Effects of a structured curriculum in osteopathic manipulative treatment (OMT) on osteopathic structural examinations and use of OMT for hospitalized patients

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Osteopathic manipulative treatment (OMT) is a defining feature of osteopathic medicine; however, use of OMT by osteopathic physicians is declining. Recent studies reveal that many osteopathic physicians are abandoning use of OMT as early as medical school. Current national efforts are aimed at reversing this trend by standardizing osteopathic medical records and clinical training in OMT. The authors found that a structured clinical curriculum in OMT taught to house staff significantly increased the percentage of patients who received osteopathic structural examinations and the percentage of patients who received OMT as part of their hospital care.

(Key words: osteopathic structural examination, osteopathic manipulative treatment, medical education)

Throughout the history of osteopathic medicine, osteopathic manipulative treatment (OMT) has been one of its most distinctive features. In the past, use of OMT was supported by anecdotal reports and small clinical studies, but there has been an increasing number of clinical trials that involve OMT, and many of these trials support the use of OMT in terms of safety, efficacy, and cost effectiveness. In fact, OMT has been included as a first-line treatment in the federal Department of Health and Human Services clinical practice guideline for acute low-back pain. There has also been an increase in the number of nonosteopathic healthcare providers, including allopathic physicians, who are training in OMT.

In contrast, the use of OMT among osteopathic physicians appears to be declining. Today, fewer osteopathic physicians use OMT in their practice than ever before, and those who use OMT treat fewer patients and less frequently. Many osteopathic students are abandoning use of OMT even before they graduate from a college of osteopathic medicine. Those who wish to include OMT in their clinical practice often state that they have lost confidence in their skills by the time they finish their osteopathic training.

It appears that lack of OMT training at the clinical sites has contributed to this problem. In one study, only 30% of third- and fourth-year students thought there was enough training in OMT at the clinical sites, and these percentages drop to below 20% during internship and residency. Perceived barriers to OMT use in training include a lack of role models who use OMT, time constraints, issues regarding reimbursement, lack of suitable facilities, declining confidence in the practitioners’ abilities, and inadequate clinical training. Many respondents in the study by Johnson and colleagues stated that while their training during the first 2 years was adequate, there was a paucity of training through the clinical training period. In another study, more than 80% of interns responded that few or no clinical professors provided exposure to osteopathic philosophy; more than 90% of those interns stated that few or no clinical professors mentioned or integrated OMT into the treatment of patients during clinical training.

Numerous osteopathic groups are now recommending a uniform osteopathic principles and practice curriculum that would run continuously throughout all 4 years of osteopathic medical school and possibly extend into postgraduate training. Integral to this concept is the principle of a uniform curriculum in which all osteopathic physicians speak a “common language.” The American Osteopathic Association (AOA) made significant steps in this process with the publication of Foundations for Osteopathic Medicine, a standardized glossary of osteopathic terminology, and the implementation of osteopathic postgraduate training institution. In addition, the AOA Council on Continuing Medical Education has recommended and approved a standardized osteopathic musculoskeletal form and guidelines for the musculoskeletal examination of hospitalized patients. These efforts should be commended and supported.

To date, research has been limited in defining successful methods for increasing use of OMT in patient care during clinical training. Seffinger and colleagues identified that the musculoskeletal findings found on physical examination and the subsequent docu-
mentation of somatic dysfunction were not correlated. In their study, 78% of charts reviewed documented significant musculoskeletal findings, but only 2% of those charts documented the diagnosis of somatic dysfunction. Magnus and Gamber found that after intensive clinical exposure to OMT there was a significant improvement in the attitudes of students toward use of OMT. However, Freidman and coworkers found that the use of an instructional videotape and a standardized hospital form for recording somatic dysfunctions did not improve osteopathic student documentation of somatic dysfunctions for hospitalized patients.

