Context: In 1992, the West Virginia School of Osteopathic Medicine (WVSOM) created a task force as part of an institution-wide initiative to integrate osteopathic principles and practice (OPP) across its entire curriculum. The goals of the initiative, which was implemented with the graduating class of 1997, were to create a clearly distinct osteopathic curriculum and preserve the use of osteopathic manipulative treatment (OMT) by WVSOM alumni.

Objective: To evaluate outcomes of the Osteopathic Principles and Practices Integration Project among WVSOM alumni.

Methods: A survey was mailed on a staggered timeline to WVSOM alumni who had graduated at least 5 years earlier. Data from the graduating classes of 1995 and 1996 (preintervention) were compared with data from the graduating classes of 1997 through 2002 (postintervention).

Results: After excluding responses from alumni still in residencies, responses from 52 (41.9%) of 124 alumni in the preintervention group and 155 (40.9%) of 379 alumni in the postintervention group were analyzed. Comparisons of preintervention group to postintervention group, based on the \( \chi^2 \) test, revealed significant improvement in the proportion of alumni who agreed that basic sciences faculty at WVSOM provided exposure to osteopathic philosophy \((P=0.020)\); that basic sciences faculty at WVSOM taught OMT \((P=0.019)\); and that alumni were exposed to osteopathic philosophy during rotations with DOs \((P=0.031)\). Approximately 53% of alumni in both groups reported daily OMT use in treating patients. Posthoc analysis using the McNemar test for correlated proportions revealed that the proportion of all alumni rating themselves as “prepared” in OMT and OPP at the end of the second year of the WVSOM curriculum was 92.7%, significantly higher than the 76.1% rating of preparation at graduation \((P<0.001)\).

Conclusion: Survey results indicate that WVSOM’s Osteopathic Principles and Practices Integration Project has created a distinctly osteopathic curriculum and has helped alumni maintain use of OMT in clinical practice.

During the past 30 years, numerous authors have stressed the need for curricular reform in osteopathic medical education, having noted a declining emphasis on osteopathic philosophy and osteopathic manipulative treatment (OMT) in osteopathic medical curricula and decreasing or low usage of OMT by osteopathic physicians (DOs).\(^1\)\(^-\)\(^14\) In published articles about the extent to which osteopathic medical students, interns, and residents report exposure to OPP during their training and the extent to which practicing DOs perform OMT, authors generally conclude that osteopathic medical education is becoming less distinct from its allopathic counterpart and that use of OMT by osteopathic physicians in practice is declining.\(^6\)\(^,\)\(^10\)\(^,\)\(^12\)\(^,\)\(^15\)\(^-\)\(^29\)

In 1992, the West Virginia School of Osteopathic Medicine (WVSOM) began an institution-wide initiative called the Osteopathic Principles and Practices Integration Project (OPP Integration Project) designed to integrate OPP across its entire curriculum. The goals of this initiative were to create a clearly distinct osteopathic curriculum at WVSOM and to ensure that WVSOM alumni would continue to use OMT in their clinical practices. In the present study, we report outcomes of the first 6 years of WVSOM’s OPP Integration Project based on surveys of alumni.

Previous Findings on OMT Use

Care must be taken when comparing surveys of DOs regarding OMT use, because different surveys tend to vary in their analyzed central characteristics. Among items that might vary from survey to survey are the following:

- specialties of DOs surveyed, with greater use of OMT observed among osteopathic family physicians than other specialists\(^22\)\(^,\)\(^24\)
- inclusion of DOs still in postgraduate training—who ostensibly have less control over their practice patterns, and, therefore, the extent to which they use OMT, compared to established DOs
time frames evaluated for use of OMT in practice (ie, use in past week, past month, or “ever” vs percent of patients receiving OMT with no time frame specified)

In developing its OPP Integration Project, WVSOM was interested in enhancing use of OMT by all alumni—regardless of specialty—with the goal of increasing daily use of OMT. Thus, previous studies evaluating OMT use by DOs in all specialties were reviewed. Five studies12,18-22 reported OMT use by osteopathic physicians in all practice specialties, with DOs still in training or not in active practice excluded from analysis. In four of these studies,12,18-22 respondents were requested to estimate the percentage of patients with whom they used OMT, with no time frame given. The most recent study21,22 assessed the percentage of DOs providing OMT to specified numbers of patients within the week previous to the survey.

