Comparison of Osteopathic and Allopathic Medical Schools' Support for Primary Care

Antoinette S. Peters, PhD, Nancy Clark-Chiarelli, EdD, Susan D. Block, MD

OBJECTIVE: To contrast prevailing behaviors and attitudes relative to primary care education and practice in osteopathic and allopathic medical schools.

DESIGN: Descriptive study using confidential telephone interviews conducted in 1993–94. Analyses compared responses of osteopaths and allopaths, controlling for primary care orientation.

SETTING: United States academic health centers.

PARTICIPANTS: National stratified probability samples of first-year and fourth-year medical students, postgraduate year 2 residents, and clinical faculty in osteopathic and allopathic medical schools, a sample of allopathic deans, and a census of deans of osteopathic schools ($n = 457$ osteopaths; $n = 2,045$ allopaths).

MEASUREMENTS: Survey items assessed personal characteristics, students' reasons for entering medicine, learners' primary care educational experiences, community support for primary care, and attitudes toward the clinical and academic competence of primary care physicians.

MAIN RESULTS: Primary care physicians composed a larger fraction of the faculty in osteopathic schools than in allopathic schools. Members of the osteopathic community were significantly more likely than their allopathic peers to describe themselves as socioemotionally oriented rather than technoscientifically oriented. Osteopathic learners were more likely than allopathic learners to have educational experiences in primary care venues and with primary care faculty, and to receive encouragement from faculty, including specialists, to enter primary care. Attitudes toward the clinical and academic competence of primary care physicians were consistently negative in both communities. Differences between communities were sustained after controlling for primary care orientation.

CONCLUSIONS: In comparison with allopathic schools, the cultural practices and educational structures in osteopathic medical schools better support the production of primary care physicians. However, there is a lack of alignment between attitudes and practices in the osteopathic community.

KEY WORDS: osteopaths; allopaths; medical school; primary care.

J GEN INTERN MED 1999;14:730–739.

Osteopathic physicians, who represent about 5% of the physician workforce, provide a disproportionate share (9%) of primary care in the United States, particularly in small towns and rural areas across the country.^{1,2} Schools of osteopathic medicine have traditionally graduated a higher proportion of primary care doctors than allopathic schools.^{3–5} These different outcomes are likely to reflect differences between the schools in mission, as well as in values, attitudes, and educational practices. As allopathic schools seek to develop new models for primary care education, descriptions of osteopathic schools might offer instructive contrasts that further our understanding of how school culture contributes to educational outcomes.

Prior research in allopathic medical education has shown factors such as institutional mission, faculty composition,⁶ student characteristics, admissions criteria, and exposure to primary care experiences to be important determinants of career choice.⁷ Others have suggested that the cultural forces in which learners are immersed are critical influences on their development and choices.⁸ These cultural forces are expressed directly and indirectly through exposure of students to role models, faculty members' stated opinions of one another, and career counseling.

Medical education in osteopathic and allopathic schools is different in major ways: mission, curricular emphasis, type of faculty, research orientation, and type of student. Not only is the mission of all osteopathic schools to produce primary care physicians, but the dominant academic department is family medicine.⁹ In contrast, relatively few allopathic schools state a primary care mission, and although most allopathic medical schools have departments of family medicine, family physicians rarely enjoy the stature accorded members of other departments.¹⁰

In addition to its emphasis on the importance of the musculoskeletal system in overall health, osteopathic education emphasizes preventive medicine, a holistic approach to the patient, and family medicine.^{2,11} Moreover, osteopathic education requires primary care experiences and utilizes voluntary primary care faculty and community-based institutions rather than tertiary care hospitals as training sites, thereby exposing students repeatedly to the values, attitudes, and practice of primary care.^{11,12} In spite of recent increases in primary care education in allopathic schools, the dominant educational venue for allopathic students and residents is the academic teaching hospital.

Received from the Department of Ambulatory Care and Prevention, Harvard Medical School and Harvard Pilgrim Health Care (ASP, NCC, SDB), Office of Educational Development (ASP), Harvard Medical School, Boston, Mass; Education Development Center, Newton, Mass (NCC); Adult Psychosocial Oncology Program, Dana-Farber Cancer Institute, and the Division of Psychiatry, Brigham and Women's Hospital, Boston, Mass (SDB).

Address correspondence and reprint requests to Dr. Peters: Department of Ambulatory Care and Prevention, Harvard Medical School and Harvard Pilgrim Health Care, 126 Brookline Ave., Boston, MA 02215.

The climate for primary care training in allopathic schools has been described as "chilly."¹³

The majority of osteopathic faculty members are volunteer primary care clinicians from the community, not researchers. Only 15% are full-time faculty. In contrast, almost 40% of the faculty at allopathic schools are full-time,⁹ and 89% are specialists,¹³ many with a strong research orientation. In addition, the kind of research each faculty conducts and on which its curriculum is founded differs: osteopathic research focuses on health services and primary care, whereas allopathic research is primarily disease-based and biomedical.^{2,9} Moreover, the tradition of research as an academic and professional requirement is stronger among academic allopaths than osteopaths: only half of the osteopathic medical schools are university-affiliated, and those only since the 1980s.

