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Original Article

Factors influencing osteopathic medical students' intent to work with underserved populations: Implications for curriculum enhancement



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ABSTRACT

Background: Fewer medical students are selecting primary care, and medical students' attitudes toward underserved populations may impact their decision to pursue primary care.

Objective: This study investigated first year medical students' beliefs and attitudes toward underserved patient populations and how those attitudes might influence their intent to care for the this population as a career choice.

Methods: A cross-sectional, correlational research design was used to determine the influence of attitudes and beliefs on osteopathic medical students' intention to provide care to underserved patient populations in future practice. Between 2011 and 2015 data were collected using the Medical Students Attitudes Scale via written questionnaire from 829 first-year attending a large osteopathic medical school in the United States.

Results: More positive attitudes toward equitable healthcare, greater belief that access to medical care is influenced by socio-cultural-environmental factors (e.g., income, gender), sense of professional responsibility, choice of family medicine as a career, and being female were related to higher levels of intent to work with underserved populations; desire for higher income and choice of surgery as a career choice were associated with less intent. Multivariate modeling successfully explained the 29% of the variance in predicting intention to provide care to the underserved in future practice.

Conclusions: With an increasingly diverse population and increasing health disparities, osteopathic medical schools might consider incorporating changes in their curricula to inculcate cultural competency and social responsibility and foster more compassion among students to care for underserved populations.

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Implications for practice

- Underlying beliefs and values about working with underserved populations held by incoming osteopathic medical students need to be addressed at the start of their medical training.
- The majority of osteopathic physicians practice primary care, yet there is an overall disinterest in working with underserved or indigent populations among osteopathic medical students; incoming students may have unrealistic career expectations.
- Some students are unsure if they want to practice in underserved areas, providing an opportunity to intervene with students at the entry-level.
- This research suggests that multidimensional curriculum enhancements to help produce more community and rural health care physicians may be warranted.

Introduction

Osteopathic medicine as a profession has risen to lead efforts to include more humanistic qualities in its practice. The school curricula are designed to teach skills to students who, for the most part, will work on the front line of medicine as primary care physicians (PCP)^[1]. Organizations affiliated with osteopathic medicine, such as the American Osteopathic Association and the American Association of Colleges of Osteopathic Medicine, claim that this branch of medicine has a tradition of providing care to underserved areas and populations and that it fosters physicians with an appreciation of diversity and equality of all people^[2].

A well-established problem facing medicine is that fewer medical students are moving into primary care^[3] and the retention of physicians in primary care is declining^[4]. Trends observed include decreasing physician empathy, declining quality of life, declining quality of patient care, dissatisfaction with work-life balance, high burnout, and high emotional exhaustion^[5], which may deter graduates from doing residency in family, or rural medicine.

The loss of interest in primary care as a specialty and declining attitudes toward working with underserved¹ communities have also been associated with education-based factors including the presence of role models. There is an increasing body of knowledge demonstrating how medical students are influenced by the positive and negative opinions of their colleagues and mentors toward primary care and the underserved^[6]. Medical students may not perceive primary care to be a field that is well respected within the professional community. It has been conjectured that negative attitudes of physicians toward working with poor and underserved¹ communities contribute to these attitudes^[7].

Producing primary care physicians is an important component of the mission of osteopathic medical education. However, the relationship between attitudes and career choice among osteopathic medical students' has not been well investigated. While several studies have made important contributions to the understanding of allopathic medical students' attitudes toward primary care and working with underserved populations, few have investigated this concept in osteopathic medical students. The authors thus sought to answer the question: What are the factors that influence medical students when deciding on a career in primary care

(PC) with underserved communities? More specifically, (a) What are the attitudinal factors that influence the medical student to choose a career in PC with underserved populations?, and (b) What are the logistical factors (e.g., working conditions, desired income) that influence the medical student to choose a career in PC with underserved populations?

Materials and methods

Participants and procedures

A cross-sectional, correlational research design was used to determine the influence of certain attitudes (e.g., personal responsibility to treat, patients' rights to treatment) on osteopathic medical students' intention to provide care to underserved patient populations as a career choice. Data were collected from a convenience sample of 829 incoming students during orientation at an osteopathic medical school in a large southeastern university in the United States in 2011–2015. Single items were used to assess demographic variables (e.g., age, gender) and other characteristics of the sample. Data were analyzed using multivariate regression analysis.