As indicated by the survey results12,18-20 summarized in Table 1, the percentage of DOs providing OMT to less than 5% (but more than 0%) of their patients more than doubled from 1993 (27.7%) to 1999 (60.4%), and the percentage of DOs providing OMT to most (75%-100%) of their patients decreased from 12.7% to 2.1% during that period. In one of these studies, Johnson and Kurtz12 concluded, “The evidence supports the assertion that OMT is becoming a lost art among osteopathic practitioners.”

It is apparent from reviewing such published data12,18-22 that the use of OMT by practicing DOs is declining.

Calls for Curricular Reform

In 1975, Korr2 wrote, regarding an osteopathic curriculum, “it matters much less how the hours are arranged than what goes on” in those hours, individually and collectively.” This opinion gained support in a 1992 study by Miller6 of attitudes and behavioral intentions regarding OPP among osteopathic medical students. Miller6 suggested that the total number of OPP hours within the curriculum was not necessarily the key to increased OPP competency.

Several authors have suggested various curricular initiatives to reverse the decline in OMT use, and some implemented initiatives have demonstrated immediate improvement in trainee behaviors regarding OMT.7,30-37 However, longitudinal retention of these improved behaviors in subsequent practice patterns has not been reported.

In 2007, Gimpel14 called on all colleges of osteopathic medicine (COMs) to move “beyond the barriers” to effect curricular reform and quality improvement so that future DOs are better prepared to meet society’s healthcare needs. Included in his recommendations was the need for integrating OPP across all 4 years of osteopathic medical education and into graduate medical education programs.14 Such recommendations are incorporated into WVSOM’s OPP Integration Project.

**Creation of the OPP Integration Document**

The OPP Integration Project of WVSOM began in 1992 with the creation of the OPP Integration Task Force (OPPI TF) by WVSOM’s dean for academic affairs. It consisted of faculty from both the basic sciences and the clinical sciences, with a member of the OPP faculty appointed by the dean as task force chairperson.

The OPPI TF conducted an extensive institutional internal study to determine where OPP concepts were being taught in the existing curriculum. Evaluations of the current curriculum

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**Table 1**

<table>
<thead>
<tr>
<th>Reference</th>
<th>Year</th>
<th>0%</th>
<th>&gt;0%&lt; 5%</th>
<th>5%&lt; 25%</th>
<th>25%&lt; 50%</th>
<th>50%&lt; 75%</th>
<th>75%&lt;100%</th>
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<td>54</td>
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<td>43</td>
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<td>63</td>
<td>39.9</td>
</tr>
<tr>
<td>Fry19♀</td>
<td>1996</td>
<td>...</td>
<td>28</td>
<td>54</td>
<td>(29)</td>
<td>43</td>
<td>(44)</td>
</tr>
<tr>
<td>Johnson and Kurtz12♂</td>
<td>1998</td>
<td>...</td>
<td>28</td>
<td>54</td>
<td>(29)</td>
<td>43</td>
<td>(44)</td>
</tr>
<tr>
<td>Aguwa and Liechty20♀</td>
<td>1999</td>
<td>...</td>
<td>54</td>
<td>28</td>
<td>(29)</td>
<td>43</td>
<td>(44)</td>
</tr>
<tr>
<td>Spaeth and Pheley21,22♀</td>
<td>2002-2003</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
</tbody>
</table>

* Data presented as reported in studies.
♀ Data calculated on the basis of only those respondents who had completed their postgraduate training, were in active practice, and stated that they used osteopathic manipulative treatment (OMT) in their practice of medicine.
♂ Data calculated on the basis of only those respondents who had completed their postgraduate training and were in active practice.
§ Retirees, osteopathic medical students, and interns (ie, first postgraduate year) were excluded from analysis. Actual numbers in each category were not reported.
¶ Data for osteopathic physicians (DOs) providing OMT were measured by number of times OMT was used in the previous week. Data were reported as follows: 0 times, 45%; 1-5 times, 20%; 6-10 times, 10%; 11-49 times, not specified; >50 times, 4%. Only DOs registered with the Ohio Osteopathic Association were included in this survey.
† Data calculated on the basis of only those respondents who had completed their postgraduate training, were in active practice, and stated that they used osteopathic manipulative treatment (OMT) in their practice of medicine.

Abbreviation: WesternU/COMP, Western University of Health Sciences College of Osteopathic Medicine of the Pacific.
and recommendations for creating the desired osteopathically integrated curriculum were obtained from WVSOM students, faculty and staff, administrators, and alumni.

