Medical Student Education

The Diverse Functions of Role Models Across Primary Care Specialties

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Background and Objectives: *This study investigated the relationship of role models to primary care specialty and gathered information on the attributes and functions of role models.* Methods: *A questionnaire on medical school experiences and attitudes was administered to primary care graduates from 24 US medical schools.* Results: *Questionnaires were completed by 1,457 physicians. Sixty-three percent of primary care respondents had a role model. Having a role model was significantly related to current specialty and ethnicity. Respondents most valued their role models' patient relationships. For family medicine and internal medicine graduates, having a role model was related to more contact and more-positive views of faculty in their specialty. Those with a role model reported that primary care was encouraged at their medical school and were more satisfied with their specialty choice.* Conclusions: *Role models may be more important to students who are not well represented among medical school faculty, namely women, underrepresented ethnic minorities, and those interested in family medicine. For family medicine graduates, role models function to moderate negative stereotypes. Role models may also make explicit the values of physicians in that specialty, making students more informed when choosing a specialty and as a consequence more satisfied with the decision.*

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The trend of decreasing choice of primary care specialties by US medical school graduates is a concern not only for medical educators[1] but for the US health care community at large. Health services researchers have demonstrated that family physicians, general internists, and general pediatricians provide a majority of office-based medical care to the US population.[2] Family physicians, in particular, provide a majority of health care to those living in rural areas.[3]

The specialty choice literature has focused on the effects of medical student characteristics, medical school characteristics, students' experiences while in medical school, and the overall effect of medical education on career choice.[4] Role models are one element of student experience and can be defined as "individuals admired for their ways of being and acting as professionals."[5] The limited data on faculty as role models suggest that sufficient exposure to enthusiastic, positive role models increases the chance that a student will enter a particular specialty. Wright and colleagues found that students who chose a specific field for residency training had higher odds of reporting exposure to positive role models in that area during their clinical years.[6] Schafer et al reported that students felt that positive role models encouraged their choice of a particular specialty and that negative physician role models dissuaded students from that choice.[7] In a study of factors influencing primary care versus non-primary care career choice, role models were cited as important for the primary care graduates and, further, helped students to refute the negative stereotypes often associated with primary care.[8]

Studies have also examined what both students and faculty feel are the most important attributes of role models. Wright found that students most valued the role-model attributes of personality, clinical skills, and competence.[6]

In a study of faculty who served as role models, Ambrozy et al found that these faculty felt it was important

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to model "enthusiasm" and "clinical decision-making skills." Role models cited this enthusiasm as a major reason students were drawn to their specialty.[9]

This study was conducted as part of a series of investigations (the "Arizona Study") funded by the American Academy of Family Physicians (AAFP). The aim of the Arizona Study was to determine factors affecting family medicine specialty choice. This paper presents a secondary analysis of those data. It examines the effects of faculty role models on primary care specialty choice and characterizes the qualities of faculty role models. Our primary hypothesis was that recruitment to a particular primary care specialty would be positively associated with having a role model in that specialty. The secondary aim of this analysis was to gather information on the attributes of a good role model. We hypothesized that students from different primary care specialties would value different attributes in their role models. We also hypothesized that, for all primary care respondents, those reporting having had a faculty role model would be more satisfied with their current career choice.

Methods

Selection of Schools for Study

The methodology for the Arizona Study has been published,[10,11] but a brief summary follows. Using data collected annually by the AAFP, we listed the proportion of each mainland US allopathic medical school graduating class entering a family medicine residency in 1997, 1998, and 1999. Schools were placed into three categories by size: <100 graduates, 100 to 150 graduates, and >150 graduates. The four schools with the largest proportionate increases and the four schools with the largest proportionate decreases in graduates entering family medicine in each of the size categories were identified and became the study schools (12 with increases and 12 with decreases). Schools were stratified by size to minimize the effect of small school size, where a relatively small number of students can result in significant change in class percentages. The 24 schools were located in 20 states representing all regions of the country and included both public and private schools.