In this study, the authors examined the effects of a structured curriculum in OMT taught to the house staff at a community hospital. The study measured the percentage of patients who received a documented osteopathic structural examination and OMT during their hospitalization. The null hypothesis for this study states that a structured curriculum in OMT presented to the house staff would have no influence on the documentation of osteopathic examinations and use of OMT for hospitalized patients at the participating hospital. The authors hoped that if a structured curriculum could improve the above outcomes, the curriculum could be standardized and implemented on a broader scale.

Methods
In this prospective study, all osteopathic family practice and general internal medicine admissions over a 2-month period (August through September 1997) at a community hospital were reviewed. Each chart was reviewed for documentation of an osteopathic examination and use of OMT. The history and physical examination, the admission note, the hospital-supplied osteopathic examination sheet, the discharge summary, and the hospital summary billing sheet were all screened. The principal author (J.S.) then constructed and presented a structured OMT curriculum to the house staff that included lectures, laboratory work, and OMT rounds. After 6 months of the curriculum, the author reviewed all osteopathic family practice and general internal medicine admissions over a 2-month period (February through March 1998) at the same hospital. The house staff and attending osteopathic physicians were unaware of the chart review and the outcome variables for this research project during the study period. The study met approval by the Institutional Review Board of the participating hospital.

Chart review
A list of all osteopathic family practice and internal medicine admissions was obtained from the utilization review staff for each of the study periods. The charts were reviewed for the presence of an osteopathic structural examination (defined as the patient examined in at least two positions with documentation of at least one of the following elements: tissue texture changes, asymmetry of landmarks, range of motion alterations, patient tenderness on palpation). Areas screened for the osteopathic examination included the dictated history and physical and the supplemental form provided by the hospital. All admissions for children under the age of 2 years (including newborns) were excluded. To minimize investigator bias, all admissions that involved the author or the supervising director of medical education (DME) were also excluded. In addition, all patients seen on OMT rounds were excluded.

Participants
All osteopathic students, interns, and residents (house staff) who were on rotation at the hospital during the study period attended the curriculum presentations. Most of the house staff were based at the hospital and therefore were present throughout the study period. Approximately twenty-five house staff participated in the study. There was a turnover of four house staff during the study period.

Fifteen osteopathic family practice physicians and two osteopathic general internal medicine physicians participated in the study. There was no turnover of attending physicians during the study period. One attending family practice physician (the DME) was aware of the study protocol and was excluded from the study.

Components of curriculum
All osteopathic terminology and lecture topics were based on Foundations for Osteopathic Medicine,13 The curriculum was presented to the house staff as part of their required lectures during educational days. Lectures were given once a month by the principal investigator or an OMM Fellow from Ohio University College of Osteopathic Medicine. Many lectures included a hands-on session in which demonstration and practice of techniques were included. House staff were required to attend all of the lectures as part of the overall didactic curriculum. A summary of the curriculum is shown in the Figure.
Analysis of data
All data were entered into electronic format and analyzed by SSPS (SSPS Inc, Chicago, Ill). The pre- to postcurriculum changes in binary outcomes were analyzed using the $\chi^2$ test. A $P$ value less than 0.05 was considered significant. The sample size was large enough for evaluation at the 99% confidence interval.

Results
There were 189 admissions during the precurriculum intake period (32% internal medicine, 68% family practice); 53 of those were excluded because they were newborn or infant admissions, and 33 were excluded because they involved the DME or the principal investigator. A total of 103 admissions were eligible for evaluation. In the postcurriculum period, there were 192 admissions (41% internal medicine, 59% family practice); 30 were excluded because they were newborn or infant admissions, and 23 were excluded because they involved the DME or principal investigator or were seen on OMT rounds. A total of 139 admissions were available for evaluation in the postcurriculum period.

There were significant differences in the percentages of admissions with an osteopathic examination (39.8% vs. 77.7%), house staff admissions with an osteopathic examination (46.3% vs. 83.7%), and non–house staff admissions with an osteopathic examination (35.5% vs. 63.4%). All observed differences were significant at the $P < .005$ level (Table).