Early in this process, the basic sciences faculty members of the OPP TF asked that the clinical sciences faculty develop an institutional definition of osteopathic medicine, which would then be used to guide the entire OPP Integration Project. After being created by the clinical sciences faculty, this definition was revised and endorsed by the entire WVSOM faculty (Appendix). An advantageous effect of the group process leading to this definition was an increased understanding by the basic sciences faculty that although OMT is important, other osteopathic concepts—such as the body’s abilities to self-regulate and heal itself—are also central to osteopathic medicine, and these other concepts could be reinforced by faculty members who are not DOs.


After reviewing all collected information, the OPP TF generated numerous recommendations and ranked them based on importance and expected ease or difficulty of implementation. The recommendations were also grouped into three main topic areas: (1) the first and second years of the curriculum; (2) the third and fourth years of the curriculum; and (3) faculty development. One topic area was assigned to each of three subcommittees of the OPP TF, and these subcommittees were asked to develop recommended timelines for a phased-in implementation plan. The reports of the three subcommittees were combined into a final document, which was submitted to the dean.

The dean approved the concept of the document and passed it to the faculty Curriculum Committee for vetting and support. After the Curriculum Committee revised the document and recommended adoption of the initiative, the document was sent to the entire faculty for their critique and approval. The dean then assigned members of the OPP TF as continuing members of an Ad-Hoc Committee on Integration of OP&P into the WVSOM Curriculum, which was charged with overseeing the proposed 5-year implementation plan.

The final 1993 OPP TF recommendations can be accessed on the WVSOM Web site at: http://www.wvsom.edu/_pdf/OPPIntegDoc93.pdf.40 It should be noted that the task force recommended no changes in WVSOM’s admissions process, which emphasizes recruitment and selection of students who are interested in osteopathic medicine and in practicing in rural areas of West Virginia.

The administrative structure developed at WVSOM to implement and continue the OPP Integration Project deserves discussion. The details of this initiative were not mandated by upper administration. Rather, the initiative was the outcome of a paradigm that was interpreted and implemented voluntarily by the faculty, based on a common vision and recognition of need. The initiative was developed under the watchful guidance of the OPP TF chairperson and with the clear expectation by the dean that all faculty members would be involved in some way in support of the initiative.

Three components of WVSOM’s OPP Integration Project were crucial to its success: support from the dean; the role of a committed chairperson who nurtured the project from its beginning through its implementation and evaluation; and the involvement of the faculty from the project’s beginning. The depth of faculty involvement is demonstrated by the fact that in 1996, WVSOM’s faculty voted to establish the Ad-Hoc Committee as a standing committee of the faculty, with the chair of the Ad-Hoc Committee also serving as chair of the standing committee. This arrangement enabled the OPP Integration Project to be endorsed by vote of the faculty as a committee, with the Ad-Hoc Committee chairperson to be given permanent faculty position.

In 1997, the WVSOM faculty further supported the OPP Integration Project by voting to include assessment of each faculty member’s integration of OPP into teaching as part of existing annual reviews for faculty retention, tenure, and promotion.

In 2002, a new academic dean was appointed at WVSOM. The new dean proactively continued previous activities for OPP integration and, in addition, created the position of associate dean for osteopathic medical education and expanded OPP integration into graduate medical education. The new associate dean position was an important step in strengthening the OPP Integration Project, because it provided administrative authority to project leadership to ensure the continuation of the program.

In 2003, the OPP Integration Committee (ie, the standing committee) began granting annual recognition awards to WVSOM faculty members for exceptional integration of OPP into teaching. Awards are given each year to a basic sciences faculty member, a clinical sciences faculty member, and a preceptor who teaches students in the third or fourth years of the curriculum or in the Mountain State Osteopathic Postdoctoral Training Institute. Full-time OPP faculty members are ineligible for these awards.

Implementation of Recommendations
The OPP TF was of the opinion that a uniquely osteopathic curriculum could not be created without both curriculum revision
and extensive faculty development. Therefore, the final recommendations in the OPP integration document40 were grouped into two major sections: curricular reform and faculty development. Curricular reform was subdivided into recommendations for the preclinical and clinical years of training.

Included within each target goal in the document was a time frame for staged implementation and the name of an office (or offices) responsible for the goal’s implementation. The OPPI TF considered its final document40 to be a guide, noting that time frames and mechanisms for achieving specified goals might need to be altered during the process of implementation.