Selection of Students

The 24 schools had a total of 1,428 graduates who entered family medicine during the time period 1997–1999, inclusive. These family medicine graduates, as well as all of the graduates who selected combined internal medicine-pediatrics (IM-Peds), and a randomly selected, equal number of graduates who entered internal medicine or pediatrics were included in the study.

Survey Instrument

A questionnaire was constructed that included items on the climate for primary care at the school, negative comments, amount of contact with primary care faculty and residents, how contact was viewed, and role models. The specific role model questions asked are listed in Appendix 1.

The University of Arizona's institutional review board granted the study an exemption from formal review. The survey instrument was then mailed to all students in the study group. Up to four mailings were used. The first included the questionnaire, the second was a reminder postcard, the third included a replacement questionnaire, and the fourth was another postcard reminder with an e-mail address to use to request another questionnaire.

Data Analysis

The responses of graduates from the 24 schools were grouped by current primary care specialty (family medicine, internal medicine, IM-Peds, and pediatrics). SPSS version 12 was used for analysis. ANOVA was used for comparison of Likert scale means, and chi-square tests were used for categorical variables.

To further explore whether or not role models function to counteract negative comments,[11,12] we stratified respondents' perceptions of faculty by level of negative comments heard ("often," "sometimes," or "never") and whether they had a role model.

One variable was constructed based on the respondent's specialty choice at entry to medical school and his/her current specialty. This variable had three options for each specialty: students who were interested in the specialty upon entry to medical school and were currently practicing in the specialty (firm), those who did not plan on the specialty at entry to medical school but were now practicing in the specialty (recruited), and those who were initially interested in the specialty but subsequently chose a different specialty (lost).

Results

Response Rate

The response rate was 51.5%. A total of 2,985 questionnaires were mailed, 155 were returned as undeliverable, and 1,457 were completed and returned. The mean age of respondents was 31.8 years and of nonrespondents was 31.3 (P=.002). There was no difference in response rate by gender, year of graduation, or between schools with increases and decreases. The response rate by specialty was family medicine 57.6%, internal medicine 38.3%, IM-Peds 56.3%, and pediatrics 50.4% (P<.001).

Demographics

Table 1 shows the demographic characteristics and current specialty of respondents in primary care (n=1,386.) The 71 respondents who identified a field of specialty outside of the above specialties or who did not identify any specialty were not included in the current analysis.

Table 1

Demographic Characteristics and Specialties of Respondents

	Family Medicine (n=790)	*Internal Medicine (n=265)*	*Internal Medicine-Pediatrics (n=108)*	*Pediatrics (n=223)*	*Total Primary Care Combined (n=1,386)*
Mean age*	33.0	32.1	31.7	31.4	—
% females**	46.6%	47.2%	50.0%	61.0%	—
Race/ethnicity***					
Black, non-Hispanic	7.6% (n=60)	6.8% (n=18)	5.6% (n=6)	10.3% (n=23)	7.7% (n=107)
Hispanic	4.2% (n=33)	4.9% (n=13)	2.8% (n=3)	4.5% (n=10)	4.3% (n=59)
Native American/Alaskan	0.8% (n=6)	0%	0%	0%	0.4% (n=6)
Asian/Pacific Islander	6.2% (n=49)	14.0% (n=37)	13.0% (n=14)	6.7% (n=15)	8.3% (n=115)
White	74.2% (n=586)	61.9% (n=164)	66.7% (n=72)	69.1% (n=154)	70.4% (n=976)
Other	1.9% (n=15)	3.8% (n=10)	2.8% (n=3)	1.8% (n=4)	2.3% (n=32)

* *P*=.973
** *P*=.002
*** *P*=.002

Who Has a Role Model?

Sixty-three percent of all primary care respondents reported that they had a role model. Significant differences were found by specialty, ethnicity, and gender (Table 2). Having a role model did not differ by age, marital status, hometown, or current practice location (*P*<.05).

Role Model Attributes

Forty-five percent of female respondents wanted to be like a faculty member who was a woman. Ninety-one percent of males wanted to be like a faculty member who was a man (*P*<.001). With the exception of IM-Peds, graduates were significantly more likely to want to be like a faculty member in their current specialty (*P*<.001). Forty-five percent of IM-Peds graduates identified a faculty member in non-primary care fields as the person that they most wanted to be like. Fifty percent of all primary care respondents indicated that they wanted least to be like a faculty member who was a surgeon.

