

Factors influencing family physicians to enter rural practice

Does rural or urban background make a difference?

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ABSTRACT

OBJECTIVE To examine where rural physicians grew up, when during their training they became interested in rural medicine, factors influencing their decision to practise rural medicine, and differences in these measures according to rural or urban upbringing.

DESIGN Mailed survey.

SETTING Rural Canada.

PARTICIPANTS Rural family physicians who graduated between 1991 and 2000 from a Canadian medical school.

MAIN OUTCOME MEASURES Backgrounds of recently graduated rural physicians, when physicians first became interested in rural practice during training, and most influential factors in decisions to practise rural medicine.

RESULTS Response rate was 59% (382/651). About 33% of rural physicians grew up in communities of less than 10 000 people, 44% in cities of 10 000 to 499 999 people, and 23% in cities of more than 500 000 people. Physicians raised in rural areas were more likely than those raised in urban areas to have some interest in rural family practice at the start and end of medical school (90% vs 67% at the start, 98% vs 91% at the end, respectively, $P < .0001$). Physicians raised in urban areas were more likely to state that rural medical training was the most influential factor in their choice of rural practice (19% vs 9%, $P = .015$). Other factors cited as influential were the challenge of rural practice (24% for both urban and rural upbringing), rural lifestyle (14% for urban and 18% for rural upbringing) and, for physicians raised in rural areas, having grown up or spent time in a rural area (27% for rural and 4.1% for urban upbringing, $P < .001$). Financial incentives were least frequently cited as the most influential factor (7.5% for urban and 4.9% for rural upbringing, $P = .35$).

CONCLUSION Although other studies have suggested that physicians with a rural upbringing are more likely to practise rural medicine and policy makers might still wish to target students raised in rural areas as candidates for rural medicine, this study shows that physicians raised in urban areas remain the main source of human resources for rural communities. They account for two thirds of new physicians in rural areas. Education in rural medicine during medical training has a stronger influence on physicians raised in urban areas than on physicians raised in rural areas. Undergraduate and postgraduate training periods, therefore, offer an important opportunity for recruiting physicians raised in urban areas to rural practice.

EDITOR'S KEY POINTS

- This study found that physicians who grew up in rural areas were more likely to return to rural areas to practise. Most rural physicians, however, actually come from cities and were greatly influenced by their rural training experiences.
- For students from both urban and rural backgrounds, the challenges of rural practice and its lifestyle had the greatest positive influence on choice of practice location.
- Are encouraging rural applicants to apply for medicine, making exposure to rural practice available during training, and promoting the challenges and lifestyle of rural practice to physicians from both urban and rural backgrounds the best strategies for recruitment to rural practice?

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Inequitable geographic distribution of physicians in countries with vast areas, such as Canada, the United States, and Australia, has been a continuing challenge for policy makers. Attempts have been made to encourage more doctors to practise in rural areas for the past 40 years. These attempts have included financial incentives; recruitment drives; offers of free tuition, access to educational resources, teaching opportunities, and locum tenens¹; and medical education specifically targeted at preparing doctors for rural practice.²

One factor identified as predicting rural practice has been where a physician grew up. Studies from Canada,^{3,4} the United States,⁵⁻⁹ and Australia^{10,11} demonstrate that people raised in rural communities are two to four times more likely to ultimately

work in rural areas. This prompted suggestions that more young people with rural backgrounds be admitted to medical schools.¹²

One of the Australian studies,¹¹ however, noted that, although rural background predicts rural practice, most rural practitioners actually did not spend any of their formative years in rural areas. This finding suggests a great potential for bringing physicians raised in urban areas into rural practice. We could not find any studies that explored this phenomenon in Canada.

Another predictor of rural practice cited in the literature is exposure to rural training. Graduates of both undergraduate medical programs with a rural focus¹³ and postgraduate rural residency training programs^{14,15} in the United States had relatively high rates of participation in rural practice. Choosing rural electives has also been associated with recruitment to rural areas; this appears to have a greater effect on people raised in urban areas.¹⁶ What is less clear is exactly when physicians solidify a decision to engage in rural practice and whether these key decision points vary by whether physicians were raised in rural or urban areas.

Studies have also examined other factors influencing the decision to choose rural practice. Spouses' preferences and proximity to family also strongly influence practice location.¹⁷ Financial incentives influence choice of rural practice, but have a greater effect on short-term recruitment than on long-term retention.¹⁸ Again, however, the difference in degree of influence of these factors on physicians raised in rural and urban areas remains to be clarified.

This study has three objectives. First, it explores whether recently graduated Canadian rural physicians tend to have urban or rural backgrounds, and whether, as in Australia, most of Canada's rural practitioners were raised in urban areas. Second, it examines whether the time during a physician's training at which he or she became interested in rural medicine differs by whether the physician has a rural or urban background. Third, it identifies the most influential factors in physicians' decisions to practise rural medicine and how these factors differ depending on where physicians were raised.