- Curricular Revision—The following recommendations of the OPPI TF were implemented to enhance integrative learning in the first and second years of WVSOM’s curriculum:

  - Institute early clinical exposure in osteopathic diagnosis and OMT. To help accomplish this goal, a free community clinic was created in which second-year osteopathic medical students practice distinctive osteopathic evaluation and treatment with community patients under direct supervision of WVSOM OPP faculty members. This student osteopathic manipulative medicine clinic was established in 1995, for the class of 1997, and has been continuously operating since that time.41
  - Create a mechanism for lectures and laboratories that outlines osteopathic principles relevant to systemic disease and that integrates these principles into the organ systems-based curriculum. The concept behind this approach was to “build a bridge” for osteopathic medical students to relate knowledge and skills learned in OPP courses to their general medical knowledge learned in the organ systems-based curriculum. Although different formats have been used to achieve this goal, the typical format is either case development with integrated osteopathic components or team-teaching on a clinical condition with both basic sciences and clinical sciences faculty.
  - Establish “substantive dialogue” between basic sciences and clinical sciences faculty. This recommendation included various methods to foster communications and integrative teaching across disciplines. This goal is achieved, in part, by assigning cross-discipline “advisors.” For example, clinical faculty members are assigned to be advisors for all basic sciences courses, and basic sciences faculty are assigned to be advisors to clinical courses.
  - Establish multidisciplinary case-study presentations, including osteopathic concepts, within the second-year organ systems-based curriculum.
  - Resequence the curriculum, where appropriate, to allow for the teaching in temporal proximity of concepts important to understanding osteopathic medicine.

The following recommendations of the OPPI TF were implemented to enhance integrative learning during the third and fourth years of WVSOM’s curriculum:

- Require that each osteopathic medical student spend a rotation with an osteopathic preceptor who uses OMT in his or her practice. We chose to include DOs specializing in osteopathic manipulative medicine and those in other specialties who regularly integrate OMT into their practices. This requirement has developed into the James R. Stookey, DO, Preceptor Program,42 in which WVSOM students perform a required OPP rotation in both the third and fourth years of the curriculum.
- Recruit preceptors who use OMT in their practices. This recommendation has also been supported via development of the roster for the James R. Stookey, DO, Preceptor Program.
- Require each osteopathic medical student to submit an OMT case history describing the integration of OPP into the treatment of a patient in whose management they participated. This recommendation has resulted in WVSOM’s OMT Case Study requirement in two family medicine rotations—one in the third year and the other in the fourth year. The student must complete the case study, which is graded by WVSOM clinical faculty, before passing that rotation.

- Faculty Professional Development—The following recommendations of the OPPI TF have been implemented to enhance faculty knowledge, comfort, and skill regarding concepts necessary to integrate OPP into their teaching:

  - Provide on-campus faculty development regarding OPP several times each year. These faculty development classes are generally attended by 60% to 90% of both basic sciences and clinical sciences faculty.
  - Orient all new faculty and staff to OPP and WVSOM’s integration activities.
  - Provide regular off-campus faculty development, including programs for preceptors and assistant deans in WVSOM’s statewide campus system, which delivers WVSOM’s third-year curriculum. Some of this faculty development is now provided by the Mountain State Osteopathic Postgraduate Training Institute, the osteopathic graduate medical education consortium in which WVSOM serves as a partner.43
  - Conduct regular OPP education in WVSOM’s continuing medical education programs, targeted to practicing DOs who serve as WVSOM’s student preceptors.
  - Foster collaborative research projects in areas of mutual interest to basic scientists and clinicians.44-47

Methods

To determine whether WVSOM’s OPP integration initiative had an impact on subsequent attitudes and practice patterns of alumni, approval was obtained from the WVSOM Institutional Review Board to conduct confidential surveys of alumni. A 2-page survey was created to gather information on multiple topics of interest, including the following:
Because one of the objectives of WVSOM’s OPP Integration Project was to preserve the use of OMT by its alumni—despite the reported decline in the use of OMT by osteopathic physicians nationally—measurement of this outcome could necessarily be obtained only via survey over a long-term period. Therefore, surveys were sent only to those alumni who had graduated 5 or more years previous to the survey, allowing time for the alumni to complete at least 3 years of postgraduate training and to be in practice for approximately 2 years. We reasoned that by that time in their careers, alumni should have developed their own practice patterns, making it possible to determine to what extent OMT would be included in their practices.

Surveys were sent via regular mail to every member of the WVSOM graduating classes of 1995 through 2002—5 to 9 years after graduation. A follow-up letter and survey were sent 1 month later to all members of each class who had not responded. All surveys received at time of data analysis were included in the results of the present study.

In 2003, the survey was administered to all students in the graduating classes of 1995, 1997, and 1998. In 2004, the survey was administered to the graduating class of 1999. In 2005, the survey was administered to the graduating class of 1996. In 2007, the survey was administered to the graduating classes of 2000, 2001, and 2002. Mailing addresses were obtained from the WVSOM Alumni Affairs Office for all graduating classes, and the alumni office was informed of any returned surveys.

