Canadian rural family medicine training programs

Growth and variation in recruitment

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ABSTRACT

OBJECTIVE To document the proliferation of rural family medicine residency programs and to note differences in design as they affect rural recruitment.

DESIGN Descriptive study using semistructured telephone interviews.

SETTING All family medicine residency programs in Canada in 2002.

PARTICIPANTS Directors of Canadian family medicine residency programs.

MAIN OUTCOME MEASURES Number of rural training programs and positions; months of rural exposure, degree of remoteness, and specialist support of rural communities within rural training programs.

RESULTS The number of rural training programs rose from one in 1973 to 12 in 2002. Most medical schools now offer dedicated rural training streams. From 1989 to 2002, the number of rural residency positions quadrupled from 36 to 144; large jumps in capacity occurred from 1989 to 1991 and then from 1999 to 2001. Rural positions now represent 20% of all family medicine residency positions. Among rural programs, minimum rural exposure ranged from 4 to 12 months, and the median distance between rural training communities and referral sites ranged from 50 to 440 km (median 187 km). Rotations in communities with no hospital were mandatory in five of 12 rural programs, optional in five, and unavailable in two. The proportion of training communities used by rural programs that had family physicians only (ie, no immediate specialty backup) ranged from 0 to 78% (mean 44%). Most training communities (78%) used by rural programs had fewer than 10 000 residents. Four of 12 rural programs offered various specialty medicine rotations in small communities.

CONCLUSION Rural residency programs have proliferated in Canada. The percentage of residency positions that are rural now equals the proportion of the general population in Canada living in rural areas. National guidelines for rural programs recommend at least 6 months of rural rotations and at least some training in communities without hospitals. Major variations among programs exist, and most program designs differ from designs recommended in national guidelines in at least one aspect.

EDITOR'S KEY POINTS

- Rural residency programs in Canada have proliferated in recent years. These programs are important in recruiting physicians to serve remote regions.
- Twelve rural training programs exist; in 2002, 144 positions in rural medicine represented 20% of all family medicine residency positions.
- Content of these programs varies, and most programs do not conform entirely to the recommendations of the national working group for standards in postgraduate rural medical education

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Rural communities have long been underserviced relative to urban centres. Communities with fewer than 10 000 residents have 20% of Canada's population[1] but only 11% of its physicians.[2] To date, most incentives to reduce this maldistribution have been financial, and they have had limited effect. Incentive grants or loans with return-of-service obligations yielded some improvement in physician distribution when first introduced,[3,4] but have not eliminated urban-rural disparities.[5]

Recent attention has shifted to medical education as a means of rural recruitment. Many undergraduate programs now offer rural medicine rotations. At the postgraduate level, designated rural family medicine residency programs have been established across Canada[6] and are formal options in the Canadian Resident Matching Service (CaRMS).

Although interest in rural medical education is growing, questions remain about what constitutes a rural-focused training program. A consensus panel report in 1999, sponsored by the College of Family Physicians of Canada (CFPC), recommended standards for rural medical education,[7,8] such as a minimum 6 months of postgraduate rural exposure (**Table 1**). To date, the extent to which these recommendations have been followed has not been documented. Further, programs have had varying success in placing their graduates into rural practice,[9] which could be related to differences in curriculums.

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Table 1. Selected recommendations from the 1999 report of the Working Group on Postgraduate Education for Rural Family Practice[7]

All family practice residency programs should:
• provide at least 8 weeks of rural training
• offer substantial rural electives in family medicine and other disciplines
Rural family practice residency programs should:
• have at least 6 months of rural training
• include rural rotations in both years of a residency
• have at least 4 months of rural training in one rural site
• offer first-hand experience in providing clinical services within communities without hospitals
• be recognizable to medical students upon application to the program and identify trainees upon entrance
• have educational content based on the clinical realities of rural practitioners
Rural program faculty should:
• be involved in program development and evaluation
• receive university faculty appointments and appropriate funding
• have access to library services, Internet, and other long-distance telecommunication technologies

This study describes rural family medicine residency programs in Canada and variations in program design. It also examines the degree of rural exposure in residency programs without a rural stream or focus. The study serves as background information for a larger study on how differences in program design could influence rural recruitment, retention, and sense of preparedness for rural practice. The information gathered here could also be useful to program directors interested in how their peers design other programs.

