; responses were received between January and April 2011.

In the first round of the Delphi techniques, 14 competencies were sent to the participants to rank. Seven of these proposed competencies were deemed to relate to OPP and were distributed among the already existing domains. The other 7 of the proposed competencies were deemed to relate to osteopathic practices or manipulation and so were placed into the new domain of OMM. Participants were asked to rank each of the proposed competencies on a scale of 1 to 4, where 1 was “not important and should not be added as a competency” and 4 was “very important and should be added as a competency.” We also solicited additional suggestions for competencies from participants by using an open-ended question.

After the rankings were completed from this first

rating round, the authors summarized the results using means. Any additional competencies suggested were also added to the list. In a second round in April 2011, the original ranked competencies were sent back to the respondents from the first round. Each participant was provided with feedback about the group means and his or her own responses from the first round. They were asked if they wanted to change their responses for each item. Because the Delphi technique is a method for developing consensus, only those who participated in the first round and provided the initial input toward consensus were asked to respond to the second round. The responses to the second rating round were summarized using means and the percentage of “4” ratings. The competencies with 80% or more of “4” ratings were retained. Those competencies not ranking 80% or more of “4” ratings were discarded. The 80% agreement is within the range of agreement levels used by other authors.¹⁶

In the first round survey, participants were asked if the OPP competencies should include competency in specific types of OMT techniques in the elderly. A list was also generated of specific OMT techniques that osteopathic medical students might use in the elderly. In the second round, participants were asked to identify in which types of OMT techniques osteopathic medical students should be competent when treating the elderly.

For each round, the participants were reminded by e-mail, personal telephone, and in-person contact to complete the rankings. Participants were given 4 to 6 weeks to respond to the survey requests prior to the subsequent request. Every effort was made to ensure a 100% completion rate.

Results

Fourteen competencies were identified for the first-round survey, 7 of which related to the new OMM domain (ie, relating to OPP or OMT) and 7 of which related to existing domains. The first round was sent to 46 osteopathic physicians—36 ECOP members and 10 geriatricians.

Responses were received from 26 osteopathic physicians from January 2011 to April 2011, for a first-round response rate of 57%. Of the 36 ECOP members, 17 completed the survey, for a response rate of 47%. Of the 10 geriatricians, 9 completed the survey, for a response rate of 90%. *Table 1* displays the 14 proposed competencies that were sent in the first round, categorized by 9 domains. Twenty-four responses were received in time to be summarized for the second round, which was conducted in April 2011. Mean responses from the first round were sent back to those who responded to the first survey. In addition, 3 new competencies were generated during the first round of ratings and they were added to the second rating round.

Twenty-two physicians responded to the second rating round; 15 were ECOP members (response rate, 82%), and 7 were geriatricians (response rate, 78%). Responses to the second round were reviewed by the authors. It was determined that the criteria for accepting a competency was a rating of 4 (“very important and should be added as a competency”) given by 80% of the raters. The 80% agreement is within the range of agreement levels used by other authors.¹⁶ *Table 2* lists the competencies that were not accepted based on this criterion, and *Table 3* lists the competencies that were accepted.

The proposed competencies that did not relate directly to OMM were distributed among the existing 8 domains (medication management; cognitive and behavioral disorders; self-care capacity; falls, balance, and gait disorders; health care planning and promotion; atypical presentation of disease; palliative care; and hospital care for elders). This process produced 7 proposed competencies for the new OMM domain, and 10 for the other 8 domains. By the end of the consensus-building process, 6 of the 7 OMM-related competencies met the consensus threshold of 80% agreement as being “very important.” Of the 10 proposed competencies for the existing domains, none passed the 80% threshold.

In addition, participants were asked if they thought OPP competencies for osteopathic medical students

