TITLE: Recruiting doctors from and for underserved groups: Does New Brunswick's initiative to recruit doctors for its linguistic minority help rural communities?

RUNNING TITLE: Recruiting doctors from and for underserved groups

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ABSTRACT

OBJECTIVES: Within health care, there are underserved groups such as New Brunswick's French-speaking minority, which also mostly lives in rural communities. A physician shortage potentially prevents this population from accessing health promotion and clinical prevention services. This study analyzes whether francophone doctors with rural backgrounds are more likely than doctors from urban regions to set up practice in rural communities of the province.

METHODS: A questionnaire was sent to 390 New Brunswick francophone physicians admitted in medicine between 1973 and 2000. It collected information on geographic origin and history of medical practice. Multivariate logistic regressions were used to identify whether a rural background is associated with the likelihood of ever and currently practicing in rural communities. We used the General Practice Rurality Index-simplified to quantify the rurality level of communities.

RESULTS: In total, 263 (67%) physicians participated. A rural background was positively associated with the establishment of a first medical practice in a rural community. This relationship was only significant among family physicians. There was no statistically significant relationship between rurality of community of origin and rurality of current community of practice among either of family or specialty physicians.

CONCLUSION: Although francophone doctors with a rural background were more likely than their urban counterparts to set up their first practice in a rural community, this effect was not sustained. This raises questions as to why they leave rural communities and highlights the importance of measures to retain doctors as a way to promote public health for underserved rural groups.

KEY WORDS:

Medically underserved area, Minority groups, Rural health services, Personnel recruitment, professional practice location,

Access to quality health care may be limited for certain groups. Rural communities (1) and language minorities (2,3) are two groups likely to be underserved. In New Brunswick, most of the population (roughly 70%) can be considered rural (4). New Brunswick also holds a French-speaking minority population which traditionally has settled in communities in the predominantly rural North-East and North-West parts of the Province. The francophone minority is generally poorer and older than the Province's English majority (5). New Brunswick's French minority has thus been identified as an underserved group lacking sufficient access to services in its own language (6). In particular, a physician shortage would prevent this population from benefiting from optimal community and individual-level health promotion, prevention, and clinical services.

To redress the imbalance in health care services to its francophone, mostly rural population, the Government of New Brunswick launched several initiatives over a thirty-year period: securing more reserved seats for its students in three French medical schools in neighbouring Quebec (since 1967), offering a clinical teaching program (since 1981) and a complete 24-month family medicine residency in the Province's francophone communities (since 1999). The goal was to recruit students among an underserved population (French-language minority) and to offer most, and eventually all of their medical training not only in their home province, but in their communities. In 2006, a distributed medical education program, offered in partnership with Université de Sherbrooke, gave New Brunswick francophone students the possibility of following their entire medical training at home. These initiatives are aligned with interventions thought to help better address the medical needs of underserved groups. The existing array of interventions includes selection, education, incentives and support (8). Targeting students with a rural background is a World Health Organization recommendation to increase access to health care in rural areas (9). It is

generally accepted that growing up in a rural community increases the likelihood of choosing to practice medicine in rural areas (10,11). Similarly, being a member of an underserved community or group increases the likelihood of setting up practice in an underserved area or for an underserved group (12,13).

This article reports on part of the data collected to evaluate New Brunswick's initiatives. Specifically, we investigated whether background (rural, urban) of New Brunswick francophone doctors was related to the location of their first and current medical practice.

METHODS

Study population

This study targeted all 410 students who had been trained under the Quebec-New Brunswick agreement for training of French language minority physicians between 1973 and 2000. Graduates of the program were contacted between October 2007 and July 2008. Initial contact was made by letter to explain the study. This was followed by phone calls to offer participants the option of answering survey questions by phone or in writing (either by returning the questionnaire in a pre-addressed and pre-stamped envelope or by fax). Second and third phone calls were made when necessary. A paper questionnaire was sent to those who had not responded after phone calls. Two study nurses were trained for standardized administration of the questionnaire. Ethical approval was granted by the regional health authority's Research Ethics Board.

