

University of Saskatchewan, Saskatoon, for their constructive comments.

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Career development of McMaster University medical graduates and its implications for Canadian medical manpower

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A study was undertaken of the career paths and decisions, and the factors influencing the decisions, of the first six graduating classes of McMaster University's medical school. Climate and geography, preference for urban or rural living and influence of spouse were the factors that most influenced the location of practice, although the graduates who moved to the United States considered economic factors important too. Nearly one third of the specialists were practising in the United States. Personal challenge and positive clinical experience in the field were the major influences on choice of medical field. Graduates entering a specialty were more likely than those entering primary care to consider encouragement of others, a positive example set by medical school faculty members, working hours and research experience in the field as important influences on their choice of medical field. Data are needed on the career decisions, and the factors affecting them, of the graduates of all Canadian medical schools if Canadian medical manpower planning is to be realistic.

Les six premiers groupes de diplômés de l'école de médecine de l'université McMaster ont fait l'objet de cette étude portant sur les cheminements et les décisions de carrière ainsi que les facteurs qui ont influencé ces décisions. Des considérations climatiques et géographiques, une préférence pour la vie urbaine ou rurale et l'influence du conjoint ont été les facteurs qui ont influencé davantage le choix du lieu de pratique, bien que les diplômés qui ont déménagé aux

États-Unis aient aussi invoqué l'importance de facteurs économiques. Près du tiers des spécialistes exerçaient aux États-Unis. Un défi personnel ou une expérience de pratique favorable ont été les principaux facteurs qui ont influencé le choix d'une spécialité. Les diplômés qui ont opté pour une spécialité étaient plus susceptibles que ceux qui ont choisi les premiers soins d'invoquer l'encouragement des autres, un exemple positif des membres de la faculté, les heures de travail et l'expérience de recherche dans la pratique comme facteurs importants dans le choix de leur option. Davantage de données sont nécessaires sur les décisions de carrière, et les facteurs qui les affectent, des diplômés de toutes les écoles de médecine canadiennes si l'on veut que la planification des effectifs médicaux au Canada soit réaliste.

Medical manpower planning in Canada is hampered by inadequate information on the medical manpower pool. The basic source of national data is the listing of physicians in the Sales Management System, which is maintained by Southam Business Publications Ltd. and used mainly for commercial purposes.¹ However, the Canadian medical profession is addressing this deficiency; its survey of physicians practising in Canada, whether trained in Canada or elsewhere, will provide the first comprehensive data on the supply of medical manpower in Canada.²

The Canadian medical manpower pool changes constantly, mainly because approximately 1800 graduates of Canadian medical schools are added each year. Yet little is known about the graduates' career paths and the factors influencing their decisions.

Only one study of Canada's medical manpower production has been carried out. Roos and Fish³ studied the career paths of physicians 4 years after their graduation from Canadian medical schools. They found

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a wide variation in the career patterns and rates of specialization between medical schools;³ in addition, two aspects of the medical schools — research funding and the number of full-time faculty members in a given discipline — were significantly, although not strongly, associated with career choice 4 years after graduation.⁴ However, no data are available on the factors that may have influenced the graduates' career decisions.

The first class of McMaster University's medical school graduated in 1972; therefore, the graduates of this school had not been included in the earlier study.³ Currently the McMaster graduates constitute about 5% of new physicians in Canada. The medical program at McMaster has a problem-based, 3-year curriculum.⁵ The students do much of their work in small groups and must direct their learning themselves, though according to specific general guidelines. Student performance is assessed continually, and the development of self-evaluation ability is emphasized.

Graduates of this atypical program may differ from those of other Canadian medical schools, and they are just beginning to influence the supply of medical manpower in Canada. In this paper we describe their postgraduate career paths, choice of specialty, and location and type of practice, as well as the factors they perceived as influencing their career decisions.

Subjects and method

Our study population included 358 of the 359 students (1 died shortly after graduation) of McMaster University's medical school who graduated between 1972 and 1977. The students from the classes of 1972, 1973 and 1974 (group 1) were surveyed 5 years after graduation and those from the classes of 1975, 1976 and 1977 (group 2) were surveyed 2 years after graduation. A pretested questionnaire and self-addressed return envelope were sent to all the graduates. They were asked to describe their career path up to Aug. 31 of that year and the factors that influenced their career choices.

Results

Response rate

Of the 358 graduates 318 (89%), 232 men and 86 women, returned the questionnaire, the response rate ranging from 100% for the class of 1972 to 83% for the class of 1977. The men were more likely to respond than the women (91% v. 83%: $\chi^2_1 = 4.7$; $P = 0.03$).

Location at time of survey

Overall, 59% of the graduates (53% in group 1 and 63% in group 2) were residing in Ontario at the time of the survey (Table I). Those who had left Ontario were more likely to be living in western Canada (particularly British Columbia) than elsewhere in Canada. The women were less likely to have left Canada than the men (12% v. 23%: $\chi^2_1 = 4.9$; $P < 0.05$).