Approval was obtained from the institution's ethics committee, the Institutional Review Board (IRB). Prior to participating in the study, potential participants were informed about the purpose of the study verbally and via a cover letter which accompanied the questionnaire. The cover letter included assurances of the anonymity of the survey and that their participation was voluntary and they could withdraw from the study at any time. The possible risks and benefits to the study were explained in addition to plans for disseminating results. No incentives for participation were provided. The questionnaire took approximately 15–20 min to administer and complete.

Measures

Students voluntarily completed the 56-item survey which contained, among items constructed by the researchers, the Medical Student Attitudes toward the Underserved (MSATU)^[8]. The MSATU, which assesses attitudes about medical care and underserved patient populations, is the only known reliable instrument that addresses the topic. Reliability, validity, factor analysis, and internal consistency coefficients for this instrument are reported elsewhere^[9].

The MSATU instrument uses a 5-point Likert scale (agree to disagree). The measure assesses attitudes regarding professional role or responsibility, organizational role or responsibility, and personal (student) role or responsibility. It also includes items on attitudes toward services ranging from basic to extensive care to which individuals should have access regardless of their ability to pay. These themes are broken into subscales and are described below.

Attitudes toward equitable healthcare

In terms of who should provide medical care, participants were asked to rate the extent to which they think the medical profession, communities, society, or individuals were responsible for providing healthcare to the underserved. Twenty-three 5-point Likert-type items (*strongly agree to strongly disagree*) addressed whether the medical profession, communities, society, or individuals were responsible for providing healthcare to the underserved. Examples if items include "Physicians should be responsible for providing medical care to the needy" and "It is the responsibility of private charitable organizations to provide some funding for health care services." Higher scores indicate more favorable attitudes toward

¹ Provided with inadequate service.

physician responsibility in providing care to the medically needy.

Opinions about types of healthcare services provided

Using a 5-point Likert scale (*strongly agree to strongly disagree*), participants were asked to report the extent to which they believed people should have access to certain health care services (e.g., childhood immunizations, organ transplants, medical office visit for routine health maintenance, prenatal care including delivery, and cancer treatment) regardless of their ability to pay. Higher scores indicate more favorable opinions about providing free health care services to those in need.

Beliefs about health care access

They were then asked, using a 5-point Likert scale (*strongly agree to strongly disagree*), if their opinion on whether certain personal characteristics influenced access to medical care (e.g., patient's age, income, education, race or ethnic group, gender, sexual orientation, and immigration status). Higher scores indicate stronger belief that disparities exist regarding access to medical services based on a patient's personal characteristic or circumstance.

Intent to practice with underserved patient populations

Participants were also asked to evaluate using a 5-point Likert-type scale the likelihood (*very unlikely to very likely*) they will choose specific areas of practice after graduating medical school. Areas assessed by the questionnaire include primary care, rural medicine, international practice, public health, and government-administrations (e.g., Peace Corps). Higher scores on this scale indicate a greater level of intention to choose a career working with the medically underserved.

Students' choice of medical specialty

In addition, students were also asked single item questions regarding their area of interest for practice (e.g., family medicine, pediatrics, surgery) and reasons that might influence their decision to practice (or not practice) in underserved areas (e.g., political climate, working conditions, pay scale).

Preliminary analysis

Data were entered into SPSS statistical software^[10]. For the attitudes and services subscales, factors were analyzed and reported separately. Baseline descriptive statistics were calculated to look for differences between groups for age, gender, and race. Multivariate regression analysis was conducted to explore the relationships between the variables and intent to work with underserved patient populations. With this sample of 829 respondents, all subscales had acceptable Cronbach's alpha reliability coefficients (.71–.92). Only one scale (intent to practice with underserved patient populations) was just under .70 (alpha = .68), considered the standard rule of thumb^[11].

Results

Sample characteristics

Table 1 reports the characteristics of the sample. The ages of the participants (N = 829) ranged from 20 to 55 years ($M = 24.5$, $SD = 3.29$). The sample consisted of 472 (56.9%) men and 357 (43.1%) women. The majority of the sample was white ($n = 519$; 62.7%), 176 (21.3%) were Asian/Pacific Islander, and 39 (4.4%) were Black; 138 participants (16.7%) identified as Hispanic. More than 50 countries other than the United States were reported as countries of origin, the majority of which were middle-and low-income

Table 1
Characteristics of the sample.

