

Factors influencing career choices made by medical students, residents, and practising physicians

A recent survey reveals what motivates trainee and physician career choices, and suggests various strategies that might be used to encourage more trainees to pursue a career in primary care.

ABSTRACT

Background: Physicians' specialty choices have a direct impact on the health care workforce. To determine which factors influenced career choices made by medical students, residents, and practising physicians, we conducted a survey in 2005.

Methods: Between April and July 2005 we distributed 327 questionnaires to University of British Columbia medical students, residents, and BC physicians.

Results: Of those asked to complete a questionnaire, 118 (36%) responded. This group included 35 students, 44 residents, and 39 physicians. In the subgroup of students, 10 (29%) ranked family medicine as their first choice of a future career. "Personal interests" and "previous experiences"

were identified as most influential in this career choice. Respondents with mentorship experience considered this more influential than those without such experience ($P = .008$). While physicians appreciated mentorship more than students ($P = .02478$), their interest in pursuing mentorship was significantly lower than students' interest ($P = .0079$).

Conclusions: Results of this study suggest that increasing primary care exposure during training and selecting students interested in primary care might be ways to increase the number of primary care physicians. Students appreciated mentorship least, suggesting either that they are less influenced by mentors or that the benefits of mentorship are not appreciated until later in a physician's career.

Background

The past few years have seen shortages of family physicians in urban and remote areas throughout Canada. Problems caused by the projected shortfall in the number of family physicians practising over the next few years will be exacerbated by an aging population that requires more health care services. Although there is an increasing demand for primary care physicians, fewer graduating medical students are choosing family medi-

Dr Ko is a gastroenterology fellow at the University of British Columbia. Dr Lee is the computer scientist for Cancer Control Research at the BC Cancer Agency, clinical assistant professor in Dermatology and Skin Science, UBC, and adjunct professor in Computing Science, Simon Fraser University. Dr Leung is a gastroenterology fellow at the University of Calgary. Dr Fleming is the associate dean for the MD Undergraduate Program at UBC. Dr Vikis is a senior general surgery resident at UBC. Dr Yoshida is an associate professor and head of the Division of Gastroenterology, UBC, and medical director of the Liver Transplant Program, BC Transplant Society.

cine. Canadian Resident Matching Service (CaRMS) data indicate that 40% of Canadian medical school graduates made family medicine their first choice in 1982. By 1996, the proportion had declined to 32% and by 2005 to only 28%.¹ Similar trends were observed in the United States, where there was decreasing interest in primary care and increasing interest in subspecialties.²⁻⁴

As medical science and technology have become more sophisticated, the university spotlight has been focused on subspecialties. Consequently, many medical students appear to find primary care less appealing than other specialties. What further complicates the problem is the reimbursement gap between the generalists and the specialists.

Given the declining interests in primary care, an understanding of the factors that influence career choices made by medical students, residents, and physicians is essential. Although many variables (e.g., level of educational debt, mentorship experiences, income prospects, lifestyle) have been investigated in previous studies,⁵⁻⁷ little research has been done to compare the relative importance of different factors affecting career choice, and the factors that have the greatest influence thus remain unclear. The purpose of the study described here was to identify the different factors and the relative importance of each in career selection in order to gain some insight into what might enhance interest in primary care as a career choice.

Methods

A one-page questionnaire was designed to identify the factors influencing career choice (see Appendix A and Appendix B). Respondents were asked to provide demographic data and to rank the factors that influenced their residency choice. The factors present-

ed were chosen based on a literature review^{5,6,8} and discussions with medical students, residents, and physicians.

Study population

The study population included medical students, internal medicine and general surgery residents, and physicians currently practising in British Columbia. A total of 327 individuals received the survey package: 140 third-year University of British Columbia medical students, 36 internal medicine residents, 11 general surgery residents, and 140 physicians randomly selected from the College of Physicians and Surgeons of British Columbia physician directory.

Survey procedures

Between April and July 2005, survey materials were mailed to the medical students and physicians in practice, and distributed to the residents (who might not have a permanent address) at their academic half days.