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METHOD

For our survey, we developed broad questions examining the influence of rural medical education on the decision to engage in rural practice. The survey was pilot-tested by 10 rural family physicians who provided feedback on questions, wording, and layout. Questions that relate to this study are listed below.

- How large was the community in which you lived when you were of high school age?
- Please rate your level of interest in rural family practice at different stages of your training and career. (Stages of training were start of medical school, end of medical school, and end of postgraduate training. Levels of interest were “little or no interest in rural medicine”; “some interest in rural medicine, but I was uncertain”; and “was certain I wanted to practise rural medicine.”)
- How much of a positive influence did the following factors have on your decision to work in a rural area? (Factors included rural training, financial incentives, past exposure to rural areas, and other issues listed as “other” factors. Respondents were asked to identify first, second, and third most influential factors.)

Other questions examined length of exposure to rural practice during postgraduate training and breadth of rural experiences (eg, opportunities to work in very remote settings with no local specialist backup) and the effect of these training-program factors on choice of rural practice.

Sample size calculations indicated that all recently graduated rural family physicians needed to be sampled in order to detect a difference in proportion of 0.10, assuming an alpha of .05, a power of .80, and a response rate of 50%. Accordingly, we surveyed all family physicians and general practitioners in Canada who had graduated recently (between 1991 and 2000) from Canadian medical schools and were practising at the time of the study (2002) in rural communities (less than 10 000 people and situated outside Census Agglomeration or Census Metropolitan areas). Potential respondents meeting these criteria were identified from

the Southam Medical Database, a commercial database widely used in Canada. A French version of the questionnaire was sent to Francophone physicians in Quebec and New Brunswick. Physicians received a first mailing in October 2002, then a reminder card and a second mailing. A third mailing was done in regions where response rates were still below 50% after the first two mailings.

We tested for differences in characteristics between those with urban upbringing and those with rural upbringing. Because outcomes of interest were categorical variables, we used chi-square tests. In testing for differences in “other” factors, we limited formal statistical testing to four broad categories of factors rather than individual factors to avoid reduction in statistical power due to multiple comparisons. Analyses were performed using SAS version 8.

Ethics approval was obtained from Sunnybrook and Women’s College Health Sciences Centre in Toronto, Ont.

RESULTS

We surveyed 784 physicians; 133 returned questionnaires were removed due to ineligibility. Reasons for ineligibility included not in family practice, not in rural practice, did not graduate between 1991 and 2000, and no longer located at the address listed in the database. This left an eligible sample of 651 physicians. The 382 completed eligible questionnaires represent an effective response rate of 59% (382/651). The response rate was higher among Anglophones (63%) than among Francophones (51%). Mean age of respondents was 35 years. There was no significant difference between respondents and nonrespondents in average age or number of years since graduation. Female physicians were more likely to return the survey than male physicians were (65% vs 51%, $P = .0004$).

Among respondents, one third grew up in communities of less than 10 000 people; the remainder grew up in urban communities of widely different sizes. Almost one quarter of rural physicians grew

up in cities with more than half a million population (Table 1).

Table 1. Size of community where physicians practising in rural areas were raised

POPULATION	NO. OF RESPONDENTS (%)
<5000	82 (22)
5000-9999	42 (11)
10 000-19 999	17 (5)
20 000-49 999	47 (12)
50 000-99 999	43 (11)
100 000-499 999	59 (16)
500 000-999 999	42 (11)
1 000 000 and more	45 (12)
TOTAL*	377 (100)

*Data missing for five participants.

As rural physicians progressed through training, their interest in rural medicine increased. The proportion of respondents who were certain they wanted to practise rural medicine rose from only 28% at the start of medical school to 77% by the end of postgraduate training. Respondents with a rural upbringing were more likely than those with an urban upbringing to have at least some interest in rural family practice at the start of medical school (90% vs 67%, $P < .0001$). At the end of medical school, this difference, while substantially reduced, remained significant (98% vs 91%, $P < .0001$). By the end of postgraduate training, the difference in proportion of physicians reporting little interest in rural medicine disappears, although physicians raised in rural areas were still more likely to report they were certain they wanted to practise rural medicine (92% versus 71%, $P < .0001$).