Osteopathic medical schools tend to admit students with characteristics associated with the choice of primary care careers.⁹ First, many osteopathic students demonstrate attitudes favorable to careers in primary care, ranking "people orientation" high and "technical orientation" low.⁵ Second, a relatively high proportion of students come from rural communities or inner cities.^{4,5} Students from such communities are more likely to choose primary care careers. Many of these students report having had primary care physician role models in their communities before medical school.¹¹

In this article, we contrast the cultures of osteopathic and allopathic academic communities by describing the *members* of each community (deans, faculty, residents, and students) and their prevailing *behaviors* and *attitudes* relative to primary care education and practice. We hypothesized that members of the osteopathic community would hold more positive attitudes toward primary care and be more supportive of primary care training than their allopathic colleagues, and that these attitudes and practices would demonstrate a consistent, cohesive primary care culture within the osteopathic community.

METHODS

This report addresses five questions: (1) How do the personal characteristics of individuals in the osteopathic and allopathic communities differ? (2) How do reasons for entering medicine differ between osteopathic and allopathic first-year students? (3) How are osteopathic and allopathic students' and residents' primary care educational experiences different? (4) How do community supports for primary care differ? (5) How do attitudes toward the competence of primary care physicians differ between the two communities? In addition, we asked whether responses differed by academic status and primary care orientation within communities.

Sample

As part of a larger study, Attitudes and Choices in Medical Education and Training (ACMET),¹³ we drew stratified probability samples of osteopathic and allopathic

first-year medical students, fourth-year medical students, postgraduate year 2 (PGY-2) residents, clinical faculty, and medical school deans from national databases of the American Osteopathic Association, the American Association of Colleges of Osteopathic Medicine, the American Medical Association, and the Association of American Medical Colleges.

Between October 1993 and March 1994, the Center for Survey Research of the University of Massachusetts, Boston, conducted confidential 20-minute telephone interviews with 2,502 respondents (for sample sizes of each respondent group, see Table 2). The overall response rate was 84%.

Human Subjects Review

The design of the study was approved by the Human Subjects Review Board of Harvard Pilgrim Health Care. Prospective respondents were mailed letters explaining the purpose of the study and requesting their participation prior to the telephone interview; informed consent was obtained from all respondents prior to the interview.

Measures

As there are no direct, standardized measures of attitudes toward primary care, we used results from 10 focus groups composed of primary care and specialist physicians and a literature review to identify constructs to serve as indicators of attitudes toward primary care. The measures of attitudes and behaviors toward primary care training that we used to characterize osteopathic and allopathic communities in this report are displayed in Table 1. The letters (A-P) attached to content are used throughout the Methods and Results. Dichotomous variables were constructed contrasting positive and negative attitudes toward primary care; continuous measures are reported directly.

The results of the larger ACMET study demonstrated the convergent, discriminant, and predictive validity of the measures across specialty groups used in this analysis.¹³ Convergent validity was suggested because the responses of the members of each subgroup were more similar to each other than to the members of other subgroups. Discriminant validity was suggested by the ability of the instrument to distinguish among various subgroups, and the predictive validity was suggested because the responses of the residents and students were indicative of future career choice or internship match.

Personal Characteristics (Items A-C). From survey items, we obtained data on gender, race, and size of students' and residents' hometown. Respondents' race was categorized as white or nonwhite, which included blacks, Hispanics, Native Americans, and Asians.

Specialty orientation was determined by combining data from several questions to construct an ordinal scale

Table 1. Measures of Cultural Characteristics

Measure	Indicators Relative to Primary Care Culture
Personal characteristics	
A. Demographics	Learners identify their gender, race, size of hometown ^a
B. Specialty	Respondents identify their specialty orientation ^b
C. Socioemotional orientation	Respondents identify themselves as being socioemotional oriented ^c
D. Reasons for entering medicine	First-year students rate importance of <i>intellectual challenge, helping people, research, independence, social responsibility, job security, income, status, and autonomy</i> in choosing a career in medicine ^d
Primary care educational experiences	
E. Exposure to primary care	Learners identify percent of time spent in primary care settings ^e Learners identify percent of time with primary care faculty ^e
F. Satisfaction with training	Learners are <i>satisfied</i> with the quality of primary care/specialty education ^f
G. Role models	Learners identify a primary care physician as their role model ^g
Community support for primary care	
H. Institutional mission	Deans identify training primary care physicians as an important school mission ^h
I. Encouragement to enter primary care	Learners report being encouraged to enter primary care by faculty, ⁱ peers, ^j or residents ^j Faculty report encouraging students and residents to enter primary care ^k
Attitudes toward primary care physicians' clinical and academic competence	
J. Endorsement of primary care physician as best physician to treat less serious medical conditions	Respondents identify primary care physician as most appropriate doctor for both a 62-year-old man with low back pain and an 8-year-old boy with asthma ^l
K. Endorsement of primary care physician as best physician to treat more serious medical conditions	Respondents identify primary care physician as most appropriate doctor for both a 45-year-old woman with ulcerative colitis and a long-standing relationship with her primary care physician and a 55-year-old woman with skin rash, joint pain, fever and fatigue ^l
L. Global perceptions of competence of primary care physicians	Respondents agree that <i>primary care doctors must tolerate more uncertainty as well as disagree that compensation should be greater for technical than cognitive tasks</i> and <i>specialists are as competent as generalists in providing primary care</i> ^m
M. Rating primary care tasks as requiring a high degree of expertise	Respondents rate degree of expertise required to both <i>manage depression</i> and <i>achieve patient compliance</i> high ⁿ
N. Perceived quality of primary care teaching	Respondents rate the quality of primary care teaching as good as or better than other fields ⁿ
O. Perceived quality of primary care research	Respondents rate the quality of primary care research as good as or better than other fields ^o
P. Perceived attitudes of specialists toward primary care	Learners report that specialists display mostly positive attitudes towards primary care physicians ^p