METHODS

We conducted semistructured telephone interviews with the directors of all family medicine residency training programs in Canada operating in 2002. Directors were asked if they had a program, stream, or overall mission dedicated to training physicians for rural practice, or if their program was labeled as rural in the CaRMS match. For programs without a dedicated rural stream, information was collected on the amount of rural training available in the program. For dedicated rural programs, we asked more detailed questions based on the 1999 CFPC report's recommendations for rural medical education.

Questions dealt with the location and remoteness of rural training communities; the amount of time spent at these sites; the level of involvement of rural physicians in designing the curriculum and leading the program; and educational resources available in rural training communities.

The total number of designated rural family medicine training positions in Canada since 1973 was calculated, based on the number of positions offered annually in each program since its establishment. The minimum time spent by all program residents in rural communities was identified, as was the maximum time available through optional rural rotations.

Many definitions of "rural" exist in Canada. Rather than imposing one definition, we allowed programs to self-report rural communities and then assessed how rural the training sites were. For each site, we calculated the distance to the nearest tertiary referral centre and identified which sites had under 10 000 population, which had no local hospital, and which had family physicians only (rather than family physicians with specialists on site). Communities with family physicians only were identified from a list prepared by special request from the Canadian Institute for Health Information, based on 2001 data from the Southam Medical Database.

Interview responses were supplemented with material from CaRMS and program websites. This information was sent back to interviewees for verification, and corrections were made as needed. Data were current as of the 2002 CaRMS match.

RESULTS

Proliferation of training programs and positions

The number of rural programs in Canada rose from one in 1973 to 12 in 2002 (**Figure 1**). Memorial University of Newfoundland and Queen's University established family medicine programs in 1973 and 1975, respectively. Though not officially labeled rural, these programs have had an explicit goal of training physicians for rural practice since their inception, and therefore were deemed rural by our study definition.

In 1982, the University of British Columbia established the first Canadian family medicine program to be labeled as rural.[6] As these and other universities developed and expanded their programs, the number of rural family medicine residency positions offered in Canada quadrupled from 36 in 1989 to 144 in 2003, with large jumps in capacity occurring from 1989 to 1991 and then from 1999 to 2001. By 2002, rural residency positions accounted for 20% of 712 Canadian positions.

Rural aspects of training sites

Among rural training programs, the median distance from training communities to the nearest tertiary referral centre ranged from 50 to 440 km (**Table 2**). Median distances between training communities and nearest tertiary centres, in non-rural programs, were similar to those of rural programs overall (mean 182 vs 187 km).

Experience during family medicine residency in communities with no local hospital was recommended by the CFPC working group in 1999.[7] Such exposure is mandatory in five of the 12 rural programs, optional in five, and unavailable in two (**Table 2**). In most non-rural programs, experience in communities with no local hospital was optional.

The proportion of training communities with only family physicians ranged from 0 to 78% in rural, and 18% to 38% in non-rural programs (mean proportions 44% and 29%, respectively). Most training communities had fewer than 10 000 residents in both rural and non-rural programs (mean proportion 78% and 74%, respectively; **Figure 2**). Four of 12 rural programs and two non-rural programs offered various specialty medicine rotations in small communities (**Table 3**).

Duration of rural exposure

Residents in rural programs spent a minimum of 4 to 12 months and a maximum of 6 to 20 months training in rural communities. Of the 12 rural programs, two have fewer than the 6 months'

Figure 1. Canadian rural family medicine 1973-2002: *A) Residency programs and B) Residency positions*