Of all respondents who had a role model, 31.3% placed most value on the "patient relationships" of their role model. This was followed by "knowledge base" (29.9%), "personal values" (14.1%), "practice style" (11.9%), "professional style" (7.8%), "lifestyle" (4.3%), and "procedural skills" (0.5%). Figure 1 displays these results by specialty. Significant differences existed between specialties for the attributes of patient relationships (*P*<.001), knowledge base (*P*<.001), practice style (*P*=.006), and professional values (*P*=.015).

Table 2

Specialty and Characteristics of Respondents With Role Models

	Percentage of Respondents With Role Models (n=847)
Specialty*	
Family medicine	62% (n=482)
Internal medicine	68% (n=174)
Internal medicine-pediatrics	47% (n=49)
Pediatrics	65% (n=142)
Gender**	
Female	66% (n=440)
Male	60% (n=404)
Race/ethnicity***	
Black, non-Hispanic	70% (n=77)
Hispanic	62% (n=42)
Native American/Alaskan	100% (n=9)
Asian	56% (n=80)
Pacific Islander	85% (n=11)
White	62% (n=596)
Other	62% (n=26)

* The differences in percentages of role models by specialty are significant at the *P*=.001 level.
** Gender differences are significant at the *P*=.01 level.
*** Ethnic differences are significant at the *P*=.042 level.

Faculty Contact

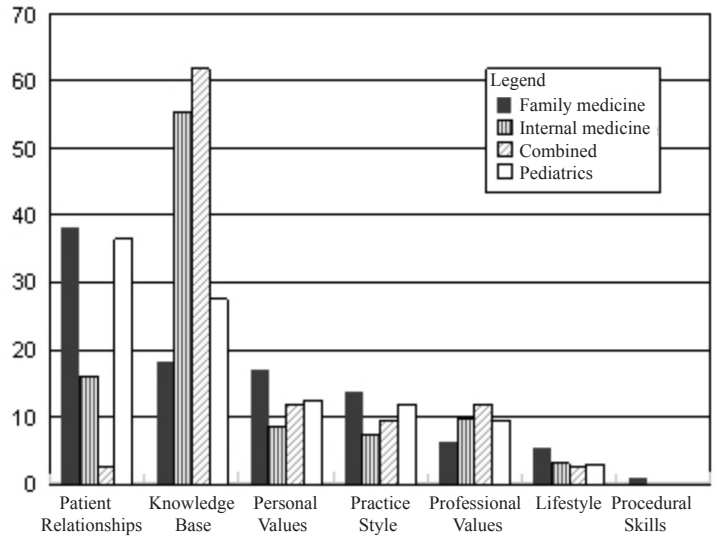
For family medicine and internal medicine, those having a role model had more contact with faculty and a more-positive view of this contact. Tables 3 and 4 display these results.

Graduates were also asked to rate characteristics of faculty in their chosen specialty. As Table 5 demonstrates, when compared to other specialty groups, family medicine graduates rated family medicine faculty less positively than those in other primary care fields rated faculty in their respective fields ($P<.001$.) However, among family medicine respondents, those with role models viewed family medicine faculty more positively than those without role models ($P\leq .001$).

For family medicine graduates who heard negative comments "sometimes," those with a role model also had more-positive perceptions of faculty respect, influence, competence, and enthusiasm than those without role models regardless of the level of negative comments (Figure 2).

Figure 1

Role Model Attributes, by Specialty



Medical School Environment

Primary care graduates were asked to indicate if, at their medical school, a career in primary care was strongly encouraged, encouraged, neither encouraged nor discouraged, discouraged, or strongly discouraged. Those who had a role model were more likely to indicate that a primary care career was strongly encouraged or encouraged ($P=.01$).