The survey packages were completed anonymously and participation in the study was entirely voluntary. A cover letter sent with the survey package explained that completion and return of the material implied consent to participate. Completed forms and questionnaires were returned by fax or mail, and were destroyed after data analysis. The study was reviewed and approved by the Behavioural Research Ethics Board of the University of British Columbia.

Analysis

Chi-square analysis was used to determine the frequency count variables. The mean and median of the ranking variables were computed and reported. Because the subgroup sizes were small, the nonparametric Mann-Whitney *U* test was applied to the ranking variables.

Results

The response rate was 36.1%, with 327 survey packages distributed and 118 completed and returned. Of the 118 respondents, 29.7% (35/118) were medical students, 37.3% (44/118) were internal medicine or general surgery residents, and 33% (39/118) were physicians. The response rate was 25.0% (35/140) for the medical students, 93.6% (44/47) for the residents, and 27.9% (39/140) for the physicians. Of the respondents 54.2% were male. The demographic characteristics of all respondents is shown in **Table 1**.

Factors influencing career choices

Respondents were asked to rank seven factors that influenced their career choices. "Personal interests" was ranked first among all the respondents, followed by "previous positive experience," "personal reasons," and "job opportunities." Selection factors that were considered less important were "influence from a mentor," "lifestyle and financial rewards," and "geographical location." The career choices and selection factors for the medical students, residents, and physicians were further analyzed separately. A summary of these findings is shown in **Table 2**.

Medical students. Family medicine was selected as the top choice for a future career by 28.6% of students, while 22.9% expressed interest in internal medicine, and 8.6% were interested in surgical specialties. The remaining 37.1% of students were interested in other specialties, such as anesthesia, emergency medicine, pathology, pediatrics, public health, psychiatry, radiology, and radiation oncology (one student did not answer, so percentages do not total 100%).

Students ranked "personal inter-

ests” as the most important factor influencing their residency selection. This was followed by “previous positive clerkship experience,” “personal reasons,” and “lifestyle and financial

rewards.” Factors that were considered relatively less influential were “future job opportunities,” “geographical locations,” and “influence from a mentor.” When we grouped the students ac-

ording to those who were and were not interested in family medicine and compared their career choice factors, there were significant differences for certain variables. Students who were interested in family medicine ranked “personal reasons” ($P = .0329$) and job opportunities ($P = .0051$) higher than other students. Those students not interested in family medicine ranked “previous positive clerkship experience” ($P = .0003$) and “influence from a mentor” ($P = .0142$) as more important factors.

Residents. As a group, the residents identified “personal interests” as the most important reason for selecting their specialty. This was followed by “previous positive clerkship experience,” “influence from a mentor,” and “future job opportunities.” Factors that were perceived as less important were “personal reasons,” “lifestyle and financial rewards,” and “geographical location.”

When responses from residents were analyzed according to specialty, “personal interests” ranked first among the internal medicine residents, followed by “previous positive clerkship experience,” “influence from a mentor,” “job opportunities,” “lifestyle and financial rewards,” and “geographical location.” Similarly, “personal interests” was considered as the most influential factor among the surgery residents, followed by “previous positive clerkship experience,” “influence from a mentor,” “job opportunities,” “lifestyle and financial rewards,” and “personal reasons.” “Geographical location” was ranked as the least influential selection factor. The differences between the two specialties were not significant.

Physicians. Along with the students and the residents, the physicians identified “personal interests” as the most

Table 1. Demographic characteristics of 118 respondents.