Instrument

The questionnaire was partly based on two surveys: the 2004 National Physicians Survey among doctors from CFPC/CMA/Royal College of Physicians and Surgeons of Canada and

the 2004 Memorial University of Newfoundland Faculty of Medicine survey of past graduates (14, 15). The questionnaire was reviewed by a statistician and methodologist for content and face validity. It was also pilot tested by four local practicing physicians to assure clarity. The questionnaire also included a question on geographic origin ("Where were you living upon high school completion?") Locations of first and current medical practices were measured with the items "Where did you first practice after residency?" and "Where do you currently practice?"

Variables

A rurality index was assigned to all New Brunswick geographic origin, first and current practice locations using the General Practice Rurality Index-simplified (GPRI-S), which takes into account realities of medical practices and population (17,18). It includes three weighted variables: remoteness from a basic referral centre, remoteness from an advanced referral centre, and population size. Communities get a score from 0 to 100, with higher scores representing more rural communities.

Other covariates. Data on covariates including sex, number of years of medical practice, and university attended were also drawn from the questionnaire.

Data analyses

Univariate and multivariate linear regression models were developed to test the hypothesis that a geographic origin that is more rural is associated with more rural locations of first and current medical practice among Francophone physicians from New Brunswick. All analyses were conducted using SAS statistical package version 9.1 (SAS Institute Inc., Cary, NC).

RESULTS

Of the 410 potential participants identified, 20 were not eligible because they started medical training before 1973 or after 2000. Contact information could not be found for 57 participants, no contact could be made with 54 other physicians and 15 refused to participate. Of the questionnaires obtained (263), 59 did not provide information for all three community-level variables and 54 practiced medicine outside of New Brunswick for a final sample of 151 participants. Compared to physicians who participated in this study, the non-respondents had a similar proportion of women (53%) and a similar median year of admission (1991 vs 1990). Approximately half of the non-respondents for whom we had contact information had an address in New Brunswick (49%) and most of them trained in speciality fields other than family medicine (56%). About two thirds of participants were family physicians and one third had training in a speciality (Table 1). The mean GPRI-S scores for community of origin (range: 5 to 57) were similar for family and speciality physicians. On average, the first and current community of medical practice were situated in more rural areas for family physicians than speciality physicians.

Results indicate that originating from a more rural community is associated with establishing a first medical practice in a community that is more rural (Table 2). This association remained significant following adjustments for number of years in practice, sex, and university attended. However, the positive relationship between rurality of community of origin and rurality of first community of practice was only significant among family physicians. Although the relationship between rurality of community of origin and rurality of current community of practice was also positive, it did not reach statistically significance among family or speciality physicians (Table 3).

DISCUSSION

Results from this study suggest that francophone doctors with a rural background are more likely than their urban counterparts to establish a first practice in a rural community. However, they are not more or less likely than other francophone doctors to continue practicing in these areas. These results remained significant following adjustments for known determinants of recruitment, including number of years in practice and sex. In terms of recruitment, our findings are consistent with results from other studies which considered the effect of background on choice of practice location (19). Training students from an underserved group, in this case language minority students with a rural background, facilitates their recruitment to provide care for this group.

However, results also reveal this effect was not sustained. Students with an urban background were as likely as students with a rural background to currently practice in a rural community. It raises questions as to why rural-born practitioners may leave rural communities. The decision to practice in rural locations is a complex phenomenon shaped as much by nature (rural background) as by nurture (programs that encourage and maintain rural affinity) (28, Orzanco et al 2011). To that point, analysis of another set of our survey data revealed that exposing medical students to practice in New Brunswick during their medical training considerably increased the odds that they will be recruited and later retained to practice medicine in that province (Landry et al. 2011- #40 dans la liste de ref). Although rurality was never taken into consideration during the admission process of students in this study, our results suggest admission criteria for medical programs may not need to include information on rural background of candidates. It may be more important to select for factors associated with an interest in rural medicine, such as desire for close relationship with patient and staff, variety, autonomy and opportunity of practice to make a difference (29,30).