^aStudents and residents identified their hometown as rural, a town (2,000–10,000), small city (10,000–50,000), moderate city (50,000–500,000), suburb, or large city (>500,000).

^bFaculty identified the specialty in which they practiced and the proportion of time practicing primary care; learners identified their intended specialty.

^cRespondents were asked to choose an orientation: socioemotional or technoscientific.

^dRespondents were asked to rate factors as very important, somewhat important, or not important during current clinical training (medical education or residency).

^eRespondents were asked to estimate percentage of time in their current clinical training they spent with primary care faculty and in primary care settings.

^fRespondents rated their satisfaction with training for primary care and specialist practice as very satisfied, somewhat satisfied, somewhat dissatisfied, and very dissatisfied.

^gRespondents were asked to identify the medical field in which their principal role model worked.

^hRespondents were asked whether training primary care physicians or specialists was a more important mission at their school.

ⁱRespondents were asked if they were encouraged: strongly toward specialties, somewhat toward specialties, strongly toward primary care, somewhat toward primary care, or neither.

^jRespondents were asked if they were encouraged to enter primary care, specialties, or neither.

^kRespondents were asked if they strongly encouraged students toward primary care careers, somewhat encouraged them toward primary care, somewhat encouraged them toward specialty careers, or strongly encouraged them toward specialties.

^lRespondents were asked to identify best doctor to treat prototypical patients.

^mRespondents were asked if they agreed or disagreed with the statements.

ⁿRespondents rated the degree of expertise required as being: high, medium, or low.

^oRespondents rated quality as being: better, same, or worse than other specialties.

^pRespondents rated perceived attitudes as mostly positive, neutral, mostly negative.

of practice categories. We defined primary care as comprising the fields of general internal medicine, general pediatrics, family medicine, geriatrics, and internal medicine/pediatrics. All respondents were categorized into one of four groups: (1) those who practice or plan to practice only primary care; (2) those who practice or plan to practice a mix of primary care and a medicine or pediatrics subspecialty; (3) those who practice or plan to practice only subspecialties of internal medicine or pediatrics; and (4) those who practice or plan to practice in any other specialty.

We explored respondents' self-characterization of socioemotional versus technoscientific orientation to the practice of medicine using a forced-choice methodology.

Reasons for Entering Medicine (Item D). We adapted items from the Association of American Medical Colleges' Matriculating Student Questionnaire to examine respondents' reasons for choosing medicine as a career. Students rated the importance of the intellectual challenge of medicine, interest in helping people, interest in research, independence, the opportunity to exercise social responsibility, job security, the prospects of high income, status, and prestige associated with medicine, and desire for autonomy in their choice of medicine as a career goal.

Primary Care Educational Experiences (Items E-G). *Exposure to primary care.* Measures of students' and residents' exposure to primary care during their current programs were obtained by asking respondents to estimate the percentage of time they spent in primary versus inpatient settings, and the percentage of time they spent with primary care faculty.

Satisfaction with training. Students and residents were asked to rate their satisfaction with specialty and primary care training.

Role models. Students and residents who had role models during their training reported whether the principal role model was a primary care physician.

Community Support for Primary Care (Items H-I). *Institutional mission.* We asked deans the relative importance of training primary care versus specialist physicians in their institutions.

Encouragement for primary care. To measure encouragement for primary care, we examined students' and residents' perceptions of support for primary career choice from faculty and peers. Similarly, we asked faculty the degree to which they encourage students and residents to enter primary care careers.

Attitudes Toward Primary Care Physicians' Clinical and Academic Competence (Items J-P). We examined the prevalence of positive attitudes about the competence of primary care physicians in clinical care, teaching, and research as indicators of general respect and esteem for primary care. We also asked students and residents their

perception of specialists' attitudes toward primary care physicians.

Analyses

Because we oversampled several subgroups of respondents and used different sampling fractions for each subsample, we developed sampling weights that generalize sample results back to the population and used these weights in all analyses to adjust for the differences in the probability of selection. To estimate parameters and their standard errors appropriately, we used a specialized statistical program, SUDAAN (Research Triangle Institute, Research Triangle Park, NC, 1992), designed for the analysis of complex probability sample data.