Postgraduate training

For the first year of postgraduate training 61% of the

graduates chose a straight internship (the first year of a family medicine residency for 31%), 25% a rotating internship and 14% a mixed internship.

The career paths since internship are described in Table II. Although 95 (30%) had initially entered general or family practice, 10 left to enter a residency program and 1 to do research. Of the 220 (69%) who initially entered a residency program 83% had completed or were completing their residency, 11% left for general or family practice, 4% undertook additional research training and 3% switched to another residency program.

Choice of medical field

Of the 318 graduates 46% chose primary care (15% general practice and 31% family practice), 32% a medical specialty, 11% a surgical specialty and 11% another specialty. We found no significant differences between the proportions of men and women who chose to enter primary care and those who chose further specialization.⁶

Of the 318 graduates 58 had changed their career plans since graduation from medical school: 43% found they were more interested in another field of medicine or in a subspecialty of their chosen field, and 30% were dissatisfied with their first choice (e.g., too narrow a field, not intellectually challenging, provided too little time with patients, or training left negative impression). Another 26% mentioned limitations in lifestyle — for example, too many hours of work, not enough time with their spouse and family, and not enough variety; equal proportions of men and women gave these reasons (31% and 29% respectively).

Table I—Location of 318 graduates of McMaster University's medical school at time of survey

Location	Year of graduation; no. (and %) of graduates			
	1972-1974		1975-1977	
	Men (n = 95)	Women (n = 20)	Men (n = 137)	Women (n = 66)
Canada				
Ontario	50 (53)	11 (55)	86 (63)	41 (62)
East of Ontario	4 (4)	4 (20)	5 (4)	6 (9)
West of Ontario	14 (15)	2 (10)	20 (15)	12 (18)
United States	20 (21)	2 (10)	24 (18)	7 (11)
Other	7 (7)	1 (5)	2 (1)	0 (0)

Table II—Career paths since internship

Career path	No. (and %) of graduates (n = 318)
Initially entered general or family practice*	95 (30)
Stayed	84 (26)
Left for residency program	10 (3)
Left to do research	1 (0.3)
Initially entered a residency program	220 (69)
Completed or completing program	182 (57)
Left for general or family practice	24 (8)
Undertook additional research training*	8 (3)
Switched to another residency program	6 (2)

*Three entered graduate or professional school.

Most of the graduates (94%) thought they would remain in their current medical field. Of those in primary care 35% had made their career choice before medical school and 33% had made their choice during medical school; the corresponding figures for those in a specialty were 14% and 36%.

The graduates were asked which of 11 factors were important influences on their choice of medical field (Table III). Although personal challenge and positive clinical experience in the field were most often considered important factors (by 81% and 73% respectively), encouragement of others, a positive example set by medical school faculty members, working hours and length of residency were also important to many (45%, 42%, 33% and 30% respectively). More of those in primary care considered length of residency an important factor, while more of those in a specialty cited the other three factors and research experience as important influences. Although there was no difference between the proportions of those in primary care and those in a specialty who considered influence of spouse an important factor, more women than men cited this factor and working hours as important influences.⁶

Graduates currently in practice

At the time of the survey 85 (74%) of the graduates

in group 1 and 92 (45%) of those in group 2 were in practice. Another 42 graduates had briefly been locum tenens or practised part-time but were still in training or graduate school. However, 17% were in full-time practice after 1 year of postgraduate training.

The locations of the graduates in full-time practice are given in Table IV. Of the 177 graduates 60% resided in Ontario. Of those who had entered general or family practice 92% had stayed in Canada, compared with only 64% of those who entered a specialty; nearly one third of the specialists were practising in the United States.

Slightly more than half (51%) of the graduates were practising in a large city or its suburbs, 10% in medium-sized cities, 21% in towns and 18% in rural areas.

The practising graduates were asked to select from 20 factors the 3 that had most influenced their decision regarding location of practice. The factors chosen most often were climate or geography (by 32%), preference for urban or rural living (by 30%) and influence of spouse (by 28%). However, when the three most important factors were ranked, influence of spouse was ranked first most often (by 19%) and was more often, though not significantly, endorsed as a factor by women. Climate or geography and income potential were considered important factors more often by graduates practising in the United States (45% and 39% respectively) than by those practising elsewhere (32% and 14% respectively).

The practising graduates reported spending an average of 57.9 hours per week in professional activities. The mean proportions of time for various activities were 83% for patient care, 6% for teaching, 4% for research, 4% for administration and 2% for other activities. More than three quarters reported spending 75% or more of their professional time on patient care, and almost half reported spending time on teaching; 30% reported some administrative activities, and 19% reported some time devoted to research. Eleven of the graduates (6%) reported spending 40% or more of their time on research.