The challenge of rural medicine and enjoyment of a rural lifestyle were two of the most important factors for physicians from both urban and rural backgrounds in the decision to practise rural medicine (Table 2). Physicians raised in urban areas were more likely to indicate that exposure to rural practice during medical school or residency was the most important factor in their decision to practise rural medicine. Physicians raised in rural areas were more likely to report that having spent time in rural areas before university was the most

important factor; among these physicians, this was most commonly cited as the most important factor. There were no statistically significant differences

Table 2. Most important factors in deciding to practise rural medicine

FACTORS	% OF RESPONDENTS RATING FACTOR MOST IMPORTANT		P VALUE, DIFFERENCE
	URBAN UPBRINGING N = 240	RURAL UPBRINGING N = 122	
Training			.015*
• Rural electives during medical school	7.5	4.9	
• Rural training during residency	11.3	4.1	
• Total training	18.8	9.0	
Rural exposure			< .0001*
• Grew up or spent time in a rural area before university	4.2	27.1	
Financial			.35
• Financial incentives for rural practice	4.6	3.3	
• Discount loans or bursaries during medical training in return for future practice in rural areas	2.9	1.6	
• Total financial	7.5	4.9	
Other			.045
• Proximity to family in rural areas	3.3	6.6	
• Spouse or partner interested in rural lifestyle	5.8	1.6	
• Government-sponsored recruitment fair	0	0	
• Recruitment by specific communities	3.3	0.8	
• Enjoy the challenge of rural medicine	24.2	23.8	
• Enjoy a rural lifestyle	18.3	14.8	
• Enjoy teaching in a rural setting	0	0	
• Enjoy working with rural patients	2.5	4.1	
• Want to practise where need is greatest	3.3	0	
• Other	8.8	7.4	
• Total other	69.5	59.0	

*Significant to $P < .05$ using modified Bonferroni adjustment for multiple comparisons. P value for overall chi-square comparison was $< .0001$.

between the two types of physicians with respect to other factors.

DISCUSSION

This study suggests that it is indeed possible to entice individuals who grew up in urban areas into rural practice. Two thirds of rural physicians who responded did not come from rural backgrounds. This finding has been noted previously in Australia,¹¹ and our study now confirms that a similar pattern exists in Canada. Those with an urban upbringing appear to be attracted to rural medicine for a variety of reasons, including community recruitment, challenge, a desire to serve society, and exposure during residency training.

This study also sheds new light on the timing of decisions about rural practice. Physicians raised in rural areas have greater interest in rural medicine before medical school than physicians raised in urban areas. Interest in rural practice gradually increases as training progresses, especially among physicians from urban backgrounds. One third of these physicians had little or no interest in rural medicine before medical school. Only 9% had little or no interest by the end of medical school, and only 2.5% by the end of postgraduate training. This finding underscores the fact that medical school and postgraduate training offer important opportunities for enticing physicians raised in urban areas into rural practice.

Those raised in urban areas appear to be more sensitive to rural training than those raised in rural areas. They rate exposure to rural medicine through electives and rotations as having greater influence on their decision to choose rural practice. Among these physicians, rural training might offer more than just the clinical skills needed to survive in a rural environment. It might also offer exposure to other positive aspects of the rural experience, such as the challenge of rural practice and a rural lifestyle. These factors were rated highly influential by physicians raised in urban areas. Without exposure to rural settings, physicians raised in urban areas would have difficulty appreciating these aspects of rural practice.

Our findings do not contradict previous studies that report that those who grew up in rural areas are more likely to enter rural practice. The reality, however, is that the number of rural students applying to and getting into medical school remains small. According to one study, while rural residents account for more than 20% of the Canadian population, only slightly more than 10% of medical students are of rural origin.¹⁹ Although policies that give rural students preferential access to medical training have merit, training programs should also consider the fact that students from urban backgrounds will be an important source of rural physicians.

Limitations

First, there is the potential for respondent bias. Baseline characteristics for respondents and nonrespondents were, however, reasonably similar. Second, there is a possibility of recall bias in responses to questions about the timing of interest in rural medicine and the effect of various factors on choice of rural medicine. This, however, is mitigated to some extent by restricting the sample to more recent graduates. Third, we examined only one aspect of rural upbringing: the high school years. This narrow definition was used because of space limitations on the survey. One Australian study confirms, however, that location of primary and secondary schooling both predict rural practice.¹¹

Conclusion

Other studies suggest that physicians with a rural upbringing are more likely to practise rural medicine, and policy makers might still wish to target students raised in rural areas as candidates for rural medicine. Physicians with an urban upbringing, however, remain the main source of human resources for rural communities, where they account for two thirds of new physicians. Rural education during medical training has a significantly stronger influence on physicians raised in urban areas than on physicians raised in rural areas. Undergraduate and postgraduate training periods, therefore, provide an important

opportunity for recruiting physicians raised in urban areas to rural practice. ❁

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Contributors

Dr Chan had primary responsibility for study concept and design, data analysis and interpretation, and drafting the manuscript. Ms Degani assisted with study design, in particular survey design; conducted the data analysis; and revised the manuscript. Drs Crichton, Pong, Rourke, Goertzen, and McCready assisted with study design, interpretation of results, and revision of the manuscript. All authors approved the final version of the manuscript.

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