	Students (N = 35) n (%)	Residents (N = 44) n (%)	Physicians (N = 39) n (%)
Gender			
Male	15 (42.9%)	23 (52.3%)	26 (66.7%)
Female	20 (57.1%)	21 (47.7%)	13 (33.3%)
5-year age group			
21–25	11 (31.4%)	1 (2.3%)	—
26–30	21 (60.0%)	31 (70.5%)	—
31–35	3 (8.6%)	7 (15.9%)	—
36–40	—	5 (11.4%)	—
10-year age group			
30–39	—	—	11 (28.2%)
40–49	—	—	9 (23.1%)
50–59	—	—	12 (30.8%)
60–69	—	—	7 (17.9%)
Graduate from			
Canadian	—	36 (81.8%)	37 (94.9%)
US	—	—	1 (2.6%)
Others	—	8 (18.2%)	1 (2.6%)
Specialty			
Family medicine	10 (28.6%)	—	13 (33.3%)
Internal	8 (22.9%)	33 (75.0%)	6 (15.4%)
Surgery*	3 (8.6%)	11 (25.0%)	4 (10.3%)
Others†	13 (37.1%)	—	16 (41.0%)
Year of Residency			
PGY-1	—	18 (40.9%)	—
PGY-2	—	14 (31.8%)	—
PGY-3	—	10 (22.7%)	—
PGY-4	—	—	—
PGY-5	—	2 (4.5%)	—
Years of Practice			
0–5	—	—	5 (12.8%)
6–10	—	—	9 (23.1%)
11–15	—	—	8 (20.5%)
16–20	—	—	2 (5.1%)
20+	—	—	14 (35.9%)

*Surgery includes cardiac surgery, general surgery, pediatric general surgery, and plastic surgery

†Others includes anesthesia, emergency medicine, neurology, ophthalmology, palliative medicine, pathology, pediatrics, public health, psychiatry, radiology, and radiation oncology

important reason for selecting a specialty, followed by “previous positive clerkship experience,” “influence from a mentor,” and “personal reasons.” Factors that were less influential were “lifestyle and financial rewards” and “job opportunities.” Again, “geographical location” was considered the least important selection factor.

Mentorship

Respondents were asked to consider the influence of mentors on their selection of a career. Of those respondents with mentors who answered this question (57/118), more than 60% (38/57) said their mentors had “some influence” or a “strong influence” on their choice of residency. Approximately 40% of respondents in both the student and resident subgroups found their mentors “somewhat helpful” or “pretty helpful.” Respondents with and without mentors ranked “general guidance” and “career counseling” as the kinds of support from mentors that they valued most.

Not surprisingly, when we compared those respondents who had mentors with those who had never had mentors, those who had worked with at least one mentor during their medical training ranked “influence from a mentor” significantly higher than those without mentors, and the difference was statistically significant ($P = .008$). When we compared mentor influence for students and physicians, there was significant difference between the two groups ($P = 0.02478$). When we compressed the degree of influence into two subgroups—“no” or “minor” influence and “some” or “strong” influence—the difference was even more significant ($P = .00554$).

Table 3 summarizes the degree of influence mentors had on respondents, and **Table 4** summarizes the respondents’ ranking of the different kinds of support provided by mentors.

Table 2. Scores assigned by respondents asked to rank factors influencing career choices from 1 (most important) to 7 (least important).

	Students Median (mean)	Residents Median (mean)	Physicians Median (mean)	All respondents Median (mean)
Personal interests	1.0 (1.2)	1.0 (2.2)	1.0 (1.9)	1.0 (1.8)
Previous positive clerkship experience	3.0 (3.2)	2.0 (2.7)	2.0 (3.0)	2.0 (2.9)
Personal reasons	4.0 (3.8)	4.0 (4.3)	4.0 (4.0)	4.0 (4.1)
Job opportunities	5.0 (4.5)	4.0 (4.2)	4.5 (4.5)	4.0 (4.4)
Influence from a mentor	6.0 (5.3)	3.0 (3.8)	4.0 (3.9)	4.5 (4.3)
Lifestyle and financial rewards	4.0 (4.4)	5.0 (4.6)	5.0 (4.3)	5.0 (4.5)
Geographical location	5.0 (5.0)	5.0 (4.8)	6.0 (5.0)	5.0 (4.9)

Table 3. Number of respondents agreeing with one of four statements about degree of mentor influence on residency choice.