Because our previous analyses demonstrated striking differences in respondents' attitudes and perceptions of primary care as a function of intended specialty,¹³ we controlled for specialty in all analyses in this report, with the exception of analyses of demographic characteristics. Based on the differences among the four groups, we constructed a dichotomous specialty variable: primary care versus nonprimary care, where primary care consisted of those who practiced primary care only and nonprimary care consisted of those who practiced a specialty, subspecialty, or a mix of primary care and subspecialty.

We conducted a descriptive analysis of the indicators of support for primary care practice and training within osteopathic and allopathic communities. Five levels of academic status were used in our analyses: first-year students, fourth-year students, PGY-2 residents, faculty, and deans. We fit a series of logistic regression models (in the case of the dichotomous responses) and analysis of variance models (in the case of continuous responses). We first fit a series of models to determine whether variation in the responses was associated with membership in allopathic or osteopathic community (the main effect, controlling for specialty). We then fit a series of models to determine whether the main effects of community (osteopathic vs allopathic) differed by academic status (two-way interaction) and, if so, whether the effects of community varied as a function of both academic status and specialty (three-way interaction). We used adjusted Wald *F* statistics to test hypotheses because of the stratification and unequal sampling fractions used in this study. All differences cited are statistically significant at the $p < .05$ level.

RESULTS

Personal Characteristics (Items A-C)

A. Demographics. Overall, osteopathic and allopathic communities had similar gender compositions; nonwhites were represented in greater proportion in the allopathic community ($p < .01$); and the proportion of students and residents from rural hometowns was greater among osteopaths than allopaths ($p < .01$) (Table 2).

Table 2. Characteristics of Members of Osteopathic and Allopathic Communities

Characteristic	All	Learners			Faculty*	Deans	Hypothesis Test of Differences by	
		Yr 1	Yr 4	Residents			Community†	Community × Academic Status
Number of respondents								
All	2,502	388	400	785	833	96		
Osteo	457	118	93	140	91	15		
Allo	2,045	270	307	645	742	81		
A. Demographic characteristics								
Female, %								
All	29.8	40.6	36.3	35.0	22.0	2.7	$F_{(1,2425)} = 0.00$	$F_{(4,2422)} = 0.48$
Osteo	29.7	33.5	32.8	27.9	14.1	6.7		
Allo	29.8	41.5	36.8	35.7	22.1	2.2		
Nonwhite race, %								
All	19.2	26.3	24.6	22.5	13.8	3.9	$F_{(1,2425)} = 9.44^\ddagger$	$F_{(4,2422)} = 1.12$
Osteo	12.1	16.5	10.7	12.7	1.6	6.7		
Allo	19.7	27.6	26.3	23.4	13.9	3.5		
Rural hometown, %								
All	9.1	9.6	8.5	9.0	—	—	$F_{(1,1503)} = 9.72^\ddagger$	$F_{(2,1502)} = 1.03$
Osteo	15.1	14.6	18.4	11.3	—	—		
Allo	8.3	9.0	7.3	8.8	—	—		
B. Specialty, [§] %								
All	20.6	28.9	33.2	27.3	11.1	13.3	$F_{(1,2425)} = 53.61^\parallel$	$F_{(4,2422)} = 6.20^\P$
Osteo	38.8	34.5	52.4	29.6	29.3	53.3		
Allo	19.4	28.2	30.8	27.0	10.9	8.4		
C. Socioemotional								
All	41.6	63.9	48.2	40.8	31.4	—	$F_{(1,2322)} = 66.74^\parallel$	$F_{(3,2330)} = 2.04$
Osteo	63.8	81.9	59.0	49.0	55.9	—		
Allo	40.1	61.6	46.8	40.0	31.1	—		

*Osteopathic faculty rosters include full-time, part-time, and volunteer community faculty, whereas allopathic databases underrepresent community faculty.

†Osteopathic versus allopathic medical schools.

‡ $p < .01$.

§Percentage practicing or planning to practice primary care.

∥ $p < .0001$.

¶ $p < .001$.

B. Specialty Distribution. Overall, 38.8% of osteopaths practiced or planned to practice primary care compared with 19.4% of allopaths ($p < .0001$); however, while osteopaths in all academic strata were more likely than allopaths to practice or plan to practice primary care, the extent of the differences varied by academic status ($p < .001$) (Table 2). Roughly equivalent proportions of osteopathic and allopathic residents planned to practice primary care (29.6% vs 27.0%). There were larger differences between osteopathic and allopathic students, faculty, and deans. In fact, with the exception of residents, the differences widened with increased status.

C. Socioemotional Orientation. Table 2 shows that 63.8% of osteopaths described themselves as socioemotionally oriented versus 40.1% of allopaths ($p < .0001$). After controlling for specialty, differences between the two communities remained significant ($p < .001$).