Studies have examined the issue of retention and found the decision to stay or leave a rural practice is a delicate balance often tipped by an acute factor. Personal (20,21), professional (20, 21,22) and community (22,23) factors play important roles. An Australian study (24) suggest that in most, if not all cases, professional satisfaction was the main reason for doctors' decision to stay or leave, while other studies (25,26) found professional satisfaction is not strongly related to professionals' decision. Those who had worked through professional difficulties and felt they were making a contribution stayed whereas those who were unable to overcome problems became dispirited and left. A physician's choice to practice in a rural community should not be taken for granted. Efforts should focus on emphasizing attractive features of the practice and the community while minimizing sources of stress: workload, isolation, lack of relief or support and no professional/personal boundaries (22,26,27). Accordingly, a developmental model of rural physician recruitment and retention includes self-actualization as a key pathway to successful and fulfilling rural practice (30). As defined by Maslow, it refers to the full use and exploitation of talents, capabilities, potentialities. Therefore, efforts could also be directed towards the professional development and contribution of rural physicians.

A challenging aspect when studying issues related to rurality is to appropriately define rural. Studies often use definitions centred on population numbers, but these can be problematic. For example, one of Statistic Canada's most commonly used definition of rurality, the Metropolitan Area and Census Agglomeration Influenced Zones (MIZ), categorizes New Brunswick towns perceived by most as "more rural than urban" (e.g. Miramichi, Campbellton) as metropolitan areas to the same degree as large metropolitan areas of Canada such as Toronto and Montreal. Such definitions do not account for the practice environment of doctors which has been shown to be a factor in recruitment and retention

(Rogers et al., 2010; Hancock et al., 2009). It has been proposed that rurality is essentially a social representation (Shucksmith 1994). In other words, peoples' perception of rurality will influence their expectations and their demands. Besides using the General GPRI-S, which fits with the notion of social representations of rurality, we conducted sensitivity analyses using the MIZ definition of rurality. These analyses lead to the same results as those presented herein. New Brunswick may be a particular case. Depending on definitions, most, or a large portion of it is rural. Yet, it is a small province with well-developed roadways which facilitates movement within it. This could explain why physicians, whether with urban or rural backgrounds, were equally likely to currently practice in rural settings. Differences between milieus might not be important enough to matter.

One limitation of this analysis includes the cross-sectional design of the study which limits the assessment of causality. In addition, problems of recall might be responsible for a reduction of estimated effects. The relatively small sample size also reduced our chances of finding statistically significant results. With regards to the generalisability of results, the sample obtained for this study likely is representative of the population of interest. Half of non-respondents did not participate because we could not find contact information for them; of these 13% potential participants, many might not have completed their medical education given estimates for medical school drop-out rates typically range from 7 to 15%. (Arulampalam et al., 2004; Ward et al., 2004)

In conclusion, results from this study indicate that francophone doctors with a rural background are more likely than their urban counterparts to establish a first practice in a rural community, but that they are not more or less likely to continue practicing in these areas. This suggests that accounting for the rural background of candidates during medical

program admission process is unlikely to secure access to health services, including health promotion and clinical prevention services, in underserved rural areas. Measures to retain doctors need to be emphasized.

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Arulampalam et al., 2004; Ward et al., 2004

Table 1. Characteristics of study participants

	All participants (n = 151 [a])	Family physicians (n = 109)	Speciality physicians (n = 45)
	mean (SD) *or* N [%]	mean (SD) *or* N [%]	mean (SD) *or* N [%]
Community of origin, GPRI	38.7 (13.7)	39.0 (13.7)	36.6 (13.7)
First community of practice, GPRI	29.3 (16.7)	32.1 (16.2)	22.0 (16.0)
Current community of practice, GPRI	28.0 (16.4)	30.6 (16.1)	21.0 (15.5)
Time in practice, years	9.4 (6.8)	9.9 (7.2)	8.4 (6.4)
Sex, female	88 [58%]	70 [64%]	20 [44%]
University attended			
Université de Sherbrooke	59 [39%]	45 [41%]	14 [31%]
Université Laval	59 [39%]	40 [37%]	21 [47%]
Université de Montréal	33 [22%]	24 [22%]	10 [31%]

SD, standard deviation; N, number; GPRI, General Practice Rurality Index simplified score.

[a] Three participants reported having conducted postdoctoral training in family medicine and in speciality medicine.

