

Articles

Factors Associated With Choosing a Primary Care Career

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The factors influencing the career choices of medical students need to be understood so that the proportion of physicians entering primary care—defined as family practice, general internal medicine, general pediatrics, and general obstetrics and gynecology—can be increased. We sent a questionnaire to 474 University of California, San Diego (UCSD), School of Medicine alumni (classes of 1974, 1978, 1982, 1986, and 1990) inquiring about demographics, personal and medical school factors, and level of debt. A total of 351 alumni responded (74% response rate), and 327 of them were engaged in direct patient care (38% in primary care). Respondents who were older, female, an underrepresented minority, from a rural background, and who chose their specialty before medical school were significantly more likely to enter primary care. The primary care group was influenced by factors unrelated to the medical school environment, such as personal social values, whereas the top 3 factors rated by the non-primary care group were directly related to school environment. Many of the respondents in primary care reported that the environment at UCSD was antagonistic toward primary care. From 1974 to 1990, more students had debt and their total debt increased, although debt had little or no influence on specialty choice.

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In 1992 the Association of American Medical Colleges (AAMC) accepted the recommendations of its Generalist Physician Task Force to undertake activities to increase the number of general internists, pediatricians, and family practitioners in the workforce.¹² The Physician Payment Review Commission and the Council of Graduate Medical Education have also periodically issued statements on the need for more generalists, and this concern has been expressed in proposed federal legislation. Further, growing managed care markets are disproportionately hiring primary care physicians, and several states have legislated primary care training goals. The California Legislature passed bills in 1993 and 1994 (Assembly Bills 3593 and 1855, Isenberg) to increase training in primary care at the University of California's five medical schools. The governor vetoed the bills when the university formally pledged to increase the number of generalist residency positions and to decrease the number of specialty residency positions, as reported in "Changing Directions in Medical Education: A Systemwide Plan for Increasing the Training of Generalists," June 1993 (University of California, Office of the President, 1994) and subsequent updates. Given these national, economic, and state forces, it is increasingly important to better understand how medical students make specialty choices.

Many studies have been done of how medical students

decide on a specialty. Some focused on the effects of student characteristics, public versus private funding of medical school, the presence and strength of family medicine departments, and whether the curriculum required exposure to primary care.^{3,4} In one study, the class of 1985 admission data were examined for predictors of specialty choice.⁵ Other investigators used alumni surveys, often in combination with university data, to determine predictive factors.⁶⁻¹⁰ The AAMC started its own prospective tracking of career choices for each medical school in the early 1980s.¹¹

California policy makers have defined the primary care specialties as family medicine, general internal medicine, general pediatrics, and general obstetrics and gynecology.¹² The last was due in part to issues of access to prenatal care. The Institute of Medicine defines primary care physicians as those who provide integrated, accessible health care services and who address a large majority of personal health care needs, develop a sustained partnership with patients, and practice within the context of the family and the community.¹³

No consistent picture has emerged of a student bound for primary care. Evidence of the effects of factors such as age, sex, ethnicity, and marital status is conflicting. The medical school environment is thought to have a critical effect on medical students' specialty choices,³ although

ABBREVIATIONS USED IN TEXT

AAMC = Association of American Medical Colleges
 UCSD = University of California, San Diego

the influence of faculty and the presence of family medicine departments is unclear. Michigan medical students reported that faculty had little to do with their decisions,¹⁴ whereas the General Accounting Office found that schools with departments and required clerkships in family medicine had more graduates who chose generalist careers.⁴ A recent study found that admission criteria, curriculum design, and faculty role models are the most influential factors under medical schools' control.³ That study reported personal social values as the strongest influencing factor on choosing primary care. Another study found that prestige and the desire for a large income correlated with choosing high-technology specialties.⁸

The University of California, San Diego (UCSD), School of Medicine is a publicly supported school in a large city and part of the University of California nine-campus system. The UCSD Medical Center cares for a large indigent population as well as private-pay patients—there is no county hospital in San Diego County—while serving as a cutting-edge research institution. The UCSD School of Medicine ranks well among United States medical schools for placing graduates into primary care—19th with the universities of South Dakota, North Carolina, and Arkansas. For the combined years 1988 through 1990, 32% of graduates entered primary care (not including obstetrics and gynecology).¹⁵ State government intervention is causing all University of California medical schools to increase the production of primary care physicians. To inform this process, this study's goal is to better understand the influence of demographics, environment, and debt on medical students' decisions. It is important to note that due to the inclusion of obstetrics and gynecology in primary care, selected results of this study will not be fully comparable with studies that excluded that specialty.