Role Models and Specialty Choice

Table 6 displays results for the calculated variable of firm, recruit, or loss by each primary care specialty. Having had a family medicine role model was significantly associated both with retention and recruitment to family medicine, although more of those who were retained (firm) reported having had a role model. Conversely, finding a role model in their current specialty (not family medicine) was associated with the physician's loss to family medicine. These differences were not significant for the specialties of internal medicine or pediatrics. None of our respondents reported that they

Table 3

Role Models and Contact with Faculty in Chosen Specialty

	Family Medicine		***Internal Medicine***		***Internal Medicine-Pediatrics***		***Pediatrics***	
*Amount of Contact**	*Role Model*	*No Role Model*	*Role Model*	*No Role Model*	*Role Model*	*No Role Model*	*Role Model*	*No Role Model*
First and second year	3.09	3.60**	2.01	2.05	1.57	1.81	1.88	2.05
Third year	2.46	2.91**	1.66	1.97***	1.38	1.58	1.66	1.79
Fourth year	2.35	2.79**	1.43	1.73**	1.33	1.55	1.33	1.46

* Range 1–5, 1= "A great deal," 5= "None"
** The difference between those with and without a role model is significant at $P<.001$.
*** The difference between those with and without a role model is significant at $P<.01$.

Table 4

Role Models and Influence of Contact With Faculty in Chosen Specialty

	Family Medicine		***Internal Medicine***		***Internal Medicine-Pediatrics***		***Pediatrics***	
*View of Contact**	*Role Model*	*No Role Model*	*Role Model*	*No Role Model*	*Role Model*	*No Role Model*	*Role Model*	*No Role Model*
First and second year	1.78	2.13**	2.01	2.05	1.57	1.81	1.88	2.05
Third year	1.72	2.06**	1.66	1.97***	1.38	1.58	1.66	1.79
Fourth year	1.64	1.95**	1.43	1.77***	1.33	1.55	1.33	1.46

* Range 1–5, 1= positive, 5= negative
** The difference between those with and without a role model is significant at $P<.001$.
*** The difference between those with and without a role model is significant at $P<.01$

Table 5

Respondents' Perceptions of Faculty in Their Chosen Specialty

	Family Medicine		***Internal Medicine***		***Internal Medicine-Pediatrics***		***Pediatrics***	
*View of Faculty**	*Role Model*	*No Role Model*	*Role Model*	*No Role Model*	*Role Model*	*No Role Model*	*Role Model*	*No Role Model*
Respected	2.61	2.81**	1.40	1.50	1.35	1.61	1.50	1.65
Influential	2.69	3.00**	1.52	1.74	1.67	2.13	1.84	1.97
Competence	1.74	2.00**	1.30	1.41	1.23	1.45	1.24	1.40
Enthusiasm	1.63	1.88**	1.43	1.77***	1.26	1.55	1.34	1.64***

* Range 1–5, 1= positive, 5= negative
** The difference between those with and without a role model is significant at $P\leq.001$.
*** The difference between those with and without a role model is significant at $P<.01$.

entered medical school wanting to enter IM-Peds, so this analysis could not be performed.

Role Models and Views of Respondents' Current Specialty

Table 7 shows primary care respondents' agreement with several statements aimed at determining the perceived congruence between their values and the values of their specialty. Those who reported having had role models were more satisfied with their current specialty choice. Seventy-three percent of those who had a role model were extremely satisfied with their current specialty choice, compared to 57% of those without role models ($P<.004$).

Discussion

Who Has a Role Model?

Having a role model in medical school is a common experience for a majority of primary care graduates. With the exception of IM-Peds, most primary care graduates did report having a role model. This makes sense, since IM-Peds is a new specialty, and, therefore, students probably have less opportunity for contact with role models.

More women than men reported having had a role model, and a significantly higher proportion of African American, Native American/Alaskan Native, and Pacific Islanders reported having a role model, compared to graduates who identified themselves as white. The

survey did not ask about the ethnic identity of the role model, but our gender data and those of Wright et al suggest that graduates look for role models similar to themselves.[6] It is therefore surprising that such high numbers of minorities report having role models given the low number of minority faculty in medical schools.[13] Further studies should explore the ethnicity of role models to determine if underrepresented minorities in medicine are more likely to have a role model but less likely to have one of their own ethnicity. An alternative possibility is that faculty who are an ethnic minority serve as role models for more students than their majority counterparts.

