BRIEF REPORT

What Predicts Medical Student Career Choice?

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The literature on medical student career choice has identified several influences that can be categorized as student demographics, medical school characteristics, students' perceptions of specialty characteristics, and student-held values. A logistic regression model that included demographics, medical school, and student-rated influences as a proxy for perceptions and values was used to determine their relative contribution to student career choice for three consecutive cohorts of senior medical students attending two schools ($n = 649$). This model identified a positive relation between choice of primary care career and both student-rated influences and one student demographic characteristic, but not between career choice and school attended. Variables positively correlated with primary care career choice were related to working with people and marital status. Negatively correlated variables were related to income and prestige.

KEY WORDS: medical students; career choice; student demographics; student-held values; medical school characteristics. *J GEN INTERN MED* 1998;13:200-203.

From 1992 to 1996, the percentage of medical students choosing primary care careers increased dramatically from 14.6% to 31.9%,^{1,2} but the number of primary care physicians remains inadequate.³ A need remains for better identification of factors that determine career choice. The literature on career choice has identified influences that can be broadly categorized as students' demographics, medical school characteristics, students' perceptions of specialty characteristics, and student-held values.⁴ The latter two factors can be indirectly evaluated by asking students to rate influences on career choice.

Although many variables have been investigated in studies of career choice, little research has been done comparing the relative importance of factors from the multiple categories. Therefore, the factors that have the

greatest influence on career choice remain unclear. For example, many studies have correlated specific demographic characteristics with career choice, but school characteristics or student values may be of greater importance in the decision-making process.

To determine the relative contribution of factors in these diverse categories to career choice, we surveyed senior medical students at two schools. Two questions were posed for this exploratory study: (1) What is the impact of student demographics, school attended, and student-rated influences on career choice? (2) Within the broader categories of demographics and student-rated influences, which specific factors are most influential?

METHODS

Survey

Three consecutive graduating classes (1995, 1996, and 1997) at New York Medical College (NYMC) and East Carolina University School of Medicine (ECUSOM) voluntarily and confidentially responded to a cross-sectional survey. The questionnaire asked about career choice, 10 demographic characteristics, and 13 student-rated influences (Table 1). Student self-ratings of influences on career choice were assessed on a 4-point Likert scale. The specific demographic characteristics⁴⁻⁷ and student-rated influences⁸⁻¹⁰ were chosen on the basis of a literature review.

Analysis

Because the number of variables was large, forward stepwise logistic regression analysis was performed using SAS Proc Logist. (The LOGISTIC Procedure, SAS/STAT User's Guide, version 6. Cary, NC: SAS Institute; 1989). The dichotomous dependent variable was primary care, defined as family medicine, general internal medicine, general pediatrics, and medicine-pediatrics¹¹ versus non-primary-care career choice. The independent variables are enumerated in Table 1. For the student-rated influences, responses were dichotomized into major and moderate influence and minor and no influence. Race groups were collapsed to white and nonwhite. Year of graduation was also included in the model. An α value of .05 was the criterion for establishing the statistical significance of the logistic regression model and independent variables.

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Table 1. Factors Analyzed for Relation to Primary Care Career Choice

Medical student demographics
Gender
Age
Race
Community size
Education loans (debt)
Marital status*
Father's education
Mother's education
Prior career
Volunteer work
Student-rated influences on career choice
Intellectual content
Income relative to other specialties*
Role model physician in this specialty
Prestige within the medical profession*
Minimal exposure to AIDS
Lack of stress in this field
Controllable work hours
Strong emphasis on primary care*
Level of educational debt
Consistent with my personality
Emphasis on people skills, rather than technical skills*
Minimal exposure to tuberculosis
Knowledge base required is manageable to achieve competency
Medical school
New York Medical College [†]
Urban
Private
Generalist clerkship
Ranks in <i>lower</i> quintile of medical schools in percentage of students choosing primary care careers
East Carolina University School of Medicine [†]
Rural
Public
Family medicine clerkship
Ranks in <i>upper</i> quintile of medical schools in percentage of students choosing primary care careers
Mission of training primary care physicians
Year of graduation

* Significant in the logistic regression; see text.

[†] School characteristics were not included individually in the logistic regression.