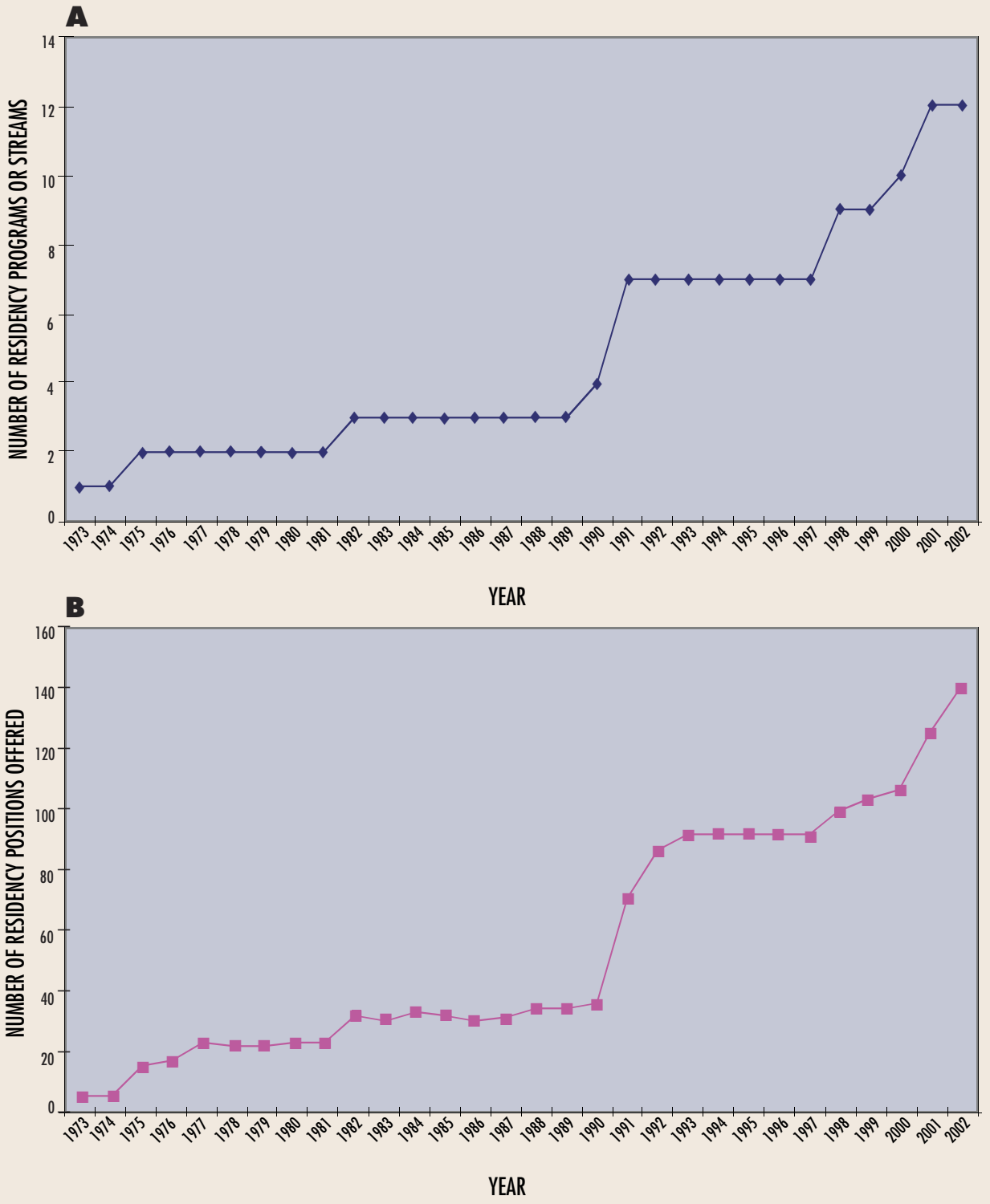


Table 2. Characteristics of rural training communities in Canadian family medicine residency programs

INSTITUTION	TRAINING IN COMMUNITIES WITHOUT AN ACTIVE HOSPITAL			MEDIAN DISTANCE BETWEEN TRAINING SITES AND TERTIARY REFERRAL CENTRE (KM)	RURAL TRAINING SITES USED BY PROGRAM (N)
	MANDATORY	OPTIONAL	UNAVAILABLE		
DESIGNATED RURAL FAMILY MEDICINE PROGRAMS OR STREAMS					
University of British Columbia (Rural)			X	360	13
University of Calgary (Rural)	X			100	14
University of Alberta (Rural)	X			200	18
University of Saskatchewan (Rural)		X		180	5
University of Manitoba (Rural)	X			300	4
University of Western Ontario (Rural)	X			50	4
McMaster University (Rural)			X	75	3
McMaster University (Family Medicine North, Thunder Bay)		X		220	12
University of Toronto (Rural)		X		75	3
Queen's University	X			100	9
University of Ottawa (Northeastern Ontario Family Medicine, Sudbury)		X		175	23
Memorial University of Newfoundland		X		440	16
INSTITUTIONS WITHOUT A DESIGNATED RURAL PROGRAM OR STREAM					
University of Montreal			X	316	7
University of Sherbrooke			X	380	7
Laval University		X		250	16
McGill University		X		110	11
Dalhousie University (Sydney)		X		100	26
Dalhousie University (Fredericton)		X		100	26
Dalhousie University (Moncton)		X		100	26
Dalhousie University (Saint John)		X		100	26

mandatory exposure recommended by the CFPC working group.[7] Flexibility in rural training also differed; for example, University of Toronto rural residents spent exactly 50% of their residency in rural areas, while Queen's University residents could spend from 16% to 83% (**Figure 3**).