D. Reasons for Entering Medicine. There were no statistically significant differences between first-year osteopathic and allopathic students' reported reasons for choosing ca-

reers in medicine (data not tabled). Overall, 90.7% of osteopathic and allopathic students said that the intellectual challenge of medicine was very important in their choice. Many students in both communities rated interest in helping people (77.9%) and research (88.0%) as very important. Fewer students rated independence, social responsibility, and job security as very important (52.2%, 50.6%, and 41.6% respectively); a very small percentage of students rated income, status, and desire for authority as very important (6.8%, 12.4%, and 5.0%, respectively).

Primary Care Educational Experiences (Items E–G)

E. Exposure to Primary Care. Controlling for specialty, osteopathic students reported spending more time in primary care settings than their allopathic counterparts ($F = 44.68_{1,400}$, $p < .0001$). Osteopathic students spent an average 51.1% (SE = 2.4) of their time in primary care settings; allopaths spent an average 31.3% (SE = 1.4) time. Similarly, primary care osteopathic residents reported

spending more time (50.9%, SE = 4.0) in primary care settings than primary care allopathic residents (34.6%, SE = 1.4) ($F = 14.89_{1,304}$, $p < .001$).

Controlling for specialty, osteopathic students reported spending more time (50.2%, SE = 1.9) with primary care faculty than did allopathic learners (37.5%, SE = 1.3) ($F = 28.75_{1,400}$, $p < .0001$). Among primary care residents, however, no differences were noted ($F = 0.08_{1,304}$, $p = 0.78$) between osteopaths (47.8%, SE = 3.4) and allopaths (48.8%, SE = 1.4) in the time spent with primary care faculty.

F. Satisfaction with Training. Table 3 shows that overall, osteopathic learners expressed greater satisfaction with training for primary care than did allopathic learners ($p < .001$). Conversely, allopathic learners reported greater satisfaction with specialty training ($p < .0001$). Effects of community varied by academic and primary care status.

G. Role Models. Overall, approximately one third of all learners reported having a primary care role model (Table

3). While there were no main effects for community, the likelihood a learner would choose a primary care role model varied as a function of community, academic status, and primary care status. Whereas only 9.7% of nonprimary care allopathic residents reported primary care role models, 32.1% of nonprimary care osteopathic residents reported primary care role models. This can be compared with the similarity of responses among primary care residents: 61.2% of the osteopaths and 61.7% of the allopaths reported primary care role models.

Community Support for Primary Care (Items H–I)

H. Institutional Mission. All osteopathic deans reported that training future primary care physicians was more important to their institutions than training future specialist physicians. In contrast, approximately half (54.6%) as many deans of allopathic medical schools reported that this was true at their schools ($F = 893.1_{1,95}$, $p < .0001$).

Table 3. Primary Care Educational Experiences and Support for Primary Care

Experience	Percentage of Learners			Hypothesis Test of Differences by*		
	All	Yr 4	Resident	Community†	Community × Academic Status	Community × Academic Status × Primary Care
F. Satisfaction with education						
Satisfaction with PC education						
All	78.5	76.6	83.0			
Osteo	93.5	95.8	85.3	$F_{(1,1144)} = 5.60^{\ddagger}$	$F_{(1,1144)} = 6.40^{\S}$	$F_{(4,1141)} = 40.24^{\parallel}$
Allo	76.8	74.2	82.8			
Satisfaction with specialty education						
All	89.7	85.1	95.0			
Osteo	67.5	52.1	90.2	$F_{(1,1144)} = 57.65^{\parallel}$	$F_{(1,1144)} = 5.65^{\S}$	$F_{(4,1141)} = 1.67$
Allo	92.2	89.3	95.4			
G. Selection of role model						
Have role model						
All	79.3	80.3	78.2			
Osteo	80.2	77.7	83.6	$F_{(1,1144)} = 0.04$	$F_{(1,1144)} = 1.96$	$F_{(4,1141)} = 1.25$
Allo	79.2	80.7	77.7			
Primary care role model						
All	30.7	36.3	24.9			
Osteo	35.4	32.1	39.7	$F_{(1,1144)} = 0.00$	$F_{(1,1144)} = 14.74^{\ddagger}$	$F_{(4,1141)} = 9.14^{\parallel}$
Allo	30.2	36.8	23.5			
I. Student perception of encouragement to enter PC						
Faculty encouragement to enter PC						
All	50.0	56.2	43.6			
Osteo	72.3	78.0	64.7	$F_{(1,1144)} = 28.89^{\parallel}$	$F_{(1,1144)} = 0.01$	$F_{(4,1141)} = 0.49$
Allo	47.5	53.4	41.6			
Peer encouragement to enter PC						
All	27.5	25.4	30.0			
Osteo	41.8	38.1	47.4	$F_{(1,1144)} = 10.97^{\ddagger}$	$F_{(1,1144)} = 1.50$	$F_{(4,1141)} = 3.27^{\S}$
Allo	25.8	23.8	28.3			

*Controlling for primary care orientation.

†Osteopathic versus allopathic medical schools.

‡ $p < .001$.

§ $p < .05$.

|| $p < .0001$.