Role models may be more important to those who are least represented among the medical school faculty. Women and those from underrepresented minority groups may have had more need for an identified role model than those who are the same gender and ethnicity as the predominant medical culture. The same process may be at work with students interested in family medicine. Hafferty has described the hidden curriculum of medical schools and their anti-primary care bias.[14] In addition to this anti-primary care bias, there is also a significant amount of anti-family medicine bias at work, demonstrated by our previously published research.[11] As described earlier, we found that family medicine graduates reported hearing more negative comments about their chosen specialty than other primary care graduates. It is possible that role models are most important for those with the greatest degree of dissonance with main-

Figure 2

Family Medicine Graduates' Rating of Family Medicine Faculty, by Frequency of Negative Comments From Faculty and Having a Role Model

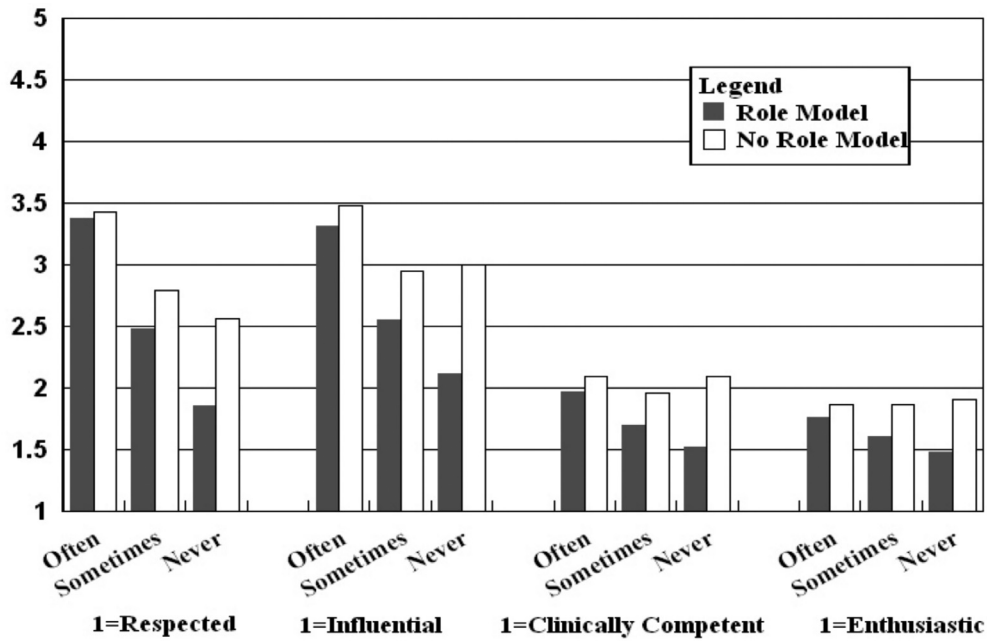


Table 6

Role Models and Those "Firm," "Recruited," and "Lost," by Specialty

	Specialty of Respondents Reporting Having Had a Role Model		
	Family Medicine n=337	*Internal Medicine n=78*	*Pediatrics n=132*
Firm	74.1% (n=203)	75.0% (n=12)	69.1% (n=56)
Recruited	60.0% (n=99)	71.7% (n=59)	65.1% (n=28)
Lost	68.6% (n=35)	46.7% (n=7)	63.2% (n=48)
	P=.009	*P*=.144	*P*=.725

Table 7

Role Models and Primary Care Respondents Views of Current Specialty*

	Role Model	*No Role Model*
My values are like physicians in my specialty**	1.66 (n=841)	1.90 (n=505)
My approach to medicine is like physicians in my specialty**	1.70 (n=841)	1.94 (n=503)
My patient relationships are like physicians in my specialty**	1.69 (n=841)	1.96 (n=504)

* 1=strongly agree and 5=strongly disagree
** The difference between those with and those without a role model is significant at *P*<.001.

stream medicine, whether it be because of their gender, ethnicity, or specialty choice.