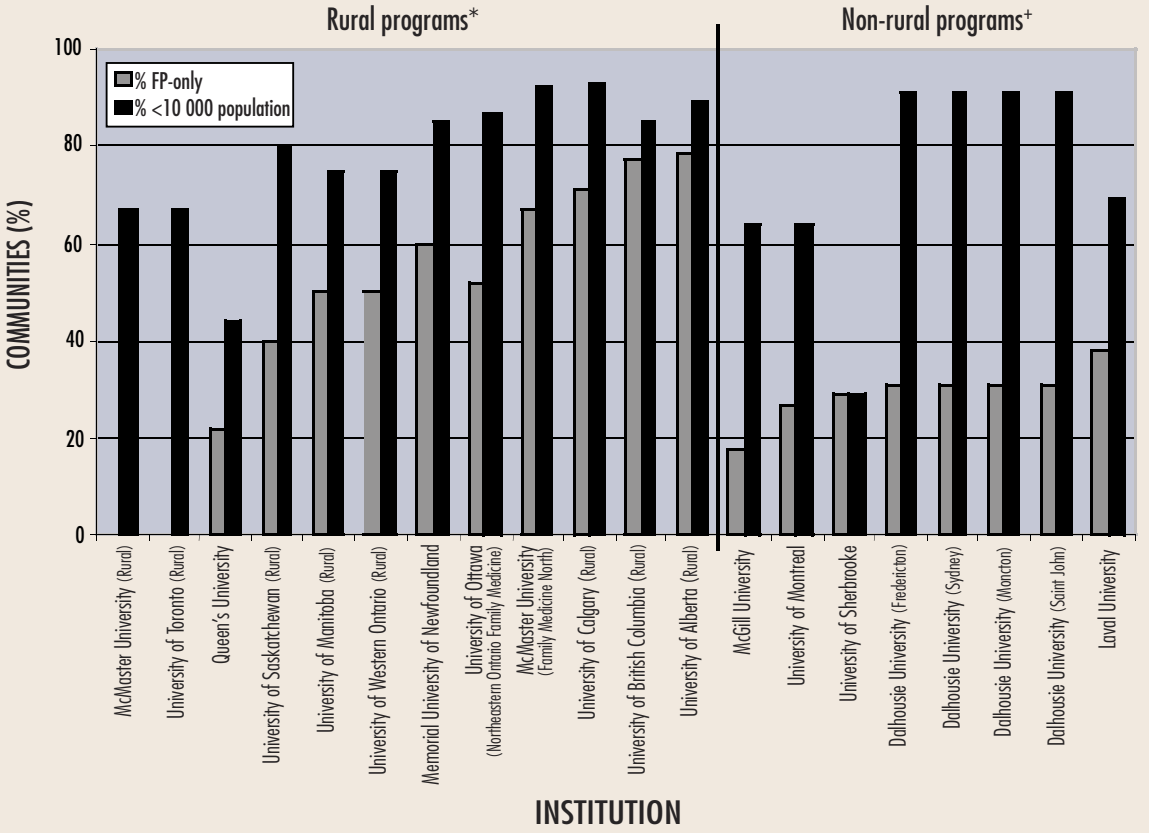
Non-rural programs had mandatory rural rotations of 2 to 4 months. Fewer opportunities were offered for additional rural training, except at Laval University, where residents can do all their training in rural settings (with specialty rotations in smaller centres; **Figure 3**).

All programs had mandatory rotations in a single rural community, to provide experience with continuity of patient care. A minimum duration of at least 4 months was recommended by the CFPC working group[7] and was found in nine of 12 programs. Time spent in a single community ranged from 2 to 12 months in the rural programs, and 2 to 3 months in the non-rural programs.

