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Osteopathic manipulative treatment for allopathic physicians: piloting a longitudinal curriculum

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Abstract

Context: Under the Accreditation for Graduate Medical Education (ACGME) single accreditation system, there is likely to be increasing interest and opportunity for teaching osteopathic manipulative treatment (OMT) to allopathic residents and residency faculty. When learning OMT, allopathic physicians (MDs) have distinct needs compared with osteopathic medical students. For example, MDs already have a foundation in anatomy and medical vocabulary, but incorporating an osteopathic approach to patient care may require a paradigm shift. Thus, a unique approach to osteopathic education for MDs in residency programs with osteopathic recognition (OR) is needed.

Objectives: To create a longitudinal OMT elective for allopathic residents and residency faculty and assess its impact on attitudes and confidence regarding osteopathic principles and treatment.

Methods: Drawing from standard texts used during preclinical osteopathic education, a blended online and in-person laboratory modular curriculum for the OMT elective course was developed by osteopathic residents and faculty within the Department of Family Medicine and Community Health at the University of Wisconsin in Madison. The modalities of muscle energy, counterstrain, myofascial release, and soft tissue were included; the curriculum also reviewed autonomic physiology, somato-visceral, and viscerosomatic reflexes. A quality improvement study of the course was conducted via pre- and postcourse surveys to assess its impact on perceptions and confidence regarding the theory and practice, referral, and use of OMT. A precourse survey was distributed before the first module

to obtain background information and assess participants' prior OMT exposure, among other things. Nine months after the course ended, a corresponding postcourse survey was distributed. Pre- and postcourse surveys were individually matched to improve statistical analysis, using unique identifiers. Also, following each laboratory, a postlaboratory survey was collected about the participant's experience for that lecture and for laboratory-specific quality improvement purposes. Two years after course completion, graduates were reached via phone or email for informal interviews to assess the perceived long-term impact from the elective.

Results: Eleven MDs from a total potential pool of 26 residents and approximately 120 attending physicians enrolled in the course; eight (72.7%) completed all modules and pre- and postcourse evaluations. Participants reported statistically significant gains in attitudes and confidence regarding OMT ("knowledgeable regarding OMT principles": precourse mean, 2.50 [0.76], vs. postcourse mean, 3.37 [0.52]; $p=0.021$; "know how to treat using OMT": precourse mean, 2.25 [1.39], vs. postcourse mean, 3.12 [1.25]; $p=0.041$). Several participants (five; 62.5%) had completed prior OMT training. There was an increase, albeit nonsignificant, in the use of OMT, with more providers using OMT (precourse mean, five, vs. postcourse mean, six; $p=0.171$), and providers using OMT more often (precourse OMT use monthly or more often, three, vs. postcourse OMT use monthly or more often, six; $p=0.131$).

Conclusions: Implementing a longitudinal elective curriculum is a feasible way to improve attitudes and confidence in OMT for MDs involved in a family medicine residency. Whether our elective leads to competency in OMT for allopathic residents and faculty remains to be formally evaluated. Our pilot established the feasibility and led to a revision of our curriculum; the elective continues to occur yearly. Future analyses will focus on competency assessment.

Keywords: allopathic physician; curriculum; GME; medical education; osteopathic manipulative treatment; osteopathic physician

Osteopathic manipulative treatment (OMT) has many applications for patient care, and a growing body of evidence supports its use. For example, OMT improves

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pain scores and reduces analgesic use in patients with chronic and pregnancy-related low back pain [1, 2], and studies have shown that hospitalized patients receiving OMT as adjunctive care for pneumonia [3] and in the postoperative period after abdominal surgery [4] have better outcomes. Additionally, preliminary evidence has suggested that OMT helps patients with conditions such as recurrent otitis media [5], neck pain [6], and irritable bowel syndrome [7]. Due to the growing evidence base for OMT coupled with the recently-completed transition to the Accreditation Council for Graduate Medical Education (ACGME) single accreditation system, we anticipate increased interest in OMT education among allopathic physicians (MDs).