Characteristic	Frequency	%
Age (mean age = 24.5 years; range 20–55 years)		
Gender		
Male	472	56.9
Female	357	43.1
Race/ethnicity		
White	519	62.7
Asian/Pacific Islander	172	21.3
Black	39	4.4
Multiracial	31	3.7
Other/prefer not answer	60	7.3
Identified as Hispanic	138	16.7
Likely to return to country of origin	99	12.0
Relationship status		
Single	513	62.3
Married	88	10.6
In a committed relationship/significant other	223	27.1
Have children	33	4.0
Region type where went to high school		
Suburban	536	65.2
Urban	200	24.3
Rural	83	10.0
Received public assistance (e.g., Medicare, food stamps) at least once in their life	98	11.8

nations; only 99 (12%) of participants reported they were very likely to return to their country of origin to practice medicine. Sixty-two percent ($n = 513$) reported being single; the remainder were married or in a committed relationship. Only about 4 percent ($n = 33$) reported having children. The majority attended high school in a suburban ($n = 536$; 65.2%) or urban ($n = 200$; 24.3%); only 10 percent ($n = 83$) went to high school in a rural setting. About 12 percent ($n = 98$) of respondents had, at least once in their life, received public assistance (e.g., Medicare, food stamps).

Attitudes toward equitable healthcare ($\alpha = .71$)

The mean score for this measure was 3.8 on a 5-point scale. The majority of respondents reported medical doctors should be responsible for providing medical care to the needy ($n = 708$; 85.4%) and they feel personally responsible for providing medical care to the underserved ($n = 602$; 72.7%). Moreover, 88.5% ($n = 732$) reported they personally want to be involved in providing care for the medically needy during their career. However, 30.5% ($n = 327$) disagreed that people have a right to unlimited medical care regardless of their ability to pay and thought that private charitable organizations should provide facilities for medical care of the needy ($n = 529$; 66.3%). More than one-fourth (28%; $n = 228$) reported there are groups who should not receive free medical care.

Opinions about healthcare services provided ($\alpha = .92$)

The mean score for this measure was 4 on a 5-point scale. Items on this scale measured respondents' feelings about receipt of certain health care services regardless of a patient's ability to pay. Childhood immunizations, prenatal (including delivery), medications for acute and chronic illness, and emergency medical care were the types of care that the majority of the students felt should be accessible regardless of ability to pay. However, some respondents felt health maintenance, transplants and certain surgeries should not be provided.

Beliefs about health care access ($\alpha = .88$)

The mean score was 3.5 on a 5-point scale. Many respondents

reported they believed access to medical care in the United States is influenced by age, income level, educational level, being insured, urban residence, and immigration status. However, many reported they disagreed that gender ($n = 488$; 58.8%), sexual orientation ($n = 424$; 51.4%), and race/ethnicity ($n = 244$; 30%) affected access to care.

Intention to practice with underserved patient populations ($\alpha = .68$)

The mean score on this scale was 2.8 on a 5-point scale. Twenty-four percent ($n = 201$) reported they were unlikely to choose a primary care specialty; 37% ($n = 309$) were unsure. About the same amount ($n = 301$; 36.4%) stated they would not be likely to choose to practice in a rural area; 45.3% ($n = 375$) were unsure. Similar results were found for public health practice ($n = 340$; 40.6%) and government work ($n = 327$; 39.5%).

Students' choice of medical specialty

Table 2 describes respondents' reports of choice of interest for all categories. When asked about their area of interest for future practice, only 10 percent ($n = 83$) of respondents reported primary care practice and 1.6% ($n = 13$) reported rural medicine.

Table 3 describes respondents' reports reasons not to choose to a career focused on care for the underserved. Main reasons that influence students' decision not to practice in underserved areas included educational debt ($n = 373$; 45.1%), working conditions ($n = 358$; 43.3%), availability of resources ($n = 318$; 38.5%), desired income ($n = 313$; 37.8%), family influences ($n = 168$; 28.3%), political climate ($n = 218$; 26.4%), location of the population ($n = 214$; 25.9%), and significant others' influences ($n = 175$; 21.2%).

Multivariate analysis

Table 4 demonstrates that more positive attitudes toward equitable healthcare for everyone, greater belief that access to medical care is influenced by socio-cultural-environmental factors (e.g., income, race, gender, sexual orientation, immigration status, rural residence), sense of professional responsibility, choice of family medicine as a career, and being female was associated with intent to provide care to underserved patient populations in future practice; desire for higher income and choice of surgery as a career choice were associated with less intent, $F = 47.6$, $df = 7$, $p < .001$.