For purposes of the present report, alumni survey respondents were categorized into two groups: respondents in the graduating classes of 1995 and 1996, who completed their curricula before implementation of the OPP Integration Project (ie, the preintervention group), and respondents in the graduating classes of 1997 through 2002, who completed their curricula after implementation of the OPP Integration Project (ie, the postintervention group). Favorable responses to survey questions (eg, perceptions of being “very well prepared” and “well prepared”) were combined, as were unfavorable responses (eg, perceptions of being “not well prepared” and “very badly prepared”) to allow for 2×2 comparisons of correlated proportions. As previously indicated, responses from graduates who were still in residency or fellowship training were excluded from analysis.

Data were compiled and verified, and data analysis was conducted using SAS statistical software (version 9.1; SAS Institute Inc, Cary, North Carolina). Categorical data were analyzed with χ² testing unless an expected cell count was less than 5, in which case the Fisher exact test was used. For comparison of all students’ perceived OMT/OPP preparation at end of the second year of the curriculum vs preparation at graduation, the McNemar test for correlated proportions was used. The P value was set at .05 as the level of statistical significance.

## Results

Survey response rates for the WVSOM graduating classes were as follows: 1995, 29.5%; 1996, 55.6%; 1997, 42.2%; 1998, 34.5%; 1999, 66.6%; 2000, 41.3%; 2001, 37.3%; 2002, 49.2%. A total of 53 of 124 alumni from the preintervention classes (1995, 1996) responded, for a return rate of 42.7%. A total of 171 of 379 alumni from the postintervention classes (1997-2002) responded, for a return rate 45.1%. Surveys of one preintervention graduate and 16 postintervention graduates were excluded from subsequent analysis because these alumni were still in residency or fellowship training.

The complete sample size of the preintervention group was 52 (representing 41.9% of surveyed individuals in this group) and that of the postintervention group was 155 (representing 40.9% of surveyed individuals in this group)—for a total combined-group sample size of 207. However, some respondents did not answer all items, so response rates on certain individual items were somewhat lower.

### Practice Types of Respondents

The types of practice (general practice, family practice, or other primary care vs other specialty) as self-identified by survey respondents are shown in Table 2.

Statistically significant differences were not found in type of practice between alumni in the preintervention group, with 35 (67.3%) respondents in primary care, and alumni in the postintervention group, with 107 (69.5%) respondents in primary care.

### Perceived Preparation in OMT/OPP

Results of how well prepared alumni believed they were “to diagnose and treat a patient regarding OMT/OPP,” both as second-year osteopathic medical students and as graduates, are shown in Table 3.

The data indicate that 45 (86.5%) responding alumni in the preintervention group rated themselves as “very well prepared” or “well prepared” in OMT/OPP at the end of their...
second year at WVSOM, compared with 147 (94.8%) responding alumni in the postintervention group. This difference was not statistically significant.

For the survey item asking about overall OMT/OPP preparation by the time of graduation, 36 (69.2%) responding alumni in the preintervention group, and 120 (78.4%) responding alumni in the postintervention group, rated themselves as prepared. Again, this difference was not statistically significant.

Perceived Classroom and Laboratory Exposure to Osteopathic Philosophy

Table 4 shows alumni responses to the survey question about their perceptions of “classroom [and laboratory] exposure to osteopathic philosophy.”

A significantly higher proportion of responding alumni in the postintervention group (127 [84.1%]) than in the preintervention group (36 [69.2%]) indicated that exposure to osteopathic philosophy was provided by all, almost all, or most of
their basic sciences professors ($P=.020$, based on $\chi^2$ test).

For the survey item asking about exposure to osteopathic philosophy by all, almost all, or most clinical sciences faculty, 41 (80.4%) respondents in the preintervention group vs 133 (88.1%) respondents in the postintervention group indicated that they had received such exposure. This difference was not statistically significant.

Perceived Teaching of OMT in the Classroom

Table 5 shows alumni responses to the survey question about their perceptions of classroom instruction by basic sciences and clinical sciences faculty in integrating OMT into practice.

A statistically significant improvement was found in the proportion of respondents in the postintervention group (107 [70.9%]) who indicated that they received such OMT instruction from basic sciences faculty, compared with respondents in the preintervention group (27 [52.9%]) ($P=.019$, based on $\chi^2$ test).

For the corresponding survey item on OMT teaching by clinical sciences faculty, differences between the preintervention group (40 [78.4%]) and the postintervention group (127 [84.7%]) were not statistically significant.