The University of Wisconsin family medicine residency program was among the first of 18 programs to attain osteopathic recognition (OR) through the ACGME in 2015. Today, 234 programs across 21 specialties have achieved OR [8]. One outcome of the move to a single graduate medical education (GME) accreditation system was that programs with OR may enroll allopathic residents into osteopathically-designated positions [9]. While program-specific requirements for residents in these programs may include background training in OMT, there are currently no ACGME-mandated prerequisites, and a knowledge and skill gap is still likely between allopathic residents and their osteopathic counterparts as it pertains to OMT tenets and practices. Furthermore, literature shows that allopathic faculty do not feel confident in their ability to support education of the osteopathic learner [10]. We suspect that improving allopathic faculty comfort with OMT and providing a structured pathway through which allopathic residents in OR positions can learn OMT will promote and encourage the practice of OMT amongst all residents. Thus, the development of an osteopathic curriculum that targets MDs is paramount to integrating OMT into residency training in the single GME accreditation landscape.

Much attention has been devoted to OMT training for osteopathic residents [9–11]. While limited OMT courses are available nationally for MDs, no established longitudinal curriculum currently exists for allopathic residents to learn OMT during residency. To meet interest in our department and the need for osteopathic curriculum for MDs in residency programs, we designed a longitudinal elective curriculum in OMT and evaluated its effect on participants' attitudes, knowledge, and practice of OMT.

Methods

Curriculum design

Drawing from standard texts used during preclinical osteopathic education, specifically *Foundations of Osteopathic Medicine (FOM)* [12], a blended online and in-person laboratory modular curriculum was developed by osteopathic residents and faculty within the Department of Family Medicine and Community Health at the University of Wisconsin in Madison during the summer of 2016. The modalities of muscle energy, counterstrain, myofascial release, and soft tissue were included. In addition to musculoskeletal applications of OMT, the curriculum reviewed autonomic physiology, somatovisceral, and viscerosomatic reflexes. Each module included readings, prerecorded online lectures, in-person laboratory sessions, and completion of practice logs. Readings were assigned from FOM [12] and the *Basic Musculoskeletal Manipulation Skills – The 15 Minute Office Encounter (BMMS)* [13]. Maintaining a high DO-to-MD ratio of 1:4 or greater during laboratory sessions ensured adequate feedback and guidance for learners. Clinical preceptorship with osteopathic faculty practicing OMT in one or more of our residency continuity clinics for additional experience was also provided. The total estimated time for course completion, including prelaboratory preparation, laboratory attendance, and practice logs was 70 hours. Original curriculum overview, including modular organization and a sample resident schedule, is shown in Table 1.

Participants and settings

Beginning in July 2016, enrollment in the elective was initially open to only senior family medicine residents (R2 and R3 years) at the University of Wisconsin School of Medicine and Public Health in good academic standing, a total potential pool of 26 residents. The course was advertised via email and word of mouth. Due to low participation numbers (five residents elected to participate), in August of 2016, attending physicians within our department were also invited to take the course. Resident and attending physicians were enrolled from September 2016 through June 2017.

Study design

We conducted a quality improvement project on our new curriculum to assess its impact on perceptions and confidence regarding the theory and practice, referral, and use of OMT. The Institutional Review Board at the University of Wisconsin in Madison determined this project to be exempt. A printed precourse survey (Supplementary material) was distributed by hand before the first module in September of 2016 to obtain background information and assess participants' prior OMT exposure, satisfaction with options for managing low back pain and headaches, use of OMT, referral for OMT, and confidence regarding principles and practice of OMT. Completion of the survey was required prior to the beginning of the first lab session. Nine months after the course ended, in March 2018, a corresponding digital

Table 1: Curriculum overview (a) and sample schedule (b) for a senior resident completing elective in two years.^a

Module	Didactic content	Laboratory				
(a) Curriculum overview of elective osteopathic course						
<i>Introduction</i>	History, definitions, principles, neuroanatomy, introduction to spinal mechanics and structural diagnosis, introduction to ME, CS, ST, MFR	Layer palpation, screening structural exam, thoracolumbar kneading and stretching, selected CS points, ME for hamstrings				
<i>Lower Extremity</i>	Functional anatomy of ankle, knee, and hips, ME assessment of talocrural joint, fibular head, common CS points in the LE	Muscle energy diagnosis and treatment of talocrural joint, fibular head, quadriceps, and psoas; CS for hamstring tender points, MFR for interosseous membrane				
<i>Pelvis</i>	Functional anatomy of pelvis, ME model diagnosis of innominate shears and rotations	ME diagnosis and treatment of innominate shears and rotations, CS for anterior pelvic tender points				
<i>Sacrum</i>	Functional anatomy of the sacrum, ME model diagnosis of the sacrum	ME diagnosis and treatment of sacrum, MFR for sacroiliac and lumbosacral joints, posterior pelvic CS tender points				
<i>Lumbar</i>	Functional anatomy of the lumbar spine and segmental diagnosis	ME diagnosis and treatment of lumbar spine, paraspinal kneading and stretching, anterior lumbar CS tender points				
<i>Thoracic</i>	Functional anatomy of the thoracic spine and segmental diagnosis	ME diagnosis and treatment of thoracic spine, paraspinal ST, posterior thoracic CS tender points				
<i>Ribs</i>	Functional anatomy of the rib cage, diagnosis of inhalation and exhalation ribs	ME diagnosis and treatment of inhalation and exhalation ribs, MFR for diaphragm				
<i>Cervical</i>	Functional anatomy of the cervical spine and segmental diagnosis	ME diagnosis and treatment of cervical spine, paraspinal ST, MFR for thoracic inlet				
(b) Sample schedule for senior resident						
Year 1	Introduction ^a	Lower extremity	Sacrum	Thoracic spine	Ribs	Review
Year 2	Introduction		Pelvis	Lumbar spine		Cervical spine