Table 1.
Proposed Osteopathic Competencies Generated From First Rating Round^a

Geriatric Competency Domain	Proposed Osteopathic Principles and Practice Competencies
Medication Management	Ensure basic patient education about each medication, including over-the-counter products, and for each medication educate about indications, side effects, potential interactions, and potential for overdose.
Cognitive and Behavioral Disorders	NA
Self-Care Capacity	Develop an exercise program with the patient, appropriate to patient condition and capacity, to maintain or improve functional ability.
Falls, Balance, and Gait Disorders	Educate patients on the benefits of appropriate weight bearing exercise to maintain or improve muscle tone, bone mineral density and stability.
Health Care Planning and Promotion	Provide treatment options that are consistent with the patient's cultural, spiritual and personal philosophy, recognizing that patient investment is critical to healing and health promotion.
	Make recommendations for exercise programs based upon functionality.
	Recognize the effect of positive physical contact on the mind, body, and spirit connection of the acute and chronically ill elderly patient.
Atypical Presentation of Disease	Recognize visceral-somatic reflexes to aid in the diagnosis of atypical disease presentations in the elderly.
Palliative Care	NA
Hospital Care for Elders	NA
Osteopathic Manipulative Medicine	Identify posture and gait abnormalities that contribute to gait and balance disorders.
	Apply osteopathic manipulative treatment as a non-pharmaceutical treatment of somatic manifestations of physical, cognitive and behavioral disorders, including pain relief and comfort and common end-of-life symptoms (i.e., nausea, constipation, anxiety).
	Describe and demonstrate the positional modifications of the physical exam and osteopathic manipulative techniques for use in elderly patients with limited or minimal mobility (i.e., hospitalized, nursing home or disabled patients).
	Evaluate and treat somatic dysfunctions that limit patient range of motion and the ability to perform activities of daily living.
	Justify osteopathic techniques chosen for elderly patients based on individual needs and physical/psychological limitations.
	List and explain the relative contraindications for and adverse effects of specific osteopathic manipulative techniques in the elderly.
	Include the unique osteopathic components of a musculoskeletal exam as a vehicle for identifying somatic manifestations of physical, cognitive and behavioral disorders, such as depression and pain.

^a The language in this table is reproduced as printed in the second-round survey and has not been edited for JAOA style.

Abbreviation: NA, not applicable.

should include specific OMM techniques. Of the 22 participants who responded in the second round, 13 (59%) agreed that OPP competencies for osteopathic medical students in geriatrics should include specific OMT techniques. Interestingly, 5 of 7 geriatricians favored requiring competencies in specific OMT techniques, but 8 of 15 ECOP participants favored this requirement.

Of the 13 participants who favored requiring specific competencies in OMT techniques, all thought that soft tissue, myofascial release, muscle energy, balanced ligamentous tension, lymphatic, and Strain-Counterstrain were OMT techniques that osteopathic medical students should know how to use in the elderly. Twelve responded that students should be required to learn rib raising and cranial techniques, and 10 responded that students should be required to learn articulatory or Still technique. Of these 13 participants, 8 thought competencies in high-velocity, low-amplitude (HVLA) techniques for the elderly should be avoided.

Comment

The authors used the existing 8 domains developed by Leipzig et al⁸ and created a ninth domain for the competencies that directly relate to OMM. This development is similar to the AOA-sponsored Core Competency Task Force recommendation of maintaining a separate domain for Osteopathic Philosophy and Osteopathic Manipulative Medicine.¹²

Why did only the proposed competencies in the OMM domain meet the consensus threshold? It is natural to think of the competencies in the non-OMM domains as relating more to osteopathic principles and the ones in the OMM domain as relating more to osteopathic practices, because the OMM domain directly concerns OMT competencies. If so, the lower ranking of the non-OMM domains might suggest principles were less valued than practices. Or it might mean that the philosophical distinction between the osteopathic and the allopathic medical professions is negligible, at least in the field of geriatrics.

Cavalieri¹⁷ has argued that geriatrics meshes especially well with osteopathic philosophy, because both fields emphasize function and holistic care. However, a closer look at the 10 proposed non-OMM competencies shows these are competencies in clinical practice skills, not specific principles. Competencies may be influenced by principles or philosophy, but they remain clinical skills. For example, 1 of the proposed competencies under the domain of “health care planning and promotion” states that osteopathic medical students should be able to make recommendations for exercise programs based on functionality (*Table 2*). The participants ranked the relative importance of this particular clinical skill, not the value of the principle that structure affects function. Their rankings indicate the relative importance of each competency skill, not the relative importance of any particular principle or philosophy that may inform a particular competency. For the non-OMM domains, the existing competencies already address the most important skills, and many of the new proposed skills overlap somewhat with the existing ones. Also, none of the existing competencies addressed skills that directly relate to OMT in the elderly. Therefore, it should not be surprising that the OMM-related proposed competencies were ranked highest.