Differences in program management

Many rural programs had guidelines for selecting residents most likely to enter rural practice. First Nations' ancestry; exposure to rural life; references from rural physicians; interest in outdoor activities; willingness to travel; and a desire to practise in the same area as the program were considered assets by various programs, but in no programs were they mandatory.

Figure 2. Rural training communities



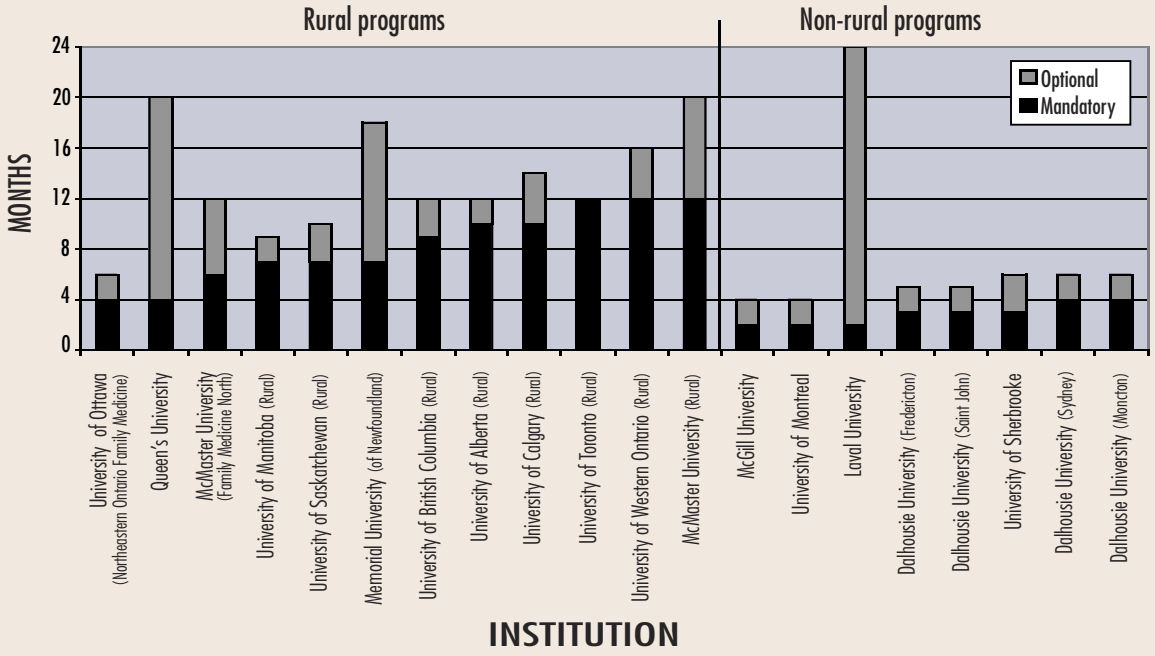
* For institutions with designated rural programs, only information about the rural program is presented.
\+ For institutions without designated rural programs, information about the whole program is presented.

Table 3. Availability of specialty training in small community hospitals

PROGRAM	INTERNAL MEDICINE	GENERAL SURGERY	PEDIATRICS	PSYCHIATRY	OBSTETRICS AND GYNECOLOGY	EMERGENCY MEDICINE	OTHER
DESIGNATED RURAL FAMILY MEDICINE PROGRAMS OR STREAMS							
McMaster University (Family Medicine North)		X	X				
McMaster University (Rural)	X				X	X*	X
Memorial University of Newfoundland	X	X	X		X		X
University of Toronto (Rural)	X	X	X	X	X	X	X
Queen's University	X	X	X	X	X	X	X
INSTITUTIONS OPERATING NON-RURAL PROGRAMS							
University of Sherbrooke	X						
Laval University	X	X	X	X	X	X	X

**Rural emergency department shifts are offered along with urban training.*

Figure 3. Time spent in rural training communities: *Rural training includes rural communities for family practice rotations and small community hospitals for specialty rotations.*



A separate committee of rural and regional physicians handled rural program development, leadership, and evaluation at 11 of the 12 rural programs. Formal rural faculty development activities were regularly scheduled within 11 programs, and three programs offered preceptors formal training in teaching skills. Rural physician involvement in the admissions process varied, but included interviewing applicants, developing admission criteria, and reviewing resident applications.

Most preceptors lived and worked year-round in rural communities, though several preceptors at McGill University did both urban practice and rural locums. Some preceptors at University of Western Ontario commuted from the city of London to their rural community practices.