Table 2
Students' desired future medical specialty.

Specialty	Frequency	%
Internal medicine	180	31.8
Surgery	155	18.8
Emergency medicine	137	16.6
Pediatrics/Adolescent medicine	102	12.3
Family medicine	83	10
Sports medicine	74	8.9
Preventive medicine	33	4.0
Obstetrics/Gynecology	32	3.9
Psychiatry	23	2.8
Forensic medicine	20	2.4
Osteopathic Principles and Practice (OPP)	17	2.1
Intensive care	13	1.6
Rural medicine	13	1.6
Hospitalist	11	1.3
Geriatrics	8	1.0

Table 3

Reasons influencing students' decisions to not practice in medically underserved areas.

Reason	Frequency	%
Educational debt	373	45.1
Working conditions	358	43.3
Availability of resources	318	38.5
Desired income	313	37.8
Political climate	218	26.4
Location of indigent population	214	25.9
Significant other's influence	175	21.2
Family influence	168	20.3
Patient population	105	12.7
Religious reasons	89	10.8
Previous volunteer or work experience with the indigent	62	7.5
Perceived degree of professional respect	58	7.0
Your community of origin's influence	54	6.5
Sense of professional responsibility	27	3.3
Role models in the health profession	27	3.3

Discussion

While the significance of osteopathic medical students' attitudes toward their subsequent career path has yet to be determined, the above findings offer medical educators some insight into the underlying beliefs and values held by candidates at the time they begin medical training. The most salient finding was the overall lack of interest in primary care among respondents, despite the fact that the majority of osteopathic medical school graduates wind up in primary care specialties each year. Also significant was the low mean score (2.8 out of 5) on the "intent to work with underserved in future practice" scale in comparison to higher mean scores on scales that measured attitudes toward the importance of providing services to the needy, that physicians should be responsible for caring for the underserved, and recognizing inequities and disparities among certain patient groups regarding access to health care.

The fact that primary care specialty was ranked low on their first choice and only a very small percent of respondents expressed intent to practice primary care in underserved areas or rural medicine could suggest that incoming osteopathic medical students have unrealistic career expectations. Alternatively, early attitudes may be subsequently influenced by primary care experiences during pre-clinical and clinical years, resulting in a paradigm shift. While about one-fourth reported they were unlikely to choose a primary care specialty or practice in a rural area, 37–45.3% were unsure. This provides an opportunity to intervene with students at the entry-level. Misconceptions about communities labeled as 'underserved' arise from fear of the unknown, and may be overcome through positive exposures such as volunteerism, international medical outreach trips, and clinical rural rotations. Increased exposure to these activities have become a mandatory component of the curricula at many osteopathic medical schools and may influence students' decisions in the end.

Among students who reported very little or no desire to provide care to the underserved, the three most common reasons cited for this decision were unfavorable working conditions, educational debt (i.e., loan repayment) and desired income. Across all specialty preferences, this point of view was most frequently expressed by those wanting to pursue surgery, one of the most competitive options listed on the questionnaire in terms of residency-match rates. The association was not surprising, as it is consistent with findings reported in prior literature on this topic from a variety of countries; for example, a multi-national analysis of perceptions toward family medicine identified similar themes, in which negative attitudes among first- and second-year medical students were based on the

Table 4
Regression model summary predicting intention to provide care to the underserved.

Predictor variables	B	SE	Beta	t	Sig
Intercept	.347	1.452		.239	.811
Attitudes toward providing healthcare services	.141	.012	.388	12.049	.000**
Beliefs about access to care	.029	.015	.062	2.022	.044*
Sense of professional responsibility	.593	.227	.080	2.612	.009**
Desired income	.911	.274	.101	3.329	.001**
Family medicine choice	1.469	.344	.128	4.270	.000**
Surgery choice	1.055	.269	.120	3.925	.000**
Gender	.696	.216	.099	3.217	.001**

Predicted variable "intention to provide care to the underserved".
p* < .005; *p* < .01.
R = 29.4% (adjusted *R* square = 28.8%).

belief that primary care is less intellectually stimulating and/or financially lucrative in comparison to specialization, in addition to being viewed as 'inferior' by their peers, colleagues and society^[12]. The attraction that prestigious specialties hold for students falling within the top 10 percent of a medical school class might be explained by the competitive nature of high-achieving students, making them less inclined to seek positions that commit to working with underserved populations which are often primary care-based and associated with lower salaries.