^aIntroduction module required in year one. CS, counterstrain; ME, muscle energy; MFR, myofascial release; ST, soft tissue techniques.

postcourse survey (Supplementary material) developed via Qualtrics (SAP SE) was distributed online via email. One reminder was sent via email after two weeks. Pre- and postcourse surveys were individually matched to improve statistical analysis, using unique identifiers with the combination of the last three digits of phone numbers and the first two letters of their mothers' maiden names. Also, following each laboratory, a digital postlaboratory survey (Qualtrics; SAP SE) was distributed via email to gather feedback regarding the participant's experience for that module and for laboratory-specific quality improvement purposes. Lastly, two years after course completion, in June 2019, graduates were reached via phone or email for informal interviews to assess the perceived long-term impact from the elective.

Data analysis

We calculated summary statistics and compared responses among respondents from pre- and postcourse surveys using a χ^2 test and paired t test.

Results

From a total possible participant pool of 26 residents and approximately 120 attending physicians, we enrolled 11 MD physicians in the study, including five residents (45.5%) and six attending physicians (54.5%). All residents and five attending physicians were trained in family medicine, and one attending physician was trained in physical

medicine and rehabilitation. Eight of 11 physicians (72.7%) completed the course as well as both pre- and postcourse surveys and were included in our analysis. A majority of the cohort had some amount of prior instruction in OMT (five [62.5%]), previously referred for OMT (six [75%]), or used OMT in their own practices (five [62.5%]; Table 2).

Table 2: Participant (n=8) background characteristics.

	n (%)
Sex	
Female	3 (37.5%)
Male	5 (62.5%)
Level of training	
Attending	5 (62.5%)
Resident	3 (37.5%)
Prior instruction in OMT	
None	3 (37.5%)
3–5 hours	1 (12.5%)
6–10 hours	1 (12.5%)
10+ hours	3 (37.5%)
Ever referred for OMT	
Yes	6 (75%)
No	2 (25%)
Currently treat patients with OMT	
Yes	5 (62.5%)
No	3 (37.5%)

OMT, osteopathic manipulative treatment.

Table 3: Pre- and postcourse OMT satisfaction and knowledge (n=8).^a

	Precourse, mean (SD)	Postcourse, mean (SD)	p-value ^b
I am satisfied with options I currently have for treating low back pain.	2.88 (0.64)	3.25 (0.71)	0.351
I am satisfied with options I currently have for treating headaches.	3.12 (0.35)	3.50 (0.53)	0.080
I am knowledgeable regarding the principles that guide osteopathic diagnosis and treatment.	2.50 (0.76)	3.37 (0.52)	0.021 ^c
I know the indications for treating a patient with OMT.	2.75 (0.89)	3.50 (0.53)	0.020 ^c
I can find areas or regions of somatic dysfunction.	2.62 (1.19)	3.62 (0.92)	0.050
I can make specific osteopathic diagnoses in regions of somatic dysfunction.	1.75 (1.03)	3.12 (0.83)	0.014 ^c
I know how to treat using OMT.	2.25 (1.39)	3.12 (1.25)	0.041 ^c
I am familiar with the mechanisms of treatment for the following modalities:			
Soft tissue	2.62 (1.19)	3.50 (0.76)	0.021 ^c
Muscle energy	2.62 (1.60)	3.75 (1.03)	0.007 ^d
Counterstrain	2.75 (1.67)	3.75 (1.03)	0.018 ^c
Myofascial release	2.50 (1.41)	3.37 (0.92)	0.021 ^c
I am confident treating somatic dysfunction using the following modalities:			
Soft tissue	2.25 (1.16)	3.25 (1.03)	0.050
Muscle energy	2.12 (1.13)	3.25 (1.03)	0.002 ^d
Counterstrain	2.37 (1.60)	3.37 (1.06)	0.033 ^c
Myofascial release	2.25 (1.39)	3.50 (1.19)	0.007 ^d
I am familiar with the indications for the following modalities:			
Soft tissue	2.37 (1.19)	3.37 (1.06)	0.086
Muscle energy	2.37 (1.30)	3.62 (1.06)	0.011 ^c
Counterstrain	2.37 (1.30)	3.62 (1.06)	0.011 ^c
Myofascial release	2.25 (1.39)	3.50 (1.19)	0.049 ^c
I am familiar with the contraindications for the following modalities:			
Soft tissue	2.37 (1.41)	3.25 (1.16)	0.021 ^c
Muscle energy	2.37 (1.41)	3.25 (1.16)	0.006 ^d
Counterstrain	2.37 (1.41)	3.25 (1.16)	0.006 ^c
Myofascial release	2.37 (1.41)	3.12 (1.25)	0.020 ^c