The lower ratings of family medicine faculty with regard to respect, influence, clinical competence, and enthusiasm by family medicine graduates may be a direct result of the overall negative climate toward family medicine. The concept that role models function to moderate negative stereotypes about primary care is supported by our study, although the effect was strongest for those in family medicine and did not moderate perceptions for graduates hearing the most negative comments. Role models appear to work best in an environment without negativity toward one's chosen specialty. With some negativity, role models can counteract this effect but not if the degree of negativity is too high.

For all primary care graduates, those with role models reported that primary care as a career was encouraged at their school. It cannot be ascertained from the current study whether a positive climate for primary care creates an environment in which students have more positive role models or if the role models themselves influence students' views of their environment. Overall, these results support that exposure to faculty role models is important but not the only determinant of specialty choice.

Different Values for Different Primary Care Fields

The results supported the hypothesis that the different primary care specialties place different values on role model attributes. Future research should continue to separate the specialties when reporting results since grouping primary care graduates may obscure such differences. Programs aimed to increase primary care specialists should also keep these differences in mind to optimize planning strategies.

Role Models and Career Satisfaction

All graduates who had role models reported significantly more satisfaction with their current position. These graduates also reported more congruence between values held and those of others within their chosen specialty. It may be that having a role model makes explicit for the student the values of physicians in that specialty, therefore making them more informed when making the choice of specialty and consequently more satisfied later with the decision.

Limitations

There are several limitations to this study that should be considered when interpreting the results. The study used a cross-sectional design so conclusions about cause and effect cannot be drawn. Also, similar to other retrospective studies, graduates' perceptions are susceptible to recall bias. A further limitation is that the original Arizona Study was designed to explore family medicine specialty choice. Family medicine graduates are, therefore, overrepresented in the study. The lack of statistical significance in several areas for the other primary care specialties may be due to insufficient power. Finally, we did not compare primary care to specialty care graduates. Further research should, therefore, include primary care and non-primary care students and examine specialty choice and role models in a prospective manner, defining when the acquisition of role models occurs and how this then influences specialty choice. Further studies could also better delineate role model characteristics, including ethnicity and whether residents serve as role models.

Conclusions

Regardless of these limitations, we were able to draw some major conclusions that will have ramifications for further research and policy. Role models are important in medical education and may be especially important to those who are from groups underrepresented in medicine. Role models also are associated with more positive views of a student's chosen profession. This finding is of special importance for family medicine graduates, for whom role models further function to moderate negative comments and negative views of faculty competence. Reversal of negative views of faculty competence could lead to increased numbers of graduates choosing family medicine.

Perhaps, most importantly, by allowing students to match their values with the values of physicians in a particular specialty, role models give students a chance to fully explore a field of medicine and reach a realistic decision about their specialty choice that ultimately leads to increased career satisfaction long after medical school is complete.

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Appendix 1

Relevant Questionnaire Items

Items Pertaining to Role Models

- Please think of the faculty member in your medical school that you <u>most</u> wanted to be like. Was this person?
  Female__ or Male__
  What was her/his specialty?_____
  Please briefly describe why you wanted to be like him/her.

- Please think of the faculty member in your medical school that you <u>least</u> wanted to be like. Was this person?
  Female__ or Male__
  What was her/his specialty?_____
  Please briefly describe why you wanted to be like him/her.

- Was there a person in your present specialty who served as your role model during medical school?
  No___If no, please go on to next question.
  Yes___If yes, please indicate the most important (1), next most important (2), and third most important (3) way they served as a role model.

  ___A knowledge base you would like to have
  ___A lifestyle you would like to have
  ___A practice style you would like to have
  ___Patient relationships you would like to have
  ___Personal values consistent with yours
  ___Procedural skills you would like to have
  ___Professional values consistent with yours
  ___Other (please briefly describe)

Items Pertaining to Faculty Contact

- During medical school how much contact did you have with faculty and residents in your <u>current specialty</u>?" (1=A great deal, 5=None)

- If you had <u>any</u> contact with faculty and residents in your specialty, was it generally? (1=Positive, 5=Negative)