Another consideration is that the Delphi technique reflects consensus, not inclusion. The process does not produce a comprehensive list of all OPP competencies for a given field, but a list that reflects a high degree of consensus for the items identified as being “very important.” The resulting list does not mean other competencies in OPP are not important or do not exist. The 6 items that passed the 80% threshold represent consensus only on which minimum competencies in the field of geriatrics osteopathic medical students should meet at graduation. One of the 2 highest ranking competencies (*Table 3*) concerned identification of posture and gait abnormalities that contribute to gait and balance disorders. It is well known that gait and balance disorders are major risk factors for falls, and falls in the elderly cause considerable

morbidity and mortality.¹⁸⁻²⁰ Identifying these abnormalities is the first step toward appropriate treatment. It is relevant that a number of small clinical trials suggest OMM as a promising treatment modality for improving gait and balance disorders in the elderly.²¹⁻²⁴ For these reasons, it is not surprising that this competency ranked so high.

The other highest ranking competency reflects the need for osteopathic medical students to know the relative contraindications and adverse effects of OMM in the elderly. Before any treatment can be competently used, the practitioner must know its risks and adverse effects. Vick et al²⁵ reviewed the world literature between 1925 and 1993 and found that the most commonly reported serious adverse events related to manipulation were strokes, herniated disks, and bone fractures, with most events occurring as a result of HVLA techniques or manipulation performed with anesthesia. At that time, there was a distinct absence of reports regarding minor adverse events from any type of manipulation-related adverse effects and no mention of injuries from muscle energy, indirect, or fascial techniques. Since 1993, a growing body of reports has improved our understanding of the incidence and nature of manipulation-related adverse effects. A 2009 review²⁶ of spinal manipulation was based primarily on newer case reports and surveys, and the reviewers found that 33% to 61% of patients experienced transient local discomfort or radiating pain. A 2011 review by Ernst and Posadzki²⁷ of 10 clinical trials of chiropractic manipulation found that 3 of these studies reported similar adverse effects; the incidence was between 8% and 30%. Ernst and Posadzki²⁷ were critical of the quality of the chiropractic clinical trials: only 3 of the 10 trials reported adverse effects. Furthermore, these reports^{26,27} appear to be primarily HVLA-type manipulation and are not specific to the elderly.

In the Multicenter Osteopathic Pneumonia Study in the Elderly (MOPSE),²⁸ the incidence of self-reported transient musculoskeletal soreness and pain was 22% in the treatment group, 7% in the sham group, and 7% in

the conventional-care group. The MOPSE protocol was used in an older population (aged ≥ 50 years) and used gentler non-HVLA OMT techniques such as soft tissue, articulation, and myofascial techniques.²⁹ In a clinical trial of 25 persons with chronic obstructive pulmonary disorder aged 50 years or older,³⁰ the incidence of post-treatment musculoskeletal soreness or pain was 6% for the minimal touch control group, 17% for the thoracic lymphatic pump with activation group, 19% for the thoracic lymphatic pump without activation group, 15% for the rib raising group, and 13% for the myofascial release group.

Remarkably, these data suggest that in the elderly, even an OMT technique as gentle as myofascial release can cause posttreatment muscle soreness twice as often as light touch. Clearly, we still have much to learn about adverse effects from different types of OMT techniques in every age group. Clinical trials of OMT should routinely report the types and frequency of possible adverse effects that may occur during the course of the trial.²⁷

The third competency in *Table 3* requires that osteopathic medical students apply OMT to a very broad range of conditions by stating that the student should be competent to use OMT for “somatic manifestations of physical, cognitive and behavioral disorders.” This competency highlights the use of OMT in end-of-life care, which is a major aspect of elder care. The competency implies that OMT can be used to relieve pain and suffering during end-of-life care. In a survey of 66 osteopathic physicians involved with end-of-life care,³¹ 48 (79%) agreed that the use of osteopathic diagnostic and treatment skills augmented their ability to provide quality care for terminally ill patients. Unfortunately, very few clinical studies provided evidence that OMM is effective for relieving common end-of-life symptoms, such as nausea, constipation, and anxiety. In a randomized controlled clinical trial by Goldstein et al,³² OMT failed to improve nausea and vomiting scores in postoperative total abdominal hysterectomy patients. The results of a pilot study of children with cerebral palsy³³ suggested

Table 2.
Osteopathic Competencies That Did Not Score 80% Agreement in the Second Rating Round^a