^aMeasured with 5-point Likert scale; 1=not at all; 3=somewhat; 5=completely. ^bp-value is based on paired t-test. ^cp<0.05. ^dp<0.01.

On a five point Likert scale, participants showed statistically significant increases in confidence regarding osteopathic principles after the course (precourse mean, 2.50, vs. postcourse mean, 3.37; p=0.021), indications for OMT (precourse mean, 2.75, vs. postcourse mean, 3.5; p=0.020), diagnosis of somatic dysfunction (precourse

Table 4: Pre-post OMT referral and treatment (n=8).

Frequency of OMT referral	Pretest, n (%)	Posttest, n (%)	p-value ^a
Never	2 (25%)	1 (12.5%)	0.522
Yearly	0	0	1.000
Monthly	4 (50%)	3 (37.5%)	0.614
Weekly	2 (25%)	4 (50%)	0.302
Daily	0	0	1.000
Treat patients with OMT			
Never	3 (37.5%)	2 (25%)	0.590
Yearly	2 (25%)	0	0.131
Monthly	0	2 (25%)	0.131
Weekly	3 (37.5%)	2 (25%)	0.590
Daily	0	2 (25%)	0.131

^ap-value based on χ^2 test. OMT, osteopathic manipulative medicine.

mean, 1.75, vs. postcourse mean, 3.12; p=0.014), and OMT application (precourse mean, 2.25, vs. postcourse mean, 3.12; p=0.041; Table 3). There was no statistically significant effect on satisfaction for options to manage low back pain (precourse mean, 2.88, vs. postcourse mean, 3.25; p=0.351) or headaches (precourse mean, 3.12, vs. postcourse mean, 3.50; p=0.080). There was no statistically significant change in frequency of OMT referral or use of OMT (precourse OMT referral monthly or more often, six, vs. postcourse, seven; p=0.522; precourse OMT use monthly or more often, three, vs. postcourse OMT use monthly or more often, six; p=0.131), though there was a trend toward more frequent referral and use of OMT (precourse OMT use monthly or more often, three, vs. postcourse OMT use monthly or more often, six; p=0.131; Table 4). The modality of muscle energy saw the largest statistically significant gains in participant confidence regarding theory (precourse mean, 2.62, vs. postcourse mean, 3.75; p=0.007), application (precourse mean, 2.12, vs. postcourse mean, 3.25; p=0.002), indications (precourse mean, 2.37, vs. postcourse mean, 3.62; p=0.011), and contraindications (precourse mean, 2.37, vs. postcourse mean, 3.25; p=0.006; Table 3). At two-year postcourse completion follow-up, four participants (two former residents without prior OMT exposure and two attendings with prior OMT training), were using OMT in their practices on at least a weekly basis.

Statistical analysis of postlaboratory surveys was not performed; however, informal review of these surveys suggested that participants favored prerecorded online lectures over assigned readings and that in-person laboratory sessions were highly valued. The breadth of topics within each laboratory was sometimes considered too expansive, with suggestions to reduce topics and focus on more repetition and review.

Discussion

The inspiration for this project was borne out of interactions between DO and MD residents in our family medicine residency program. Several MD residents were keenly interested in OMT and desired to learn about and incorporate this useful modality into their practices. Fueled by this interest amongst our MD colleagues, our passion for osteopathic education, and the need for innovative OMT pedagogy in the single GME accreditation system environment, we set out to design and implement a structured curriculum with regular hands-on laboratory sessions that would constitute a robust OMT training for allopathic residents and faculty.