Perceived Teaching of Osteopathic Philosophy and OMT in Rotations

Results of alumni responses to the survey item about exposure to osteopathic philosophy and OMT during clinical rotations with osteopathic physicians are shown in Table 6.

A significantly higher proportion of alumni in the postintervention group (96 [62.3%]) than in the preintervention group (23 [45.1%]) indicated that they had received “exposure to osteopathic philosophy” in all, almost all, or most clinical rotations ($P=.031$, based on $\chi^2$ test).

No significant difference was found between proportions of alumni in the preintervention group (16 [30.8%]) and the postintervention group (60 [39.0%]) regarding the extent to which they indicated that “instruction/assistance in integration of OMT into practice” was provided by all, almost all, or most DO rotations.

Use of OMT by Alumni in Practice

Survey results comparing the proportion of alumni who reported daily use of OMT in their clinical practices with the proportion of alumni who reported that they did not use OMT daily are shown in Table 7.

In the preintervention group, 27 (52.9%) responding alumni reported using OMT with at least one patient per day. In the postintervention group, 74 (52.5%) respondents reported using OMT with at least one patient per day. This difference in OMT use was not statistically significant.

Comparison of Perceived OMT/OPP Preparation at End of Second Year and at Graduation

Additional analysis was used to examine whether a statistically significant difference existed between the proportion of graduates rating themselves as “very well prepared” or “well prepared” to diagnose and treat a patient regarding OMT/OPP at the end of the second year of the WVSOM curriculum com-

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**Table 4**

Survey of WVSOM Alumni: Perception of Exposure to Osteopathic Philosophy in Classroom and Laboratory Instruction (N=207)

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>2a. Classroom/lab exposure to osteopathic philosophy was provided by:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basic sciences faculty</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– All/almost all/most professors</td>
<td>36 (69.2)</td>
<td>127 (84.1)</td>
<td>163</td>
<td>.020</td>
</tr>
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<td>– Few/no professors</td>
<td>16 (30.8)</td>
<td>24 (15.9)</td>
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<tr>
<td>– Total No.‡</td>
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<td>203</td>
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</tr>
<tr>
<td>Clinical sciences faculty</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– All/almost all/most professors</td>
<td>41 (80.4)</td>
<td>133 (88.1)</td>
<td>174</td>
<td>.170</td>
</tr>
<tr>
<td>– Few/no professors</td>
<td>10 (19.6)</td>
<td>18 (11.9)</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>– Total No.‡</td>
<td>51</td>
<td>151</td>
<td>202</td>
<td></td>
</tr>
</tbody>
</table>

* Classes of 1995-1996 were before implementation of the West Virginia School of Osteopathic Medicine (WVSOM) Osteopathic Principles and Practice (OPP) Integration Project. Classes of 1997-2002 were after implementation of the WVSOM OPP Integration Project.

† $P$ value based on $\chi^2$ test.

‡ Basic sciences total numbers do not include 4 respondents. Clinical sciences total numbers do not include 5 respondents.
pared with those giving themselves such a rating at time of graduation (Table 8). Because no statistically significant differences were found in such ratings in comparisons of alumni in the preintervention group vs the postintervention group (Table 3), all responding alumni from all classes were combined in a single analysis to generate the data in Table 8.

This analysis, based on the McNemar test for correlated proportions, revealed that significantly more alumni rated

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**Table 5**

Survey of WVSOM Alumni: Perception of OMT Integration Into Classroom and Laboratory Teaching (N=207)

<table>
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<tbody>
<tr>
<td>2b. Classroom instruction/assistance in integration of OMT into practice was provided by:</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>□ Basic sciences faculty</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– All/almost all/most professors</td>
<td>27 (52.9)</td>
<td>107 (70.9)</td>
<td>134</td>
<td>.019</td>
<td></td>
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<tr>
<td>– Few/no professors</td>
<td>24 (47.1)</td>
<td>44 (29.1)</td>
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<td>– Total No.</td>
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<td>202</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Clinical sciences faculty</td>
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<td>– All/almost all/most professors</td>
<td>40 (78.4)</td>
<td>127 (84.7)</td>
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<td>11 (21.6)</td>
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<td>– Total No.</td>
<td>51</td>
<td>150</td>
<td>201</td>
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</table>

* Classes of 1995-1996 were before implementation of the West Virginia School of Osteopathic Medicine (WVSOM) Osteopathic Principles and Practice (OPP) Integration Project. Classes of 1997-2002 were after implementation of the WVSOM OPP Integration Project.
† P value based on $\chi^2$ test.
‡ Basic sciences total numbers do not include 5 respondents. Clinical sciences total numbers do not include 6 respondents.