RESULTS

The overall response rate was 81.8% (649 of 793), and 565 (71.2%) provided complete responses and were included in the regression analysis. Within schools the corresponding percentages were 92.5% and 89.7% for ECUSOM and 77.9% and 64.5% for NYMC. Demographic characteristics of the respondents were similar to those of the total group (data not shown). Primary care careers were chosen by 38.1% of the responding students. As expected, more graduating students at ECUSOM chose pri-

mary care careers (46.9%) than at NYMC (33.7%), largely because more ECUSOM students chose family medicine as a career (24.5% at ECUSOM vs 7.3% at NYMC). Demographic characteristics of all respondents at the two institutions are shown in Table 2.

Of the three broad categories of predictors included in the regression model (Table 1), student-rated influences and a single demographic characteristic were statistically significant predictors. School attended did not influence career choice. Two student-rated influences were directly related to choice of a primary care career: "emphasis on people skills, rather than technical skills" (odds ratio [OR] 4.7, $p < .0001$) and "strong emphasis on primary care" (OR 20.3, $p < .0001$). Marital status (being wed) also correlated with choosing primary care (OR 2.2, $p < .01$). The factors that were inversely related to primary care career choice were "prestige within the medical profession" (OR 0.37, $p < .001$) and "income relative to other specialties" (OR 0.20, $p < .0001$). The pseudo R^2 was .46.

DISCUSSION

Reports on the impact of student demographics, student perceptions of specialty characteristics, student-held values, and school characteristics are available.^{4,5} The demographic characteristics included in our study (Table 1) have often been reported to correlate with career choice.^{4,7} However, previous reports, with rare exceptions,^{5,12} examined relations between demographics and specialty choice without considering other categories of independent variables such as those included in our analysis. Of the 10 demographic characteristics included in our model, only marital status was a significant predictor of specialty choice. Previous reports have found an inconsistent relation between marital status and career choice.^{12,13}

Many authors have reported medical school characteristics that correlate with primary care career choice.^{4,5,14,15} The two schools included in this study were notably different on almost every characteristic associated with career choice (Table 1), and their students differed significantly in career choice. Given the literature and these differences, we were surprised to find that school was not a statistically significant predictor of career choice.

Student-rated influences are the students' retrospective and introspective interpretations of the causal factors in their career choices. These factors are a reflection of their values and perceptions of specialty characteristics. The student-rated variables that positively related to primary care specialty choice were related to working with people. This is congruent with other reports noting the association between a desire to help others and the choice of a primary care career.^{4,5} The variables inversely related to primary care career choice were placing value on prestige and income. Hence, students choosing a non-primary-care specialty seemed to be influenced more by financial issues and prestige.

Table 2. Comparison of Student Demographics

Factor	ECUSOM* (n = 197)	NYMC* (n = 452)	Total (n = 649)	AAMC*
Female gender, [†] %	49.0	33.0	38.0	40.0
Married, [†] %	41.3	23.9	29.3	32.1
Age, [‡] years	29.3	28.4	28.6	28.2
Race, [†] %				
White	79.6	57.2	64.0	69.8
Nonwhite	20.4	42.8	36.0	30.2
High school community, [†] %				
Large city (>500,000)	6.6	22.6	17.7	18.0
Suburb of large city	7.1	38.1	28.7	26.1
Moderate city (>50,000)	29.4	10.4	16.2	17.6
Suburb of moderate city	7.6	10.4	9.6	9.0
Small city (>10,000)	23.4	6.7	11.7	13.6
Town (>2,500)	12.7	8.4	9.7	9.6
Small town (<2,500)	8.1	2.4	4.2	3.9
Rural/unincorporated area	5.1	0.9	2.2	2.2
College loans [§]				
Percentage with debt after college	25.9	33.2	31.0	32.6
Mean amount of debt $\pm$ SD, \$	9,015 $\pm$ 11,198	17,107 $\pm$ 30,568	15,126 $\pm$ 27,328	10,855
Medical school loans				
Percentage with debt after med school	85.8	87.4	86.9	80.4
Mean amount of debt $\pm$ SD, \$	40,135 $\pm$ 23,380	95,607 $\pm$ 61,211	78,743 $\pm$ 58,513	68,965

* ECUSOM indicates East Carolina University School of Medicine; NYMC, New York Medical College; AAMC, Association of American Medical Colleges Graduation Questionnaire 1995 and 1996.^{1,2}

[†] Schools differ significantly, $p < .001$.