We recognized the need for a distinct approach to osteopathic education in the context of GME. While DO students learn anatomy, physiology, and pathology at pace with their introduction to OMT, MDs who begin osteopathic training do so with preexisting knowledge in these fields. Furthermore, doctor–patient interaction and comfort with therapeutic touch may already come naturally to MDs, especially those who are beyond their initial training. These distinctions present certain advantages and disadvantages for MDs undertaking osteopathic training. While MDs will have a strong background in anatomy and vocabulary, thinking about medicine and patient care osteopathically may require a paradigm shift, which can present its own obstacles. We built our curriculum with these considerations in mind, choosing to review anatomy in prerecorded lectures and incorporating case examples for each unit that integrated osteopathic reasoning, diagnosis, and treatment into the decision-making model of a practicing clinician.

Our course's strengths included modular organization and a robust prelaboratory curriculum, which allowed participants to maximize hands-on time during in-person sessions and provided flexibility for integrating the course into residents' existing schedules. Depending on the program-specific OR eligibility requirements, this course could educate faculty, prepare an allopathic resident to enter an OR position, or train MD residents in OR positions during residency. However, while gains in attitudes and confidence regarding OMT were significant, participant competency to practice OMT was not evaluated. Additionally, prior OMT training among participants limits the extent to which we can extrapolate the impact the curriculum might have on a group of physicians without previous OMT exposure. It is possible that an OMT naïve cohort may not experience the positive impact we saw. On the other hand, it is also possible that an OMT naïve cohort would experience an even greater impact from the curriculum, since all the material would be an opportunity for new knowledge and skill acquisition.

Our quality improvement study was not designed to assess skill acquisition. However, the authors' observations of participants' skill development, in combination with informal interviews, suggested that attaining competency across the broad range of OMT modalities included in our curriculum demands a significant amount of study and practice that is likely beyond the 70 hours we estimated to complete the course. These observations support the current standard that osteopathic medical students receive 200 to 300 hours of OMT training during their preclinical years in medical school [14]. Additionally, skill development was highly variable among participants, consistent with differences in the time invested and previous OMT instruction.

The question of competency is a crucial one when assessing a training curriculum. Two elements prevented us from answering the competency question. First, formal objective assessments, including practical and written examinations, were not included. While initial brainstorming for this project had the goal of competency assessment, we quickly realized that real-time curriculum design and the logistics of its delivery taxed our resources. Second, we conceived of an elective primarily for OMT naïve residents, but our pilot cohort comprised a majority attending physicians, several of whom had prior OMT training. Therefore, we chose to focus on feasibility, quality improvement, and impact on participants' perceptions.

We continue to offer the elective yearly. To improve skill acquisition for subsequent cohorts, we narrowed the curriculum's scope by eliminating the modality of myofascial release, which allowed for more repetition and review of other topics. Additionally, we shifted reading assignments from *FOM* to *Osteopathic Techniques: The Learner's Guide* [15], which our learners found more approachable. Beginning with the cohort enrolled in 2018, we successfully included postcourse written and skills assessments. Analysis and reporting on these groups is forthcoming.

If the ACGME single-accreditation system is any indicator, the separation between allopathic and osteopathic training will continue to narrow. As osteopathic physicians, we share a sense of pride and protectiveness for the tenets of osteopathic philosophy and our distinct approach to patient-centered care and hands-on healing. By sharing the art and practice of OMT, our osteopathic principles and practices will be better protected because respect and appreciation grow out of direct experience. We suspect this positive regard will lead to increased referral rates for OMT and increased use of OMT. However, without inclusive OMT education in residency programs with OR, it is the authors' opinion that we run the risk of cultivating resentment or dismissal towards OMT. As such, curricula

like ours could be essential to encouraging and maintaining OMT's adoption in residency programs with OR.

Conclusions

The multitude of applications for OMT, its growing evidence base, and the novel landscape of the ACGME single-accreditation system herald a new chapter in postgraduate osteopathic training. As more residency programs attain OR, an inclusive osteopathic curriculum is needed to ensure that OMT has broad respect and use. Results from the quality improvement study of our pilot curriculum showed that a longitudinal residency-based OMT elective for MDs can improve their attitudes and confidence regarding osteopathic principles and practices. Areas for future research include competency assessment and impact on practice patterns.

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