Table 2. Beta coefficients[a] and 95% confidence intervals estimated in linear regressions for difference in GPRI for the community of first practice per unit difference in the GPRI of the community of origin

	All participants		Family physicians		Speciality physicians	
	First community of practice (GPRI)		First community of practice (GPRI)		First community of practice (GPRI)	
	Crude β (95% CI)	Adjusted β (95% CI)	Crude β (95% CI)	Adjusted β (95% CI)	Crude β (95% CI)	Adjusted β (95% CI)
Community of origin, GPRI	**0.28 (.09, .47)**	**0.31 (.11, .50)**	**0.34 (.11, .55)**	**0.38 (.16, .60)**	0.08(-.28, .44)	0.13 (-.28, .55)
Time in practice, years	0.06 (-.34, .46)	0.07 (-.40, .50)	-0.04 (-.48, .39)	-0.21 (-.68, .26)	-0.14 (-.90, .62)	-0.04 (-1.0, .90)
Sex, female vs male	-2.2 (-7.7, 3.2)	-3.1 (-8.8, 2.5)	-4.9 (-11.3, 1.5)	**-7.5 (-14.1, -.83)**	-1.0 (-10.8, 8.7)	-2.3 (-13.0, 8.4)
University attended						
Université de Sherbrooke	Reference	Reference	Reference	Reference	Reference	Reference
Université Laval	1.7 (-4.4, 7.8)	0.36 (-6.2, 6.9)	2.7 (-4.3, 9.7)	3.2(-4.1, 10.6)	1.0 (-10.1, 12.2)	0.52 (-12.9, 14.0)
Université de Montréal	3.2 (-4.0, 10.4)	2.0 (-5.2, 9.2)	2.5 (-5.7, 10.7)	0.46(-7.6, 8.6)	8.6 (-4.8, 21.9)	9.0 (-4.8, 22.9)

GPRI, General Practice Rurality Index simplified score; β, regression coefficient; CI, confidence interval;

[a] The regression coefficient represents the estimated difference in GPRI for the community of first practice that is associated with one additional unit of the GPRI for the community of origin.

Table 3. Beta coefficients[a] and 95% confidence intervals estimated in linear regressions for difference in GPRI for the current community of practice per unit difference in the GPRI of the community of origin

	All participants		Family physicians		Speciality physicians	
	Current community of practice (GPRI)		Current community of practice (GPRI)		Current community of practice (GPRI)	
	Crude β (95% CI)	Adjusted β (95% CI)	Crude β (95% CI)	Adjusted β (95% CI)	Crude β (95% CI)	Adjusted β (95% CI)
Community of origin, GPRI	0.12 (-.07, .31)	0.15 (-.05, .35)	0.10 (-.12, .33)	0.15 (-.08, 0.38)	0.10 (-.24, .45)	0.16 (-.24, .57)
Time in practice, years	0.07 (-.32, .47)	0.08 (-.36, .53)	-0.05 (-.48, .38)	-0.15 (-.63, .34)	-0.03 (-.77, .71)	0.04 (-.92, 1.0)
Sex, female vs male	-2.0 (-7.4, 3.3)	-2.6 (-8.3, 3.1)	-3.9 (-10.2, 2.4)	-5.8 (-12.7, 1.1)	-2.7 (-12.1, 6.7)	-3.6 (-14.0, 6.9)
University attended						
Université de Sherbrooke	Reference	Reference	Reference	Reference	Reference	Reference
Université Laval	0.2 (-5.8, 6.2)	-0.8 (-7.4, 5.8)	0.85(-6.1, 7.8)	1.28 (-6.3, 8.9)	0.64 (-10.3, 11.6)	-0.54 (-13.7, 12.6)
Université de Montréal	-2.1 (-9.2, 5.0)	-3.1(-10.4, 4.2)	-3.5 (-11.6, 4.6)	-4.7(-13.1, 3.7)	4.6 (-8.5, 17.8)	5.2 (-8.4, 18.7)

GPRI, General Practice Rurality Index simplified score; β, regression coefficient; CI, confidence interval;

[a] The regression coefficient represents the estimated difference in GPRI for the community of first practice that is associated with one additional unit of the GPRI for the community of origin.