I. Encouragement for Primary Care. Osteopathic learners more frequently reported receiving encouragement to enter primary care careers from peers than did allopathic learners ($p < .05$) (Table 3). Nearly three of four osteopathic learners reported receiving faculty encouragement in comparison with less than half of the allopathic learners ($p < .0001$).

There was a significant difference between osteopathic and allopathic faculty in self-reported encouragement of learners to enter primary care careers, with osteopaths being more supportive ($F = 26.9_{1,810}$, $p < .0001$) (data not tabled). Overall, 70.6% of osteopathic and 38.6% of allopathic faculty reported encouraging learners to enter primary care. Moreover, while faculty differed by specialty in both communities ($F = 45.5_{1,810}$, $p < .0001$), in osteopathic schools, high proportions of both primary care and nonprimary care faculty were supportive (97.0% and 59.7%, respectively). Among allopathic faculty, many primary care faculty (85.2%), but few nonprimary care faculty (32.9%), encouraged primary care career choice.

Attitudes Toward Primary Care Physicians' Clinical and Academic Competence (Items J-P)

J-M. Attitudes Toward Primary Care Physicians' Clinical Competence. Three fourths of all respondents identified a primary care doctor as the most appropriate to provide care for a less serious medical condition such as back pain or childhood asthma (Table 4). Despite this generally high endorsement of a primary care physician, higher proportions of osteopaths than allopaths identified a generalist ($p < .05$). There were also differences by academic status, with both osteopathic and allopathic residents responding virtually identically; greater differences were noted among students, faculty, and deans. In contrast, less than half of respondents in both osteopathic (47.5%) and allopathic (43.5%) communities endorsed a primary care physician to provide care for two serious illnesses (defined in Table 1) ($p > .05$).

The majority of all respondents (66.7%) reported positive global attitudes toward primary care competence. However, less than one in four respondents in either group believed that primary care tasks require a high degree of expertise. On both measures, members of the osteopathic community were significantly less likely than those of the allopathic community to express positive attitudes toward primary care.

N-O. Attitudes Toward the Academic Competence of Primary Care Physicians. The vast majority of osteopaths (80%) and allopaths (79.4%) tended to perceive that primary care faculty members' teaching is as good as or better than that of specialist faculty (Table 4). However, significantly fewer osteopaths (35.7%) than allopaths (42.7%) rated primary care research equal to or better than that of

specialists ($p < .01$). The effect of community, however, varied as a function of academic and primary care status.

P. Perceived Attitudes of Specialists Toward Primary Care. Overall, less than one third of the respondents perceived positive attitudes toward primary care physicians among specialist faculty (Table 4). There were no differences between groups ($p > .05$).

DISCUSSION

This study presents evidence that the culture of osteopathic medical schools supports learners' choice of primary care careers to a greater extent than that of most allopathic medical schools. Because we controlled for primary care orientation in our analyses, we believe we can attribute differences between the two communities to their cultural practices and not simply to the higher proportion of primary care faculty or primary-care-oriented learners in osteopathic medical schools.

The pattern of responses to this survey from members of the osteopathic community indicates the pervasiveness of their commitment to support primary care. Beginning with an explicit, stated primary care mission, the osteopathic medical community admits new members whose personal characteristics and interests fit well with a primary care culture and who are, therefore, likely to choose primary care careers. Not only are structures in place to support primary care training—i.e., mission statements, curricular hours, and a relatively high proportion of primary care faculty—but both primary care and nonprimary care faculty strongly encourage learners to enter primary care careers. Also, residents and students encourage their peers.

Despite large differences between the osteopathic and allopathic communities, there is reason to believe that the two cultures have begun to converge. At the time of this study, 63% of osteopathic graduates entered allopathic residency programs.⁹ This dilution of the osteopathic culture, along with the emphasis on high technology and subspecialty medicine practiced in allopathic residency programs, may diminish osteopathic residents' positive attitudes toward primary care and align their attitudes more closely with the culture of allopathic medicine than with osteopathic medicine. Because we did not differentiate between osteopathic residents in osteopathic and allopathic training programs, we cannot determine the degree to which any of these forces was associated with residents' attitudes.

Since this survey was conducted, three new osteopathic schools have opened and numerous osteopathic hospitals have closed (Zuger A. New York Times. February 17, 1998:C1). This would suggest that osteopathic students and residents will increasingly train in mixed allopathic and osteopathic settings in which the transmission of positive attitudes toward primary care may be less

Table 4. Percentage Agreeing with Attitudes Toward Primary Care Physicians' Clinical and Academic Competence