**Abbreviation:** OMT, osteopathic manipulative treatment.

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**Table 6**

Survey of WVSOM Alumni: Perception of Clinical Years/Rotations with DOs (N=207)

<table>
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<tr>
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<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3a. For rotations with DOs, exposure to osteopathic philosophy was provided by:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ All/almost all/most DO rotations</td>
<td>23 (45.1)</td>
<td>96 (62.3)</td>
<td>119</td>
<td>.031</td>
<td></td>
</tr>
<tr>
<td>□ Few/no DO rotations</td>
<td>28 (54.9)</td>
<td>58 (37.7)</td>
<td>86</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Total No.</td>
<td>51</td>
<td>154</td>
<td>205</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3b. Instruction/assistance in integration of OMT into practice was provided by:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ All/almost all/most DO rotations</td>
<td>16 (30.8)</td>
<td>60 (39.0)</td>
<td>76</td>
<td>.290</td>
<td></td>
</tr>
<tr>
<td>□ Few/no DO rotations</td>
<td>36 (69.2)</td>
<td>94 (61.0)</td>
<td>130</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Total No.</td>
<td>52</td>
<td>154</td>
<td>206</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Classes of 1995-1996 were before implementation of the West Virginia School of Osteopathic Medicine (WVSOM) Osteopathic Principles and Practice (OPP) Integration Project. Classes of 1997-2002 were after implementation of the WVSOM OPP Integration Project.
† P value based on $\chi^2$ test.
‡ Survey item 3a total numbers do not include 2 respondents. Survey item 3b total numbers do not include 1 respondent.

**Abbreviations:** DO, osteopathic physician; OMT, osteopathic manipulative treatment.
of an understanding and adoption of osteopathic philosophy, imbuing osteopathic medical students, interns, and residents with OPP philosophy and OMT skills during their training will not only enhance the care they provide to their future patients, but is crucial to the future of the osteopathic profession.

The comprehensive OPP Integration Project initiated in 1992 at WVSOM was designed to create an academic culture at one COM in which each faculty member was expected to support student understanding of osteopathic philosophy. Alumni themselves as prepared regarding OMT/OPP at the end of the second year of the curriculum (190 [92.7%]) than at the time of graduation (156 [76.1%]) (P<.001). Therefore, these results suggest that rather than feeling that they had become more confident in their OMT/OPP skills after their clinical years, alumni felt they had become less confident.

**Comment**

Osteopathic manipulative treatment is one of the hallmarks of the osteopathic physician. Because the use of OMT grows out of an understanding and adoption of osteopathic philosophy, imbuing osteopathic medical students, interns, and residents with OPP philosophy and OMT skills during their training will not only enhance the care they provide to their future patients, but is crucial to the future of the osteopathic medical profession.

The comprehensive OPP Integration Project initiated in 1992 at WVSOM was designed to create an academic culture at one COM in which each faculty member was expected to support student understanding of osteopathic philosophy.
from within the context of his or her discipline. In order for this
goal to be achieved, extensive faculty education and a net-
work of support for integrative teaching were provided. In
addition, the WVSOM curriculum was resequenced and real-
located so that students’ understanding of osteopathic phi-
losophy and OMT would be enhanced—without any increase
in curricular time.

A leader for WVSOM’s OPP Integration Project was iden-
tified, and the dean made clear his expectation that each fac-
ulty member would be involved in the program. Furthermore,
the WVSOM faculty at large was allowed to develop a
process and curriculum to meet the agreed-upon goals.

Alumni survey data document success in some important
aspects of WVSOM’s OPP Integration Project after its first
6 years, through the graduating class of 2002. This success
was achieved with substantial changes in WVSOM’s cur-
rriculum and faculty development, but no changes in the
college’s admissions process. The OPP Integration Project resulted
in statistically significant improvements in alumni perception
of classroom and laboratory exposure to osteopathic philos-
ophy from basic sciences faculty and in alumni perception of
exposure to classroom instruction and assistance from basic sci-
ences faculty in integration of OMT into practice. The initiative
also resulted in statistically significant improvement regarding
alumni perception of exposure to osteopathic principles in
rotations with DOs.