	Respondents with mentors (N = 57) n (%)	Students (N = 21*) n (%)	Residents (N = 20) n (%)	Physicians (N = 16) n (%)
No influence	10 (17.5%)	8 (34.8%)		2 (12.5%)
Minor influence	9 (15.7%)	4 (17.4%)	5 (25%)	
Some influence	24 (42.1%)	6 (26.1%)	12 (60%)	6 (37.5%)
Strong influence	14 (24.6%)	3 (13.0%)	3 (15%)	8 (50%)

*2 of 23 students with mentors did not answer this question.

Table 4. Scores assigned by respondents asked to rank relative importance of different kinds of support provided by mentors from 1 (most important) to 5 (least important).

	Students Median (mean)	Residents Median (mean)	Physicians Median (mean)	All Respondents Median (mean)
General guidance	1.0 (1.4)	2.0 (2.4)	2.0 (2.1)	2.0 (2.0)
Career counseling	2.0 (2.5)	1.0 (1.8)	2.0 (2.3)	2.0 (2.2)
Professional support	3.0 (2.7)	2.0 (2.3)	2.5 (2.5)	3.0 (2.5)
Emotional support	4.0 (3.9)	5.0 (4.1)	4.0 (3.4)	4.0 (3.8)
Research project	5.0 (4.3)	3.0 (2.8)	5.0 (4.4)	4.0 (3.7)

Medical students. Of the 35 student respondents, 23 currently had a mentor. Among these students, 30% found their mentors “very helpful” and 21.7% found their mentor “not at all helpful.” The rest of the students, 43.5%, found their mentors “somewhat helpful” or “pretty helpful” (one student did not answer, so percentages do not total 100%).

In terms of mentor influence on residency choice, only 13% of the students found their mentors had a “strong influence” on their career choices.

“General guidance” was the most important benefit students expected from their mentors, followed by “career counseling” and “professional support.” Providing “emotional support” and “assistance on research projects” was considered less important.

When asked whether they would be interested in a mentorship program in the future, the majority of student respondents (34/35) expressed interest.

Residents. Among the 44 responding residents, 20 had mentors prior to residency; however, this number dropped significantly during residency, to 11. When the residents were analyzed by speciality, 36% of internal medicine and 73% of surgery residents had mentors during medical school. During residency, only 27% of internal medicine residents and 18% of surgery residents had mentors.

Among those residents who had mentors prior to residency, only 15% found their mentors had a “strong influence” on their residency choices. For those residents who currently had mentors, 27.3% found their mentors “very helpful,” 27.3% “somewhat helpful,” and 45.5% found them “pretty helpful.”

“Career counseling” was ranked as the most important benefit residents expected from their mentors, followed

by “professional support” and “general guidance.” Mentor roles that were considered less important were “assistance on research projects” and “emotional support.”

Despite the small number of residents with mentors, the majority of resident respondents (38/44) expressed their interests in a mentorship program in the future.

Physicians. Of the 39 physician respondents, 16 had had mentors during their residency. Among those who had mentors, 8 were strongly influenced by their mentors when choosing their careers.

As a physician and mentor, providing “general guidance” to the mentees was perceived as most important, followed by “career counseling,” “professional support,” “emotional support,” and “assistance on research projects.”

While 97.1% of student respondents and 86.4% of resident respondents were interested in a mentorship program, only 69.3% of physicians were interested, a statistically significant difference ($P = .0079$).

Study limitations

There were several limitations to this study. The sample size was small and the participant rate was low. The study relied on the respondents to self-report what influenced their career choices and these responses, especially in the case of residents and physicians, would be subject to recall or nondisclosure bias. Furthermore, this study looked at only seven career-choice selection factors; other factors such as marital status, level of educational debt, and desire to work with people, were not considered. Lastly, the study sample was drawn from students, residents, and physicians from a single Canadian province and may not be generalizable to other provinces and countries. To better understand the career-choice

process, additional research involving input from other regions and residents from other specialty training programs would be needed.