Proposed New Osteopathic Competencies Listed by AAMC-Established Domains	Rating Distribution, No. (%)				Mean Score	Responses Rated 4, %
	1	2	3	4		
Falls, Balance, and Gait Disorders: Educate patients on the benefits of appropriate weight-bearing exercise to maintain or improve muscle tone, bone mineral density, and stability.	0	1 (4)	5 (23)	16 (73)	3.68	73
OMM: Include the unique osteopathic components of a musculoskeletal exam as a vehicle for identifying somatic manifestations of physical, cognitive, and behavioral disorders, such as depression and pain.	0	2 (9)	4 (18)	16 (73)	3.64	73
Atypical Presentation of Disease: Recognize visceral-somatic reflexes to aid in the diagnosis of atypical disease presentations in the elderly.	0	2 (9)	5 (23)	15 (68)	3.59	68
Medication Management: Ensure basic patient education about each medication, including over-the-counter products, and for each medication educate about indications, side effects, potential interactions, and potential for overdose.	0	0	7 (32)	15 (68)	3.68	68
Falls, Balance, and Gait Disorders: Describe the impact of somatic dysfunction on the musculoskeletal function of gait and balance. ^b	0	1 (4)	7 (32)	14 (64)	3.59	64
Self-Care Capacity: Describe the effect of somatic dysfunction on musculoskeletal function that affects self-care capacity. ^b	0	2 (9)	6 (27)	14 (64)	3.55	64
Self-Care Capacity: Develop an exercise program with the patient, appropriate to patient condition and capacity, to maintain or improve functional ability.	1 (4)	3 (14)	5 (23)	13 (59)	3.36	59
Health Care Planning and Promotion: Make recommendations for exercise programs based on functionality.	0	2 (9)	8 (36)	12 (54)	3.45	54
Health Care Planning and Promotion: Recognize the influence of the whole person in functional healthy aging by incorporating cultural, spiritual, and personal philosophy in the plan of care critical to healing and health promotion.	0	1 (4)	11 (50)	10 (46)	3.41	46
Cognitive and Behavior Disorders: Assess environment as a contribution to worsening cognitive and behavioral disorders. ^b	0	4 (18)	8 (36)	10 (46)	3.27	46
Health Care Planning and Promotion: Recognize the effect of positive physical contact on the mind, body and spirit connection of the acute and chronically ill elderly patient and chronically ill elderly patient.	0	2 (9)	11 (50)	9 (41)	3.32	41

^a The language in this table is reproduced as printed in the second-round survey and has not been edited for JAOA style.

^b Competency was added for second rating round.

Abbreviations: AAMC, American Association of Medical Colleges; OMM, osteopathic manipulative medicine.

Table 3.
Osteopathic Competencies That Scored 80% Agreement in the Second Rating Round^a

Proposed Geriatric Competencies for New OMM Domain	Rating Distribution, No. (%)				Mean Score	Responses Rated 4, %
	1	2	3	4		
Identify posture and gait abnormalities that contribute to gait and balance disorders.	0	0	3 (14)	19 (86)	3.86	86
List and explain the relative contraindications for and adverse effects of specific osteopathic manipulative techniques in the elderly.	0	0	3 (14)	19 (86)	3.86	86
Apply osteopathic manipulative techniques as a non-pharmaceutical treatment of somatic manifestations of physical, cognitive and behavioral disorders, including pain relief and comfort and common end-of-life symptoms (i.e., nausea, constipation, anxiety).	0	0	4 (18)	18 (82)	3.82	82
Describe and demonstrate the positional modifications of the physical examination and osteopathic manipulative techniques for use in elderly patients with limited or minimal mobility (i.e., hospitalized, nursing home, or disabled patients).	0	0	4 (18)	18 (82)	3.82	82
Justify osteopathic manipulative techniques chosen for elderly patients based on individual needs and physical/psychological limitations.	0	0	4 (18)	18 (82)	3.82	82
Evaluate and treat somatic dysfunctions that limit patient range of motion and the ability to perform activities of daily living.	0	1 (4)	3 (14)	18 (82)	3.77	82

^a The language in this table is reproduced as printed in the second-round survey and has not been edited for JAOA style.

Abbreviation: OMM, osteopathic manipulative medicine.

that OMT might be useful for managing chronic constipation. In a survey study of 195 patients who received OMT in the hospital,³⁴ 144 of 160 respondents (90%) reported that OMT reduced their anxiety and 156 of 160 respondents (98%) reported that OMT improved their overall comfort level. Whereas OMT is generally thought to be useful for end-of-life care and for promoting comfort, more research is needed to confirm this belief and to discern which applications of OMT are most effective.