The OPP Integration Project did not lead to significant
improvement in alumni perception of teaching of osteopathic
philosophy or OMT by clinical sciences faculty. Nevertheless,
more than three-fourths of all responding alumni indicated that
classroom and laboratory exposure to osteopathic philosophy
from basic sciences faculty and in alumni perception of
be counter to the national trend toward
decreasing usage of OMT in osteopathic practice.\textsubscript{12,18-22} While
did not find that WVSOM’s OPP Integration Project caused
an increase in graduates’ daily use of OMT, the baseline daily
use of OMT by more than 50% of all WVSOM graduates—and
the lack of decrease in OMT use by graduates over time—
may indicate that some aspect of the WVSOM educational
continuum makes WVSOM graduates more likely to inte-
grate OMT into the care of their patients.

Alumni expressed a statistically significant loss of confi-
dence in their ability to diagnose and treat patients using
OMT/OPP between the second year of the curriculum and
graduation. However, the vast majority (92.7%) of survey
respondents entered their clinical training years confident in
their OMT/OPP abilities, and 76.1% of respondents remained
confident in their OMT/OPP abilities at the time of graduation.
The reduction in alumni self-evaluation of their preparedness
in OMT from the second year of the curriculum to graduation
may reflect the difficulty most COMs encounter in continuing
to foster OPP education in the third and fourth years. This
issue has been extensively addressed for the second 6 years of
the OPP Integration Project.

In 2002, WVSOM began to develop a statewide campus
system for coordination of student education during the third
and fourth years of the curriculum. As a part of this system,
substantial increases in OPP integration have been imple-
mented during the clinical training years, including extensive
faculty development for preceptors and more curricular
emphasis on osteopathic manipulative medicine. In addition,
WVSOM has strengthened teaching regarding OPP at affiliated
graduate medical education sites—a step that could poten-
tially increase confidence in OMT and OPP abilities as grad-
uates enter clinical practice.

As with all studies based on survey data, the present
study has the limitation of accepting respondents’ reports of
their attitudes and behaviors, rather than directly observing
the performance of respondents. The study also has limitations
associated with having a response rate of less than 100%, as well
as possible selection bias by those responding to the survey.
However, the same limitations apply to alumni from both the
preintervention and postintervention classes, thereby cancel-
ing out any potential bias. Until a strategy is developed for
obtaining actual medical records of WVSOM alumni, surveys
of the alumni may be one of the better mechanisms available
for monitoring their perceptions, attitudes, and behaviors.

In future surveys of WVSOM alumni, we hope to be able
to compare our data on rates of OMT use with data on OMT
use obtained by other authors in regard to various interven-
tions. Future WVSOM alumni surveys will also be used to
determine if the OPP Integration Project eventually results in
improved confidence in OMT/OPP preparation at gradu-
a
tion and in clinical practice.

**Conclusion**

The OPP Integration Project at WVSOM was undertaken with
clear goals and a long-term perspective: to create a clearly dis-
tinct osteopathic curriculum and to preserve the use of OMT
by graduates. Comparisons of alumni survey data from grad-
uates before the implementation of the initiative with gradu-
ates of the first six classes after implementation of the initiative
reveal statistically significant improvements in alumni evalua-
tion of the osteopathic distinctiveness of some aspects of the
WVSOM curriculum. In addition, no decrease in graduate
use of OMT in practice has occurred over time—with approxi-
ately 53% of graduates reporting daily use of OMT in clin-
ical practice. Although a statistically significant decline in
survey respondent confidence in OMT and OPP preparation

**MEDICAL EDUCATION**
was observed between the end of the second year of the curriculum and graduation, 92.7% of respondents entered their clinical training years confident in their OMT and OPP skills, and more than three-fourths of respondents remained confident at graduation.

The WVSOM’s OPP Integration Project is successful at meeting its objectives of creating a clearly distinct osteopathic curriculum and of maintaining OMT use among WVSOM graduates. Future surveys of WVSOM alumni will determine if gains observed in the first 6 years of the OPP Integration Project will continue, and if additional gains will be realized based on the continued maturation and development of the OPP Integration Project.

Acknowledgments

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References


Steele and Baker • Medical Education
“Osteopathic medicine is a system of health care based on the premise that disease is the result of anatomical abnormalities associated with physiological discord. Structure and function are considered interdependent and a normally functioning musculoskeletal system plays an important role in wellness, disease prevention, and recovery. Osteopathic medicine holds that human beings have a mind, a spirit, and a physical body, and impairment in any of these aspects may be demonstrated as illness in another.

“Osteopathic medicine emphasizes the importance of preventive health care and relies on the inherent ability of the body to heal itself. The osteopathic physician’s role is to remove impediments to that inherent ability by the use of all accepted medical means including surgery, drugs, patient education, and manipulation of the body.”

**Appendix. Definition of osteopathic medicine as developed by the West Virginia School of Osteopathic Medicine in Lewisburg.**