Methods

The study sample consisted of 474 UCSD alumni from the classes of 1974, 1978, 1982, 1986, and 1990 (the charter class graduated in 1972). Most 1990 graduates who planned to subspecialize in medicine or pediatrics would have done so by the time of this study. The questionnaire was mailed in October 1994. A follow-up questionnaire was mailed six weeks later to the nonrespondents. A total of 351 completed questionnaires were received, for a 74% response rate. All responses were anonymous, and no other data were used. Confidentiality policies precluded access to identifiable UCSD data.

Demographic factors possibly affecting specialty choice were elicited. Hispanics, Latinos, blacks, and Native Americans are considered underrepresented minorities at UCSD. A student's place of origin was defined as the type of location where the respondent spent the most time before medical school.

Factors representing undergraduate medical experiences and personal values perceived as important in making a specialty choice were rated by respondents as follows: 0 = "no influence," 1 = "little influence," 2 = "moderate influence," and 3 = "strong influence." A mean score was generated for each response.

Respondents estimated their level of total debt at graduation, including all sources such as undergraduate debt. For analysis, debt was expressed in 1982 dollars per the Consumer Price Index.

Statistical analysis for the demographics consisted of Pearson's χ^2 test for homogeneity in the $r \times c$ table and Cochran's test for linear trend. Statistical analysis for the perceived factors was Cochran's test for linear trend comparing the primary care and non-primary care responses within each category of influence. The average debt was tested between groups with the two-sample t test. Cochran's test for linear trend was used to test for the influence of debt on choosing primary care medicine. The Pearson correlation was used to analyze the rise in aver-

TABLE 1.—Demographic Characteristics Comparing Primary Care and Non-Primary Care Physicians

Demographic Characteristics	Respondents, No.	In Non-Primary Care, %	In Primary Care, %	P Value
Overall	327	62	38	
Age at graduation (mean = 27.23), yr*				
24-25	46	65	35	
26	109	67	33	
27	71	59	41	
28-29	60	60	40	
30-36	39	54	46	<.05†
Sex				
Women	98	44	56	
Men	229	70	30	<.01‡
Marital status§				
Married	120	66	34	
Single	189	61	39	NS
Ethnicity				
White	249	65	35	
Asian/Pacific Islander	35	58	42	NS
Underrepresented minorities¶	40	47	53	<.05†
Place of origin				
Small town/rural	20	30	70	
Small city	79	52	48	
Suburb of large city	118	64	36	
Large city	110	75	25	<.001*
Point of decision				
Before medical school	32	25	75	
Preclinical years (MS I-II)		21	52	48
Clinical years (MS III-IV)	188	62	38	
Residency	86	79	21	<.001*

MS I-II = first- to second year medical student, MS III-IV = third- to fourth-year medical student, NS = not significant

*325 respondents reported their age at graduation.

†Cochran's test for a linear trend.

‡Pearson's χ^2 test in $r \times c$ table.

§309 respondents reported marital status.

||324 respondents reported ethnicity.

¶Consists of Black, Latino, Hispanic, and Native American ethnicities.