Type of practice

The current or planned types of practice of the 305

Table III—Important factors influencing choice of medical field

Factor*	% of graduates		
	Medical field		Total
	Primary care	Specialty	
Personal challenge	78	83	81
Clinical experience in current field			
Positive	70	75	73
Negative	20	26	24
Encouragement of others†	33	55	45
Example set by medical school faculty member(s)‡			
Positive	29	52	42
Negative	20	26	24
Working hours§	23	41	33
Length of residency‡	50	14	30
Influence of spouse	18	15	16
Research experience in current field‡	2	19	11
Military experience	1	2	2
Other	24	21	22

*Difference between primary care and specialty significant at †P = 0.001 or P < ‡0.001 and §0.01.

Table IV—Location of full-time practices

Practice location	No. (and %) of graduates		
	Type of practice		
	Primary care	Specialty	Total
Canada			
Ontario	82 (65)	24 (48)	106 (60)
East of Ontario	5 (4)	3 (6)	8 (4)
West of Ontario	30 (24)	5 (10)	35 (20)
United States	7 (6)	16 (32)	23 (13)
Other	3 (2)	2 (4)	5 (3)
Total	127 (72)	50 (28)	177 (100)

Table V—Current or planned types of practice

Type of practice	No. (and %) of graduates		
	Currently in practice	Planning to practise	Total
Solo	57 (33)	27 (21)	84 (28)
Group or partnership	81 (47)	38 (29)	119 (39)
Industrial	2 (1)	1 (1)	3 (1)
Armed Forces	7 (4)	1 (1)	8 (3)
Public health		3 (2)	3 (1)
Full-time teaching and research	6 (3)	28 (21)	34 (11)
Part-time university affiliation*		10 (8)	10 (3)
Salaried by an organization	21 (12)	1 (1)	22 (7)
Undecided		22 (17)	22 (7)
Total	174 (57)	131 (43)	305 (100)

*Type of practice not stated.

graduates who answered this question are given in Table V. Large proportions planned to seek full-time positions in teaching and research or part-time university affiliation. Overall, 11% had or planned to have a full-time career in teaching and research.

Discussion

The proportions and locations of graduates selecting primary care in our study were similar to those reported by Roos and Fish.³ In both studies most of the graduates who chose to live outside the province in which they went to medical school moved to British Columbia or the United States, a fact that led Roos and Fish to conclude that climate and geography are important factors in the choice of residence. In our study the practising graduates clearly identified geographic factors as having been important. However, those living in the United States more often considered economic factors as important than those living elsewhere.

Considering the timing of our survey it was inevitable that specialists were under-represented in the group of practising graduates; however, 32% are practising in the United States. It will be distressing if this proportion remains high when all the graduates in our study have entered practice. However, whether graduates receive advanced training in the United States does not appear to be a major factor in their leaving Canada, since the location of training was listed by only 8% of the practising graduates in our study as an important influence on the location of their practice.

Many women have graduated from McMaster University's medical school. Although the career paths of these women and the male graduates of McMaster were similar,⁶ the women chose to work fewer hours. Although our results indicate that women are more likely to stay in Canada, the fact that they would prefer to work fewer hours than men may have an influence on the supply of Canadian medical manpower.

Graduates who enter primary care usually make this decision earlier than those who enter the specialties, as indicated by our finding that those in the latter group more often cited positive examples set by medical school faculty members, encouragement by others and research experience in the specialty field as major influences on their career choice.

Information on the types of practice chosen was limited because 44% of the graduates were still in training at the time of the survey. However, that 11%

had entered or were planning to enter full-time careers in academic medicine was surprising, for in a survey of those graduating in 1970 from Canadian medical schools only 7% reported having full-time academic careers, and this proportion may have been an overestimate because the response rate to the survey was low (48%) and those in academic medicine may have been more likely to respond (N.P. Roos: personal communication, 1981). On the other hand, our findings can be supported by the results of a survey of the types of practice chosen by 98% of the same McMaster medical graduates:⁷ 12% reported that they held full-time academic positions in 1980, an outcome that requires further exploration. It may simply be that more Canadian graduates are becoming interested in academic medicine. However, if this trend were to continue, one in nine graduates would not be accommodated in the academic posts currently available.

Since the McMaster University medical program is not typical of those in other Canadian medical schools, our results may not reflect the national picture. Adequate information on the career decisions and working patterns of the recent graduates of all Canadian medical schools is urgently needed if Canadian medical manpower planning is to be realistic. Until such data are available, the extent to which the choices made by graduates of any school are unique will remain a matter of conjecture, and shortages and oversupply of physicians in various fields will remain.

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Choosing a medical field

If you find that you resent having to look after the patients on your wards and want to get back to the laboratory, it probably means you'll be happier there. If on the contrary you find you are concerned all the time you are in the laboratory with what is going on in your patients, then that may indicate that you will be better off dealing with people.

—Warfield T. Longcope (1877-1953)