The next 2 competencies in *Table 3* address how OMM can be adapted for use with the elderly. The elderly

could be treated with OMM in both acute care and long-term settings, meaning that patients will often need to be examined and treated in a wheelchair or hospital bed. Osteopathic medical students are also expected to justify their choice of technique based on the elderly patient's individual needs. In his classic article "Formulating a Prescription for Osteopathic Manipulation," Kimberly³⁵ discusses principles for choosing an OMT technique, then adjusting the dose and frequency to fit the individual. Related to this discussion, Dodson³⁶ stressed that "all treatment is dose-related" in his discussion of manipulative therapy in the geriatric patient. Dodson wrote that

the type and amount of treatment depend on the problem; the anatomic, physiologic, and psychologic condition of the patient; and the skill of the physician. An OMT regimen—just as a drug regimen—is prescribed to fit the individual patient.

The last competency in *Table 3* addresses the use of OMT to improve joint range of motion and general function. Enhancing function and independence are major goals in geriatric medicine. This particular competency is perhaps best supported by Hoefner,³⁷ who discusses how OMT can be used to improve fluid circulation, deepen breathing, stretch fascial sheaths, and generally improve mobility in the elderly. A broad review of manipulative techniques for the elderly³⁸ highlighted the use of the Spencer technique to mobilize range of motion in the shoulder. Knebl et al,³⁹ in a randomized controlled clinical trial, suggested that the Spencer technique improves function in the elderly with restricted range of motion in the shoulder.

A benefit of developing competencies specific for OPP is that competency-based education has long been established as the standard for curriculum development. By creating markers of achievement at different levels of education, trainees can be more effectively monitored for proper development of their skills. This monitoring decreases variability of training among institutions and improves patient care and safety.

Should we require osteopathic medical students to be competent in specific types of OMT techniques for the elderly, and if so, which ones? A thin majority of the participants (13 of 22 [59%]) favored requiring students to be assessed for competency in specific OMT techniques. Geriatricians more often favored assessing specific technique types relative to their NMM/OMM colleagues. This finding may be the result of geriatricians perceiving certain techniques as safer than others, whereas NMM/OMM specialists tend to view all techniques as potentially viable with limitations based on the judgment of individual patients and practitioners. Of those who did want specific techniques assessed, there was unanimous

agreement that soft tissue, myofascial release, muscle energy, balanced ligamentous tension, lymphatic, and counterstrain are techniques in which osteopathic medical students should be competent for treating the elderly. There was less consensus regarding rib raising, cranial techniques, and articular or Still technique. However, slightly more than half thought HVLA should be excluded as a required competency for osteopathic medical students treating the elderly. The standards of ECOP do not include age as an absolute contraindication for HVLA technique. Exclusions of HVLA technique are assessed based on risk factors, including history of osteoporosis, surgical procedures for the joint, osteomyelitis, and patient tolerance. A 65-year-old patient with no risk factors may be treated with HVLA technique if the physician believes it to be appropriate.^{35,36,38}

This study has some limitations. More NMM/OMM specialists were surveyed than were geriatric specialists. This imbalance in numbers is somewhat compensated for by the lower response rate from the NMM/OMM specialists (47%) relative to the geriatric specialists (90%). Lending further support to project outcomes, the full committee of ECOP endorsed the proposed list of competencies at its fall 2011 meeting. The new domain of “Osteopathic Manipulative Medicine” and the 6 competencies included under its heading are to be considered a minimum standard of training for all graduating osteopathic medical students. It is expected that many osteopathic medical students will exceed these standards.

Conclusion

The 2003 AOA Core Competency Task Force recommended competencies in OMM be developed that are appropriate for each specialty.¹² The AOA Commission on Osteopathic College Accreditation is the body that determines and sets requirements for COMs. We engaged ECOP members in this process because of their mission and expertise. Although they do not set guidelines for all schools, as chairs they control their respective curricula

and influence education at all levels of the profession. In the current study, we aspired to reach a national consensus, one that osteopathic medical schools, residencies, and fellowships could build on to create standards and expectations for osteopathic physicians regarding the best care of geriatric patients. The consensus building process we used included a partnership between ECOP and recognized osteopathic experts in geriatric medicine. This unique partnership may serve as a model for developing specialty-appropriate osteopathic competencies in other practice specialties. The Delphi consensus building process is fairly straightforward and can be adapted to fit a variety of situations. Setting benchmarks will assist institutions in tailoring their curriculum and performance assessment tools to achieve a standard of competence across osteopathic medical schools.

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