Attitude	All	Learners				Hypothesis Test of Differences by*		
		Yr 4	Resident	Faculty	Deans	Community	Community × Academic Status	Community × Academic Status × Primary Care
Attitude Towards								
Clinical Competence								
J. Best MD for less serious illness is PC								
All	75.2	71.0	81.9	71.0	87.4			
Osteo	85.2	85.1	81.3	85.1	100.0	$F_{(1,2066)} = 5.01^\ddagger$	$F_{(3,2064)} = 17.54^\S$	$F_{(10,2057)} = 7.18^\S$
Allo	74.7	70.9	82.0	70.9	85.9			
K. Best MD for more serious illness is PC								
All	43.7	41.2	51.1	41.2	50.8			
Osteo	47.5	48.7	50.0	48.7	80.0	$F_{(1,2066)} = 0.01$	$F_{(3,2064)} = 1.21$	$F_{(10,2057)} = 0.80$
Allo	43.5	41.1	51.2	41.1	47.3			
L. Global PC competence is supported								
All	66.7	65.6	69.2	65.6	78.6			
Osteo	64.9	71.3	58.9	71.3	80.0	$F_{(1,2066)} = 4.43^\ddagger$	$F_{(3,2064)} = 0.86$	$F_{(10,2057)} = 1.57$
Allo	66.8	65.5	70.1	65.5	78.5			
M. PC tasks require high expertise								
All	18.8	25.2	7.0	25.2	—			
Osteo	9.3	22.3	3.9	22.3	—	$F_{(1,1973)} = 14.16^\parallel$	$F_{(2,1972)} = 0.28$	$F_{(7,1767)} = 0.40$
Allo	19.3	25.2	7.3	25.2	—			
Attitude toward academic competence								
N. Quality of PC teaching is better than or equal to specialists								
All	79.4	72.6	86.5	72.6	85.9			
Osteo	80.1	74.6	73.5	74.6	86.7	$F_{(1,2066)} = 0.99$	$F_{(3,2064)} = 2.00$	$F_{(10,2057)} = 1.42$
Allo	79.4	72.6	87.8	72.6	85.9			
O. Quality of PC research is better than or equal to specialists								
All	42.4	35.3	52.8	35.3	32.9			
Osteo	35.7	35.6	37.2	35.6	13.5	$F_{(1,2066)} = 10.34^\P$	$F_{(3,2064)} = 2.69^\ddagger$	$F_{(10,2057)} = 2.21^\ddagger$
Allo	42.7	35.3	54.3	35.3	35.2			
P. Specialists hold positive attitude toward PC								
All	29.2	13.1	45.8	—	—			
Osteo	32.9	22.6	46.7	—	—	$F_{(1,1144)} = 1.22$	$F_{(1,1144)} = 2.90$	$F_{(4,1144)} = 1.03$
Allo	28.7	11.8	45.7	—	—			

*Controlling for primary care orientation.

†Osteopathic versus allopathic medical schools.

‡p < .05.

§p < .01.

||p < .001.

¶p < .0001.

likely. At the same time, allopathic medical schools, especially those with primary care missions, have increasingly imitated the admissions criteria and curricular requirements of osteopathic schools.¹⁴

There are two important limitations to this study. First, we did not compare the osteopathic community with the subsets of allopathic schools with stated primary

care missions or those involved in the generalist curriculum reform. Past research suggests that the cultures of these schools more closely resemble those of osteopathic schools.⁶ However, a recent study found that attitudes toward the competence of primary care physicians were just as negative in primary-care-oriented allopathic schools as in all others.¹⁵

Second, major changes in the health care system that have occurred since this study was conducted may affect our conclusions. Increased penetration of managed care has had a negative effect on academic physicians, especially specialists.¹⁶ Theoretically, this might cause a backlash against primary care, which could be greater in allopathic medical centers where there are larger proportions of specialists. Moreover, to the extent that managed care has not yet penetrated rural areas,¹⁷ primary care osteopathic physicians—who are more likely than allopaths to practice in rural areas—have probably been less negatively affected. In addition, primary care, as practiced today, has become fragmented among multiple practitioners (e.g., hospitalists, nurse practitioners, physician assistants, both osteopathic and allopathic family physicians, general internists, and pediatricians) whose functions overlap, but who bring different backgrounds and hold different levels of expertise for components of primary care. This fragmentation may lead to an increased perception that primary care tasks do not require high levels of expertise.

Culture matters in its totality. Although this study demonstrates that osteopathic schools' culture may be *more* supportive of primary care education than allopathic, it also reveals how the lack of alignment among different aspects of the culture—namely, community members' practices and attitudes—can undermine the expressed goal of producing primary care physicians. Osteopathic schools, like allopathic schools with primary care missions, lose many graduates to the specialties. To make further advances in primary care education, we must explore why this lack of alignment between primary care practices and attitudes exists in schools that are aggressively promoting primary care training.