Conclusions

The results of this study illuminate some key factors that influenced the career choices made by medical students, residents, and practising physicians. “Personal interests” and “previous positive clerkship experience” were the two most important factors for the students, residents, and physicians when selecting their specialty, while “lifestyle and financial rewards” and “geographical location” did not attain significance as predictors of a career choice. It was somewhat surprising to see that “lifestyle and financial rewards” had minimal influence on the career choices since previous studies^{9,10} have shown that the odd ratios for selecting a residency other than primary care increased as the concern about student indebtedness increased. Moreover, comments in the Vancouver media have suggested that the decline in physician interest in primary care, especially family medicine, is in part due to income disparity between primary care physicians and specialists.^{11,12}

The results of this study regarding mentorship were also somewhat surprising. Other studies have reported that role models or mentors influence a medical student’s selection of residency.^{7,13} In our study, both the residents and physicians ranked “influence from a mentor” third, after “personal interests” and “previous positive clerkship experiences.” However, when asked about mentors specifically, very few respondents felt that mentors did not provide any influence. In fact, the perceived value of mentors appeared to be greatest among the practising physicians. This is in contrast to the responses of medical students, who

perceived that having a mentor did not have any significant influence on residency selection. We concede that it is possible this finding may be due to the limitations of our study: the study looked only at third-year medical students from a single university and only 65.7% of these students had mentors. It may also be possible that students tend to meet their mentors *after* they have decided on a career path, and that the true value of mentorship is perceived only long after the mentorship has been completed and not immediately afterward or during the course of mentorship. Mentorship may in fact be of great benefit, even if those student respondents with mentors do not appreciate this right away. Another possibility is that the difference in the perceived value of mentorship in our study reflects a cohort or temporal effect. It may be that the generation of students we surveyed is less affected by mentorship than those of previous years. If this is true, then increasing exposure to mentors will be of limited benefit. Since there appeared to be a gradient in perceived value of mentorship from students to residents to practising physicians, and since the age gap between students and residents is not that great (i.e., most respondents within both groups were between 20 and 30 years of age), we do not feel that this was the reason.

Despite the limitations of this study, our findings suggest there might be ways to influence students to pursue careers in primary care. One way might be to increase exposure to primary care experiences during the first and second years of medical school, and to emphasize primary care ambulatory experiences during clerkship years. Another way to increase the number of primary care physicians might be through the medical student selection process. Explicit interest in primary care by a student applicant is

a predictor for later generalist practice.^{14,15} Therefore, selecting medical students who express an interest in primary care might be helpful.

Promoting interest in primary care will require substantial effort. Various strategies—including increasing exposure to primary care during training, selecting students who express interests in primary care, and improving satisfaction among family physicians—might encourage more trainees to pursue a career in primary care. However, all these will require a coordinated and interdisciplinary approach among the policymakers, physicians, and academics. Although this study provides some insight, studies that involve multiple centres and a larger sample are still needed to provide better understanding of the relative importance of various career-choice factors.

Acknowledgments

We thank Dr Jessica Mills for all her help with the distribution of surveys.

Competing interests

None declared.

References

1. Canadian Resident Matching Service. R-1 match report—2005. Ottawa, ON: Canadian Resident Matching Service, 2005. www.carms.ca/eng/operations_R1_reports_05_e.shtml (accessed 10 September 2007).
2. Skinner BD, Newton WP. A long-term perspective on family practice residency match success: 1984–98. *Fam Med* 1999;31:559-565.
3. Kahn NB, Schmittling GT, Graham R. Results of the 1999 National Resident Matching Program: Family practice. *Fam Med* 1999;3:551-558.
4. Pugno PA, McPherson DS, Schmittling GT, et al. Results of the 2000 National Resident Matching Program: Family practice. *Fam Med* 2000;32:543-550.
5. Jordan J, Brown JB, Russell G. Choosing

family medicine: What influences medical students? *Can Fam Physician* 2003; 49:1131-1137.