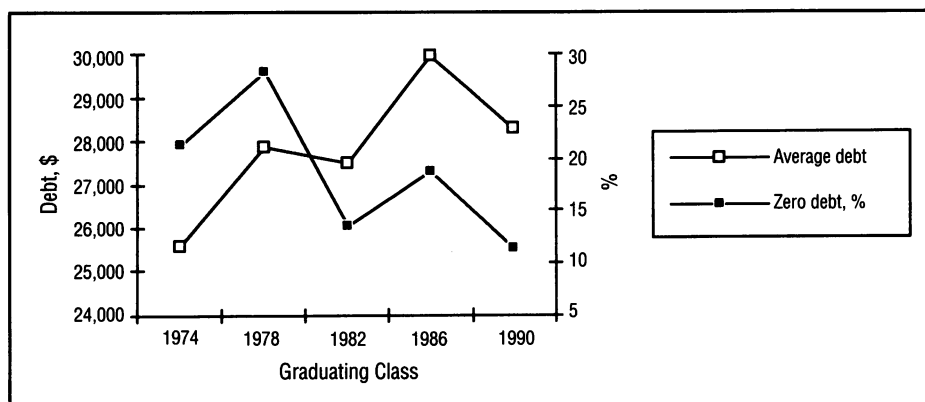


Figure 1.—The graph shows an increase in average debt for those who incurred debt and a decrease in the percentage of those with zero debt from the class of 1974 to 1990 (expressed in 1982 dollars).

age debt and the fall of the percentage with zero debt from 1974 to 1990. The Pearson χ^2 test for homogeneity in the $r \times c$ table was used to analyze percentage with zero debt between groups. A P value of less than .05 was considered significant when using a two-tailed test.

Results

In 327 (93%) completed questionnaires, a clinical specialty with the respondents remaining in direct patient care was listed. The remaining 24 (7%) were not engaged in direct patient care and were excluded from specialty choice analyses but included in the analysis of the level of debt. Of the respondents, 123 (38%) were in primary care (Table 1). Of the primary care physicians, 38 were general internists (31%), 36 in family practice (29%), 30 in general pediatrics (24%), and 20 in obstetrics and gynecology (16%). The breakdown of respondents in primary care by class is as follows: 1974, 52%; 1978, 32%; 1982, 36%; 1986, 45%; and 1990, 34%. The 204 respondents in the remaining specialty groups were distributed as follows: internal medicine subspecialties, 10%; pediatric subspecialties, 3%; obstetric and gynecologic subspecialties, 1%; general surgery and surgical subspecialties, 12%; and the support specialties, 36%. Most of the last category were represented by psychiatry, emergency medicine, anesthesia, dermatology, neurology, and radiology. The level of debt at graduation was reported by 343 (98%).

An analysis of demographic factors determined the importance of each for the choice of primary care or non-primary care specialty (Table 1). Respondents who were older, female, an underrepresented minority, from a rural background, and who chose their specialty before medical school were significantly more likely to enter primary care. Women were more likely to choose primary care than were men in all of the primary care fields, with the greatest ratio in general internal medicine (19.4% women to 8.3% men). Marital status had no significant influence on specialty choice.

The data on perceived school-related and personal factors are shown in Table 2. The primary care group was influenced by factors unrelated to the medical school environment, whereas the top three factors rated by the

non-primary care group were related to the school environment. For example, the primary care group's highest mean score was for "personal social values"; for the non-primary care group, it was "clinical rotations within your specialty." The difference between groups for the factors "clinical rotations within your specialty" and "UCSD faculty role models" was almost entirely due to the lack of influence of these factors in family practice.

From 1974 to 1990, the number of indebted students and the average indebtedness increased (Figure 1). In 1974 the average debt from all sources expressed in 1982

TABLE 2.—Mean Scores of Perceived Personal and School-Related Factors of Primary Care and Non-Primary Care Physicians*

Perceived Factor	Mean Score		P Value
	Primary Care Physicians	Non-Primary Care Physicians	
Those that influence the primary care group			
Personal social values	2.25	1.50	<.001
Desire for a broad scope of practice	2.02	1.08	<.001
Emphasis on patient education and prevention . .	1.81	0.85	<.001
Other physician role models . .	1.62	1.46	NS
Those that influence the non-primary care group			
Clinical rotations within your specialty	2.12	2.30	<.05
UCSD faculty role models . . .	1.41	1.84	<.01
Electives	1.35	1.70	<.01
Lifestyle available in specialty . .	1.20	1.69	<.01
Emphasis on performing procedures	0.76	1.49	<.001
Desire for a narrow scope of practice	0.48	1.27	<.001
Hours/length of residency . . .	0.95	1.14	<.05
Opportunity for research	0.41	1.06	<.001
Income potential	0.52	0.94	<.001
Independent study project . . .	0.52	0.79	<.05
Prestige within the medical profession	0.56	0.78	<.01
Level of debt	0.18	0.29	<.05