One explanation may lie in American society's emphasis on specialized knowledge and expertise. The belief among primary care and specialist physicians, osteopaths and allopaths alike, that primary care tasks such as managing depression and achieving patient compliance require little expertise highlights a prevailing attitude among academics that work that requires communication with patients or psychosocial expertise is not scientifically based or intellectually rigorous.¹⁸

For some time, the curricular structures and policies needed to produce primary care physicians have been clear to both osteopathic and allopathic educators. This study highlights the importance of general culture in which there is an alignment of educational structures, practices, and attitudes. Schools interested in creating positive cultures for primary care must broaden community membership to include entrants with strong socioemotional orientations or untraditional backgrounds, for example, as well as recruit, develop, and promote outstanding primary care faculty members. It is important that these newcomers be given every opportunity for professional development and be accorded the respect and status of their specialist—or specialty-bound—peers. Finally, schools need to encourage a

collegial discourse about all medical specialties. Certainly, sincere, consistent, and widespread encouragement of students to enter primary care careers is a convincing form of support. Its opposite, "badmouthing" of primary care careers, has been shown to be discouraging.¹⁹ The prevalence of negative attitudes toward the competence of primary care physicians within both communities suggests that there needs to be a clearer understanding of the value added by primary care within the health care system.

The authors are grateful to Brian Clarridge, PhD, and Michael Massagli, PhD, at the Center for Survey Research of the University of Massachusetts, Boston, for assistance in survey development and data collection; Allen Singer, PhD, of the Association of American Colleges of Osteopathic Medicine, for background information; our colleagues on the ACME research team for critical reviews of the manuscript; and Emily Ficklin and Paul Reen for technical services.

This project was supported by grants 20091 and 21608 from the Robert Wood Johnson Foundation.

REFERENCES

1. Council on Graduate Medical Education. Fourth Report: Recommendations to Improve Access to Health Care Through Physician Workforce Reform. Rockville, Md: US Dept of Health and Human Services; 1994.
2. Hruby RF. Session II: contemporary philosophy and practice of osteopathic medicine. In: Sirica CM, ed. *Osteopathic Medicine: Past, Present, and Future*. New York, NY: Josiah Macy, Jr. Foundation; 1996.
3. Gevitz N. Session I: the history of osteopathic medicine. In: Sirica CM, ed. *Osteopathic Medicine: Past, Present, and Future*. New York, NY: Josiah Macy, Jr. Foundation; 1996.
4. Cummings M. Challenge to osteopathic education: returning to its primary care roots. *JAMA*. 1992;268:1139–40.
5. Singer AM. Debts and Career Plans of Osteopathic Medical Students. Rockville, Md: AACOM; 1994.
6. Campos-Outcalt D, Senf JH. Medical school financial support, faculty composition, and selection of family practice by medical students. *Fam Med*. 1992;24:596–601.
7. Martini CJM, Veloski J, Barzansky B, Xu G, Fields SK. Medical school and student characteristics that influence choosing a generalist career. *JAMA*. 1994;272:661–8.
8. Colwill JM. Where have all the primary care applicants gone? *N Engl J Med*. 1992;326:387–93.
9. Ross-Lee B, Wood DL. Session III: osteopathic medical education. In: Sirica CM, ed. *Osteopathic Medicine: Past, Present, and Future*. New York, NY: Josiah Macy, Jr. Foundation; 1996.
10. Hueston WJ. Factors associated with research efforts of academic family physicians. *J Fam Pract*. 1993;37:44–8.
11. Shlapentokh V, O'Donnell N, Grey MB. Osteopathic interns' attitudes toward their education and training. *Med Educ*. 1991;91:786–802.
12. Arnstein SR, Haspel LU. A perspective on osteopathic medical schools. *Milbank Q*. 1994;72:725–33.
13. Block SD, Clark-Chiarelli N, Peters AS, Singer JD. Academia's chilly climate for primary care. *JAMA*. 1996;276:677–82.
14. Colwill JM, Perkoff GT, Blake RL, Paden C, Beachler M. Modifying the culture of medical education: the first three years of the RWJ Generalist Physician Initiative. *Acad Med*. 1997;72:745–53.
15. Block SD, Clark-Chiarelli N, Singer JD. Mixed messages about primary care in the culture of US medical schools. *Acad Med*. 1998;73:1087–94.

16. Simon SR, Pan RJD, Sullivan AM, et al. Views of managed care: a survey of students, residents, faculty, and deans at medical school in the United States. *N Engl J Med*. 1999;340:928-36.
17. Christianson JB, Hamer R, Knutson D, Wellever A. HMO financial arrangements with rural physicians. *J Rural Health*. 1997;13:240-52.
18. Magill MK, Catinella AP, Haas L, Hughes CC. Cultures in conflict: a challenge to faculty of academic health centers. *Acad Med*. 1998;73:871-5.
19. Hunt DD, Scott C, Zhong S, Goldstein E. Frequency and effect of negative comments ("bad mouthing") on medical students' career choices. *Acad Med*. 1996;71:665-9.

JOURNAL OF GENERAL INTERNAL MEDICINE SUBSCRIBERS

Do we have your new address?

Send us your new address three months before it becomes effective, so we will have time to get it into our computer system and ensure that your copies of JGIM continue to arrive uninterrupted. Send your old mailing label, your new address with zip code, the effective date of your new address, and your current telephone number.

Nonmember subscribers notify:

Tina Lynch
Blackwell Science, Inc.
Commerce Place, 350 Main St.
Malden, MA 02148

SGIM members notify:

Janice L. Clements
Society of General Internal Medicine
2501 M Street, NW, Suite 575
Washington, DC 20037