6. Newton DA, Grayson MS, Whitley TW. What predicts medical student career choice? *J Gen Intern Med* 1998;13:200-203.
7. Wright S, Wong A, Newill C. The impact of role models on medical students. *J Gen Intern Med* 1997;12:53-56.
8. Senf JH, Kutob R, Campos-Outcalt D. Which primary care specialty? Factors that relate to a choice of family medicine, internal medicine, combined internal medicine-pediatrics, or pediatrics. *Fam Med* 2004;36:123-130.
9. Kiker BF, Zeh M. Relative income expectations, expected malpractice premium costs, and other determinants of physician specialty choice. *J Health Soc Behav* 1998;39:152-167.
10. Rosenthal MP, Marquette PA, Diamond JJ. Trends along the debt-income axis: Implications for medical students' selections of family practice careers. *Acad Med* 1996;71:675-677.
11. Rosser WW. The decline of family medicine as a career choice. *CMAJ* 2002; 166:1419-1420.
12. Sullivan P. Family medicine in crisis? *CMAJ* 2003;168:881-882.
13. Burack JH, Irby DM, Carline JD, et al. A study of medical student's specialty-choice pathway: Trying on possible selves. *Acad Med* 1997;72:534-541.
14. Rabinowitz HK, Paynter NP. The role of the medical school in rural graduate medical education: Pipeline or control valve. *J Rural Health* 2000;16:249-253.
15. Pathman DE, Steiner BD, Jones BD, et al. Preparing and retaining rural physicians through medical education. *Acad Med* 2002;77:475-480. **BMJ**

Appendix A. Factors influencing medical students' residency choice.*

1. What is your gender?
 Male Female

2. What is your age?
 21–25 26–30 31–35 36–40 41–45

3. Which residency program do you plan to apply? _____

4. Rank the following factors that influenced your choice of residency program:
(1 = most important; 7 = least important; please use each number only ONCE)
___ Personal interests
___ Personal reasons (e.g. family, friends, etc.)
___ Geographical location
___ Previous positive clerkship experience
___ Influence from a mentor
___ Lifestyle and financial rewards
___ Future job opportunities in that field

5. Did you have a mentor during your medical school training?
 If Yes, please go to Question #6
 If No, please go to Question #8

6. Did your mentor have any influence on your residency choice?
 No influence
 Minor influence
 Some influence
 Strong influence

7. How helpful is your mentor?
 Not at all helpful
 Somewhat helpful
 Pretty helpful
 Very helpful

8. Rank the following areas that you expect to benefit from the mentor:
(1 = most important; 5 = least important; please use each number only ONCE)
___ General guidance
___ Career counseling
___ Assistance & support surrounding professional issues
___ Emotional support surrounding personal or non-work related issues
___ Assistance on research project

9. Are you interested in a mentorship program during residency?
 Yes
 No

*Medical students received this questionnaire, while practising physicians received the questionnaire in Appendix B. Residents received a questionnaire similar to this one, except it gathered information on the medical school graduated from, current speciality, and year of residency.

Appendix B. Factors that influenced physicians' career choice

1. What is your gender?
 Male Female
2. What is your age?
 30–39 40–49 50–59 60 – 69 70+
3. Which medical school did you graduate from?
 Canadian US UK Other
4. What is your specialty? _____
5. How many years have you been in practice?
 0–5 6–10 11–15 16–20 20+
6. Rank the following factors that had motivated you to choose the current specialty:
(1 = most important; 7 = least important; please use each number only ONCE)
___ Personal interests
___ Personal reasons (family, friends, etc.)
___ Geographical location
___ Previous positive clerkship or rotation experience
___ Influence from a mentor
___ Lifestyle and financial rewards
___ Future job opportunities in that field
7. Did you have a mentor during your residency or fellowship training?
 If Yes, please go to Question #9
 If No, please go to Question #8
8. Looking back, would you feel you could have benefited from having a mentor?
 Yes No
(Skip Question #9, go to Question #10)
9. How much influence did your mentor have on your career?
 No influence at all Minor influence Some influence Strong influence
10. Are you interested in mentoring a medical student or resident or fellow in the future?
 Yes No
11. If answered “Yes” in the above question, please rank the following that you feel a good mentor should offer to the mentee: (1 = most important; 5 = least important)
Please use each number only ONCE
___ General guidance
___ Career counseling
___ Assistance & support surrounding professional issues
___ Emotional support surrounding personal or non-work related issues
___ Assistance on research project