[‡] $p < .05$.

[§] $p < .01$.

^{||} $p < .0001$.

Our survey was administered after match lists were submitted. However, the students' final career obviously cannot be determined until residency (or fellowship training) is completed. Our study is limited by being cross-sectional, having a response rate of less than 100%, and the limitations of introspective causal reports.¹⁶ This work is also limited by including only two schools, but the notable differences between the two schools is a strength of the study.¹⁷ The applicability of this research may extend beyond the two schools because the combined characteristics of the students approximate national data (Table 2).

In summary, although previous studies have suggested that the particular medical school attended influences career choice, this factor was not predictive in our analysis. Our study shows that the main determinants of choosing a primary care career were student-rated influences and marital status. The student-rated influences related to choosing a primary care career are more altruistic and are similar to those in previous reports.^{14,18,19} The final decision about specialty choice is most likely related to the need for consistency between student values and perceptions of specialty characteristics including financial rewards. Assuming values and perceptions are

constant within individuals, admitting medical school applicants who have values most consistent with careers in primary care will not only increase the numbers that enter these fields, but, more importantly, will also yield physicians who are better suited for their chosen careers.

REFERENCES

1. Medical School Graduation Questionnaire Survey Results. Washington, DC: Association of American Medical Colleges; 1992.
2. Medical School Graduation Questionnaire. Washington, DC: Association of American Medical Colleges; 1996.
3. Rivo ML, Kindig DA. A report card on the physician work force in the United States. *N Engl J Med*. 1996;334:892-6.
4. Bland CJ, Meurer LN, Maldonado G. Determinants of primary care specialty choice: a non-statistical meta-analysis of the literature. *Acad Med*. 1995;70:620-41.
5. Kassebaum DG, Szenas PL, Schuchert MK. Determinants of the generalist career intentions of 1995 graduating medical students. *Acad Med*. 1996;71:197-209.
6. Brotherton SE. The relationship of indebtedness, race, and gender to the choice of general or subspecialty pediatrics. *Acad Med*. 1995;70:149-51.
7. Rosenthal MP, Marquette PA, Diamond JJ. Trends along the debt-income axis: implication for medical students' selections of family practice careers. *Acad Med*. 1996;71:675-7.
8. Schwartz MD, Linzer M, Babbott D, Divine GW, Broadhead E.

- Medical student interest in internal medicine: initial report of the Society of General Internal Medicine interest group survey on factors influencing career choice in internal medicine. *Ann Intern Med.* 1991;114:6-15.
9. Fincher RE, Lewis LA, Rogers LQ. Classification model that predicts medical students' choices of primary care or non-primary care specialties. *Acad Med.* 1992;67:324-7.
10. Mowbray RM. Research in choice of medical specialty: a review of the literature 1977-1987. *Aust N Z J Med.* 1989;19:389-99.
11. Szenas PL. Graduates' interest in generalist specialties nearly doubles in three years. *AAMC Report.* 1995;5:1-3.
12. Kassler WJ, Wartman SA, Silliman RA. Why medical students choose primary care careers. *Acad Med.* 1991;66:41-3.
13. Dial TH, Elliot PR. Relationship of scholarship and indebtedness to medical students' career plans. *J Med Educ.* 1987;62:316-24.
14. Martini CJM, Veloski JJ, Barzansky B, Xu G, Fields SK. Medical school and students' characteristics that influence choosing a generalist career. *JAMA.* 1994;272:661-8.
15. Campos-Outcalt D, Senf JH. Characteristics of medical schools related to the choice of family medicine as a specialty. *Acad Med.* 1989;64:610-5.
16. Pathman DE, Agnew CR. Querying physicians' beliefs in career choice studies: the limitations of introspective causal reports. *Fam Med.* 1993;25:203-7.
17. Grayson MS, Newton DA, Whitley TW. First-year medical students' knowledge of and attitudes toward primary care careers. *Fam Med.* 1996;28:338-42.
18. Madison DL. Medical school admission and generalist physicians: a study of the class of 1985. *Acad Med.* 1994;69:825-31.
19. Schwartz RW, Haley JV, Williams C, et al. The controllable lifestyle factor and students' attitudes about specialty selection. *Acad Med.* 1990;65:207-10.

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