All programs reported that most rural training communities offered accredited continuing medical education activities on-site, either independently to reflect the needs and interests of local physicians or in partnership with the affiliated university's continuing medical education program. Long-distance communication was frequently used for this purpose, such as Dalhousie University's Web-based courses or the province of Alberta's WellNet videoconference network. Residents had on-site access to library references (on-line or hard copy), Internet access, and teleconference services in almost all training communities, and all programs provided videoconferencing links with at least some sites. Some rural programs offered residents access to computer laboratories, while others, such as the Saskatchewan and Calgary rural programs, provided laptop computers and personal digital assistants (Saskatchewan).

DISCUSSION

Canada's capacity to offer rural medical education to its family physicians in training has expanded dramatically over the past 10 years, particularly from 1997 to 2002. Most medical schools now offer dedicated rural training streams. The proportion

of total family medicine residency positions that have a rural focus now equals the proportion of the Canadian population living in rural areas. Even schools without formal rural programs have mandatory exposure to rural medicine. At Laval University, residents can even spend the entire training period in rural areas or small hospitals.

Interest in rural training in Canada began three decades ago just as rural training programs in other countries became established. Examples include the Physician Shortage Area Program (PSAP) of Jefferson Medical College in Philadelphia, Pa, in 1978 and the Washington, Wyoming, Alaska, Montana, and Idaho (WWAMI) program at the University of Washington School of Medicine in 1970.[10] In Australia, designated rural family medicine training has existed since the 1970s and 1980s,[11,12] and in 1992, the Royal Australian College of General Practitioners created a Faculty of Rural Medicine to administer a national postgraduate training program for rural medicine.

Rural medical education is thought to have numerous benefits. It familiarizes residents with the actual working conditions of rural physicians.[13] It exposes residents to communities where they might wish to practise in the future. It allows residents to develop social networks in rural settings, and it can provide important role models for rural medicine.[14] Definitive evidence about the effectiveness of rural medical education is difficult to establish, because randomized controlled studies of such interventions are unfeasible. Nonetheless, many cohort studies demonstrate a positive correlation between rural training and rural recruitment and retention,[15-18] and other studies show that postgraduate trainees tend to practise near where they trained.[19,20]

Although there is broad support for rural medical education, the degree of rural exposure varies considerably among programs in time spent in rural areas and opportunities to work in communities with no hospital or no local specialists. The recommendations of the CFPC's 1999 working group for standards in postgraduate rural medical education[7] have not yet been implemented uniformly across Canada. Only three programs currently incorporate all this group's recommendations in their mandatory curriculum. Differing approaches could reflect the tension between the need to train physicians to work with limited backup and the need for tertiary centres to provide intense exposure to diverse diseases. Deviation from the working group's guidelines could be because these guidelines are based on consensus opinion rather than hard evidence.

Almost all programs had some formal mechanism to solicit input from rural physicians into program management and design. Such input could ensure programs meet the practical needs of the communities they serve. Many family practice programs used selection criteria for their programs, such as belonging to an underserviced ethnic or minority group, being raised in a rural area, and exposure to rural experiences during undergraduate medical education. Such policies are consistent with the best evidence on which physicians are most likely to practise rural medicine.[21-24]

This study has several strengths and limitations. The first strength is that it includes all family medicine programs in Canada. Second, respondents were given opportunities to verify the accuracy of data. The limitation is that we collected data on the numbers of family medicine residency positions offered, which could vary from the actual positions filled. This discrepancy has been particularly large in recent years.[25] Further, there is the potential for recall bias, especially in the older programs.

CONCLUSION

Rural residency programs have proliferated in Canada. The percentage of residency positions that are rural now equals the proportion of the population in rural areas. Major variations among programs exist, and most program designs differ from designs recommended in national guidelines.

Future research should assess whether differences in program design influence physician recruitment, retention, and preparedness for rural practice. Another hypothesis to explore is whether the different approaches to rural training could actually be beneficial, given the diversity of Canada's rural communities.

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Contributors

Ms Krupa *helped to develop the research question and to design the study, identified participants, collected and analyzed the data, and cowrote the manuscript.* **Dr Chan** *had lead responsibility for securing grant funding, for developing the research question, and for designing the study, and cowrote the manuscript.*

Competing interests

None declared

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