Preintervention data
There were 103 eligible admissions during the (preintervention period) months of August and September of 1997 to osteopathic family practitioners and internists. Of those, 41 (39.8%) had an osteopathic examination as defined previously. House staff participated in 41 of the admissions, of which 19 (46.3%) had an osteopathic examination. Of the remaining 62 admissions, 22 (35.5%) had an osteopathic examination. No patient in the study group received OMT during this study period (Table).

Postintervention data
There were 139 eligible admissions during February and March of 1998. Of those, 108 (77.7%) had an osteopathic examination. House staff participated in 98 of the admissions, of which 82 (83.7%) had an osteopathic examination. Of the remaining 41 admissions (no house staff participation), 26 (63%) had an osteopathic examination. Five (4%) patients in the study group received OMT during this study period (Table).

Discussion
The results of this study show that standardized instruction in OMT increased the use of osteopathic structural examinations and OMT for the care of hospitalized patients. These results have numerous explanations, some of which came directly from the house staff when they were given an opportunity to provide verbal and/or written feedback regarding the influence of the curriculum on their overall comfort with providing osteopathic examinations and OMT for hospitalized patients.

First, the increased exposure to osteopathic examinations and OMT at regular intervals allowed house staff to be continually reminded of their place in patient care. Students commented that observing their preceptors and mentors using OMT positively influenced their use of these modalities. The authors believe that OMT rounds had the greatest impact for a positive exposure to OMT. Students were able to incorporate time-efficient and situation-specific

| Table  
| Summary of Osteopathic Manipulative Treatment (OMT) Curriculum Data  
<table>
<thead>
<tr>
<th>Aug/Sept 1997</th>
<th>Feb/Mar 1998</th>
<th>$P$ value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable</td>
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<td>No. (%)</td>
</tr>
<tr>
<td>Total admissions</td>
<td>103</td>
<td>139</td>
</tr>
<tr>
<td>Total admissions with osteopathic examination</td>
<td>41 (39.8)</td>
<td>108 (77.7)</td>
</tr>
<tr>
<td>Non–house staff (HS) admissions</td>
<td>62</td>
<td>41</td>
</tr>
<tr>
<td>Non-HS admissions with osteopathic examination</td>
<td>22 (35.5)</td>
<td>26 (63.4)</td>
</tr>
<tr>
<td>Total HS admissions</td>
<td>41</td>
<td>98</td>
</tr>
<tr>
<td>HS admissions with osteopathic examination</td>
<td>19 (46.3)</td>
<td>82 (83.7*)</td>
</tr>
<tr>
<td>Patients receiving OMT</td>
<td>0 (0)</td>
<td>5 (4.0)</td>
</tr>
</tbody>
</table>

*One house staff member accounted for the majority of house staff patient admissions that did not have an osteopathic examination in the postintervention data. If these admissions were excluded from analysis, the percentage of patients receiving an osteopathic examination would be 96.5 (82 of 85 patients).

†Statistical significance cannot be determined because 0% cannot be used as a baseline measurement.
treatments for patients in the hospital setting. Many students requested that we increase the frequency of OMT rounds to every 2 weeks.

Second, house staff were given exposure to how OMT can be verbally introduced to a patient. The students involved in this study stated that they found it awkward to try to explain the risks, benefits, and the specifics of the techniques they hoped to employ when offering OMT to a patient (especially true when the patient was not familiar with OMT), but that this became easier with exposure and practice. As with other procedures, students were exposed to the idea of obtaining informed consent before beginning OMT.

Third, the house staff who participated in the study stated that a focused osteopathic examination related to the patient’s chief complaint was easier to integrate into the complete care of the patient than a comprehensive musculoskeletal assessment. They also stated that they had not previously been taught how to perform a focused osteopathic examination on a hospitalized patient. Many believed that a full structural examination was too complex and time-consuming for a patient who had not been presented with musculoskeletal complaints.

Finally, by using a common reference source and reviewing topics on a regular basis, house staff were able to identify and discuss differences in training at the colleges of osteopathic medicine. This allowed us to compare differences in training and then integrate those differences toward an expanding knowledge base in OMT.