NS = not significant, UCSD = University of California, San Diego

*The scores were arrived at by the following ratings: 0 = no influence, 1 = little influence, 2 = moderate influence, and 3 = strong influence.

dollars was \$25,590. It increased to \$28,310 by 1990 ($r = .76, P < .05$). The percentage of students graduating with zero debt declined from 21% in 1974 to 11% in 1990 ($r = -.69, P < .05$). There was no significant difference between the primary care and the non-primary care groups when the level of debt or the percentage with zero debt was analyzed. No trend was found as the level of debt increased to suggest a move away from primary care.

Discussion and Conclusions

We found no temporal trend for the percentage of respondents entering primary care, although the class of 1974 had a greater proportion of graduates who entered primary care. The proportion of respondents in primary care in the 1986 and 1990 classes is similar to AAMC tracking data for UCSD.¹¹

Many of the demographic factors were positively associated with choosing primary care. Respondents who were older than the mean at graduation were more likely to become generalists. The oldest group, older than 30 years, had the greatest proportion who chose primary care but was the smallest in number. Similar to the findings of another study, we found that women entered primary care in significantly greater numbers than did men.¹⁰ In the previous study, the higher proportion of women in primary care was due to their greater numbers in general pediatrics and obstetrics and gynecology, not in general internal medicine. Women alumni of UCSD were also disproportionately represented in general pediatrics and obstetrics and gynecology; however, the most significant difference was in general internal medicine. No significant gender difference was found in family practice. Female students could have the greatest influence on increasing the number of graduates in primary care because women are approaching 50% of enrollment at UCSD and elsewhere.

Earlier studies are in conflict regarding the specialty preference of minority students.^{3,4,8} We found that underrepresented minority graduates chose primary care significantly more frequently than did white respondents. A higher percentage of Asian respondents than white respondents entered primary care, but the difference was not significant. Among the small number of respondents who decided their specialty before entering medical school, 75% chose primary care. Most made career decisions in their third or fourth year, which did not favor or disfavor primary care. These data may not be useful in the admission process because many applicants may declare a preference for primary care once it is known to influence admissions, but the use of corroborating evidence, such as premedical extracurricular activities, might be helpful. As expressed elsewhere,¹⁵ the latter two years of medical school should be the primary target for change because most decisions are made then. The respondents who spent most of their time before medical school in a small town or rural environment (6%) chose primary care 70% of the time. This was nearly threefold more than those from a large city. Of those from a small city, 48% chose primary care, nearly a twofold increase over those from a large city.

The influence of personal factors was perceived differently between the primary care group and the non-primary care group (Table 2). The influencing factors that favored the primary care group were all personal. As noted by others, personal social values were the strongest influencing factor for the primary care group.³ Therefore, the detection of these personal attributes could be used to affect admission policies. As expected, the primary care group favored a broad scope of practice, with an emphasis on patient education and prevention. The primary care group also had a higher mean score for the factor "other physician role models," but it was not significant.

Other personal factors favored the non-primary care group, such as the significantly stronger influence of hours worked and length of residency training. This could be related to the fact that primary care residencies are distinctively shorter (obstetrics and gynecology excluded) than the non-primary care specialties. As expected, the non-primary care group strongly favored a narrow scope of practice, with an emphasis on doing procedures. The lifestyle available in one's specialty had a strong influence on the non-primary care group. A further breakdown revealed that those who chose family practice rated it as an even stronger influence than the non-primary care group. It is unclear how to interpret the results because lifestyle could mean many different things. For example, lifestyle could be related to income for some physicians and amount of personal time for others. The greater influence of income potential on the non-primary care group was expected. This reflects the difference in earning potential between the groups, with non-primary care specialists earning significantly more than primary care specialists (excluding obstetrics and gynecology). Although there was a statistically significant difference in scores, the level of debt as a perceived factor had minimal to no influence on either group.