Implications for medical education

Because a majority of the literature attributes declining interest toward primary care and the underserved to curricular deficits at medical schools^[13], it may be in the best interest to address these attitudes and beliefs by changing the curricula. Medical school curricula, being malleable, should reflect societal wants and needs from its physicians which includes not only people with expertise in medical sciences, but also people who are excellent communicators, managers, advocates, and sensitive to cultural and socio-economic differences. This idea reflects a consensus being established in a growing body of literature stating that the public is looking for humanistic physicians, not just medical technical experts^[4,14].

Very little time is spent directly discussing the importance of social sciences in medical curricula^[13]. Students that do spend time in required curricular activities that – though not didactic – can be implemented in the hope of fostering social skills and changing student attitudes toward primary care and the underserved. Such activities include rural rotations, community service requirements, and international medical outreach programs.

Requiring rural rotations may be perhaps the most direct maneuver employed to address these problems because they engage students in direct delivery of primary care to populations that are underserved. These rotations have been found to be effective in changing student attitudes toward both primary care and underserved populations, though the degree of their impact is dependent on the duration of the rotation^[15]. Additionally, the effect of the duration of the rotation on attitude change is itself moderated by whether or not the student is in their graduate or postgraduate medical training. Rural rotations have also been shown to instill a higher sense of social responsibility in all students, regardless of whether or not they planned on going into primary care^[9]. This effect may have occurred because students left the rotation with a better understanding of the needs of the underserved population with whom they worked. However, service learning may be more effective if it includes certain elements in order to be successful, namely that students get hands-on experience practicing clinical skills within a community with a previously identified medical problem while meeting other formal objectives identified by a

course director. Most importantly, students must reflect on their experience and understand its significance. The importance of reflection on the outcome of service learning experiences is crucial and well-established^[16].

It has also been suggested that the outcome of service learning on student attitude may be variegated due to the wide variety of pre-existing beliefs possessed by students^[17].

For example, students with a positive attitude towards underserved populations tend to volunteer more than students with negative attitudes. Non-volunteers have been found to lack interest in working with these groups and may hold the belief that their medical education should not include exposure to these populations. They also may believe that physicians should be responsible for devoting time to treating the underserved populations on a regular basis, but do not feel personally responsible. Given these findings, it may be prudent to expand the goals of service learning to include opportunities that help develop cultural competency, promote empathy through extracurricular (as well as curricular) efforts, and help them grasp the implications of health disparities to facilitate attitudinal change^[18,19].

It may be assumed that PCPs are motivated to treat the underserved. This assumption permeates through the concepts behind curricular changes of cultural competency or service learning; if a student is not motivated to extract meaning from these experiences, it is highly unlikely that they would change from it. Future research in behavioral interventions towards improving attitudes and beliefs towards primary care and medically underserved groups may benefit from modifying previously established behavior models that account for student motivation and readiness for change. By using such models to take students' readiness and motivation to change into account, it is likely that interventions to address student attitudes will have greater success.

Limitations

Findings from this study have provided insight regarding variables that influence osteopathic medical students' intentions to work with the underserved. However, there are several potential limitations of this study. First, a cross-sectional, correlational survey design was used to collect data for this study. Therefore, generalizations cannot be made regarding changes or trends over time, directionality of influence, or cause-and-effect relationships. Second, a convenience sample of students was used to collect data, which limits the ability to generalize findings. Third, self-report questionnaires used for data collection can result in response bias, social desirability bias, and inaccuracies that could affect findings. Fourth, data collection was limited to one U.S. medical school. Multi-site data collection (i.e., a variety of osteopathic schools throughout the U.S.) might have provided a more diverse sample of student respondents. Data collection occurred in some

group settings. Even though the participants were informed that completing the survey was strictly voluntary, they may have felt peer pressure to complete the survey because their counterparts had.

Conclusion

With an increasingly diverse population and increasing health disparities, medical schools might want to consider incorporating changes to their curricula to inculcate cultural competency and social responsibility among the graduating physicians to care for medically underserved patient populations. While more research in this area is warranted, findings from this study could help guide academic programming efforts for medical students to help produce more community and rural health care physicians, as well as foster compassionate care toward the underserved.

Conflicts of interest

None declared.

Ethical approval

Authors declare this study has been conducted according to their institution's ethical review board.

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