Limitations of this study included involvement of only one training site, a brief study period, possible variability between the documentation and the number of examinations and osteopathic treatments given, and a small turnover of house staff during the study period.

The duration of this study was designed to limit house staff turnover at the hospital; however, a small turnover (approximately 16%) was unavoidable. There was no turnover of participating attending physicians.

The percentage of patients who had an osteopathic examination in this study was lowered by the criteria used to define an osteopathic examination. Many patients had a cursory examination that involved only one position or lacked features describing tissue texture changes, asymmetry of landmarks, altered range of motion, or patient tenderness. However, it should be noted that the current AOA criteria for a complete osteopathic examination are more inclusive than the criteria used in this study.

The number of patients included in the study was also limited because all patients seen by the author, the supervising DME, and those seen during OMT rounds were excluded from the analysis. This limitation did not affect the ability of the study to reach statistical significance, however.

One result that is more difficult to explain is the significant increase in the use of osteopathic examinations by attending physicians who had no direct exposure to the curriculum. However, these physicians were exposed to house staff who were participating in the OMT curriculum. Increased awareness from interaction with the house staff may have contributed to the increased use of osteopathic examinations by attending physicians in this study.

It is also possible that there were more osteopathic examinations completed and more OMT used than what was documented in the chart. This variable may be present in any research that involves chart review and cannot be fully accounted for. In the modern era of medicine, it is commonly noted that if it is not documented then it was not done. This is particularly important with those features that help to distinguish osteopathic medicine from other forms of healthcare. To remain distinctive, we as a profession must show that we are unique.

The ability to generalize the results of this study is somewhat limited by the fact that this study involved only one training site and one main curriculum coordinator. The challenge of standardizing curriculum is in the training and delivery of the information at many separate sites by different instructors with different backgrounds. The validity of this study will be increased greatly when it has been repeated as a multicenter trial.

The recent growth rate for osteopathic medicine has been impressive. The ever-increasing number of osteopathic medical schools and graduating osteopathic physicians gives evidence to the growing strength of the profession. But while other healthcare professionals show increasing interest in the use of manipulation in medical care, osteopathic physicians are abandoning its practice as early as medical school. Development of a standardized osteopathic manipulative curriculum is needed, followed by its integration into the training sites. Considering the fact that 30% of all osteopathic physicians are doctors-in-training, if we more consistently train today’s osteopathic students to incorporate the use of osteopathic structural examinations and OMT in the care of patients, it may provide a profound impact on the future survival of these modalities.

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References


Coming in...

Future issues of JAOA

- “Objectivity and accuracy of the interpretation of mammograms using the BI-RADS final assessment categories in 40- to 49-year-old women”
- “Galbreath technique: an old manipulative treatment for otitis media revisited”
- “HbA1c and beyond: glycation as the glucose link to diabetic complications: minireview”
- “Spirituality in history taking”
- “Minor depression in primary care: what the generalist should know”
- “Correlation of scores for the COMLEX-USA with osteopathic medical school grades”
- “Clinical experience using intracorporeal lithotripsy with the Swiss lithoclast”
- “Black widow bites in children”
- “Collaboration between osteopathic medicine and pharmacy to teach via the Internet”
- “Weaning from mechanical ventilation: an update”
- “The cranial rhythmic impulse related to the Traube-Hering-Mayer oscillation: comparing laser-Doppler flowmetry and palpation”
- “Occupational and environmental medicine in a family medicine residency”
- “Effect of cooling on muscular health prior to a marathon race”
- “Student perceptions of osteopathic manipulative treatment after completion of a manipulative medicine rotation”
- “Evaluation of aminotransferase elevations in a bodybuilder using anabolic steroids: hepatitis or rhabdomyolysis?”
- “Characteristics, satisfaction, and perceptions of patients receiving ambulatory healthcare from osteopathic physicians: a comparative national survey”
- “Combating ageist attitudes at the end of life: the case for physicians as advocates”
- “Adjunctive osteopathic manipulation for the treatment of pneumonia in the hospitalized elderly”