The medical school environment had a greater influence on the non-primary care group. The UCSD faculty had a strong effect on specialty choice for the non-primary care group. A further breakdown revealed that the difference was largely due to the low response of those entering family practice. This is despite the fact that UCSD has a large, well-established family practice program and a growing department within the past decade. Clinical rotations within their specialty was the strongest influencing factor for the non-primary care group. Further analysis showed that nearly the entire difference between groups is due to a lack of influence on those in family practice. Family practice was the only primary care specialty that did not have any core time in the third-year curriculum, suggesting that the medical school environment promotes or disfavors primary care through clinical exposure. As expected, the non-primary care group was significantly more influenced by the prestige associated with their specialty. At UCSD, non-primary care specialty and subspecialty physicians dominate, an imbalance that the university has recently addressed by increasing exposure to primary care faculty.

Literature reports have shown that primary care physicians do much less clinical research than their non-

primary care colleagues.^{7,10} This study supports those results, raising the concern of exacerbating the declining interest in research by medical graduates by shifting physicians into primary care. Promoting primary care research and exposing those students interested in primary care to clinical research could help, although further study is necessary.

As expected given previous studies reporting that debt greater than \$75,000 is required to affect students' specialty choices, there was little influence of debt on UCSD graduates.¹⁶ This may be a problem in the future if tuition or fee increases continue, coupled with more economically diverse student bodies. The findings suggest that there is a debt threshold at which UCSD students will become increasingly sensitive to their potential income and corresponding specialty choice. It is important to note that we asked for debt from all sources because medical school debt is not a complete marker, and it is total debt that may influence specialty choice.

General comments were solicited in the questionnaire and were often directed at the perceived hostility toward primary care (especially family medicine) at UCSD. "UCSD was an unfriendly school for family practice . . ." commented a 1982 graduate, and "I did find the bulk of UCSD faculty very antagonistic towards primary care," said a 1990 graduate. Many of these same alumni had a faculty member or resident who inspired them: "I was miserable, but I had a great resident who encouraged me," said a 1982 graduate. "My number 1 reason for choosing my specialty was one UCSD faculty role model practicing prevention, patient education, and whole patient care," said a 1990 graduate. These comments show that support for primary care within the medical school was critical in attracting students.

Comments from subspecialists displayed critical variations in personality and personal characteristics: "My interest in dermatology came from personal skin problems prior to medical school." "A chance to cut is a chance to cure." "Plastic surgery is creative, artistic, and problem solving." "I strongly disliked patients with long medical histories and big charts."

Two consistent themes permeate the results. First, certain demographic factors were strong indicators for choosing primary care. Although it may be difficult to select for characteristics such as sex, ethnicity, and place of origin, personal social values could be selected for or influenced. Second, the environment has a strong influence on graduates' specialty choices, regrettably often a negative effect on primary care specialties (especially family practice). The university is changing its environment to increase primary care exposure. The class of 1995 was the first to have a required fourth-year primary care rotation.

A required primary care longitudinal experience of half a day per week throughout the third year has been implemented for the class of 1997. The only required primary care experience for the alumni surveyed was a four-week outpatient pediatrics rotation in the third year, although they had fourth-year elective time to pursue other primary care opportunities. Changes in graduate medical education at UCSD include increasing primary care residency slots while decreasing others and creating a new, affiliated, community-based family practice residency. In fact, UCSD's environment is changing rapidly because it must not only comply with state mandates but adjust to perceived workforce requirements of the next several decades. Further follow-up studies will be needed to test the response of students to these changes in curriculum and practice environment. Indeed, the latter may be a major factor for students entering specialty training in the 1990s. Primary care fields are the initial specialty choice of 61% of the class of 1995, 53.5% if obstetrics and gynecology is excluded.

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