Regional and medical school variation in family medicine specialization choice

Canadian medical graduates from 2000 to 2023

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Abstract

Objective To examine how Canadian medical schools contribute to the family physician workforce.

Design Population-based repeated cross-sectional study.

Setting All Canadian medical schools.

Participants All Canadian medical graduates (CMGs) between 2000 and 2023.

Main outcome measures Multivariate Poisson regression models were used to estimate incidence rate ratios (IRRs) of the associations between age, sex, and medical school attended, and entry into family medicine (FM) training. Trends in the proportion of CMGs entering FM postgraduate training were examined by medical school and region using linear regression models to calculate average annual percent changes (AAPCs).

Results Of 55,883 CMGs, 22,849 (40.9%) specialized in FM. Quebec had the highest proportion (44.5%) of graduates specializing in FM. McGill University (31.7%), Queen's University (31.8%), and the University of Toronto (33.0%) had the lowest proportions of graduates specializing in FM. Entry into FM was more likely among females (IRR=1.30, 95% confidence interval [CI] 1.26 to 1.33) and those aged 31 years and older at entrance into FM (IRR=1.47, 95% CI 1.41 to 1.53). After adjusting for age and sex, CMGs from NOSM University, the University of Sherbrooke, and the University of Montréal were most likely to specialize in FM, while graduates from McGill University, the University of Toronto, Queen's University, and the University of Calgary were least likely. Nationally, the proportion of CMGs entering FM increased from 36.2% (2000-2004) to 43.0% (2019-2023) (AAPC=0.36%, 95% CI 0.22% to 0.51%). Several universities saw a significant increase over time in the proportion of graduates entering FM (Laval University, University of Sherbrooke, University of Montréal, McGill University, Western University, the University of Manitoba, and the University of British Columbia) while NOSM University showed a decline in graduates entering FM (AAPC=-1.01%, 95% CI -1.65% to -0.37%). Regionally, growth was highest in Quebec (AAPC=0.52%, 95% CI 0.34% to 0.71%), followed by Ontario (AAPC=0.33%, 95% CI 0.16% to 0.50%), Central-Western Canada (AAPC=0.25%, 95% CI 0.01% to 0.49%), and Eastern Canada (AAPC=0.07%, 95% CI -0.17% to 0.30%).

Conclusion Substantial variation exists in the proportion of CMGs specializing in FM by medical school. These findings may highlight differences by school in the characteristics of medical students, undergraduate medical curriculum, social accountability mandates, and student experiences. Ongoing efforts to understand and address these differences are crucial to strengthening Canada's primary care workforce.

Variations dans le choix de la spécialisation en médecine familiale selon la région et la faculté de médecine

Diplômés en médecine au Canada de 2000 à 2023

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Résumé

Objectif Examiner la façon dont les facultés de médecine canadiennes contribuent aux effectifs de médecins de famille.

Type d'étude Une étude transversale répétée dans la population.

Contexte Toutes les facultés de médecine canadiennes.

Participants Tous les diplômés en médecine au Canada (DMC) entre 2000 et 2023.

Principaux paramètres à l'étude Des modèles de régression logistique multivariée Poisson ont servi à estimer les ratios des taux d'incidence (RTI) des associations entre l'âge, le sexe et la faculté de médecine fréquentée, et l'inscription à la formation en médecine familiale (MF). Les tendances dans les proportions de DMC inscrits à la formation postdoctorale en MF ont été examinées par faculté de médecine et par région en utilisant des modèles de régression linéaire pour calculer les changements annuels moyens en pourcentage (CAMP).

Résultats Au nombre des 55 883 DMC, 22 849 (40,9 %) se sont spécialisés en MF. La proportion la plus élevée (44,5 %) de diplômés se spécialisant en MF se trouvait au Québec. L'Université McGill (31,7 %), l'Université Queen's (31,8 %) et l'Université de Toronto (33,0 %) comptaient les plus faibles proportions de diplômés se spécialisant en MF. L'inscription en MF était plus probable chez les femmes (RTI=1,30, intervalle de confiance [IC] à 95 % de 1,26 à 1,33) et chez les diplômés de 31 ans ou plus au moment de l'entrée en MF (RTI=1,47, IC à 95 % de 1,41 à 1,53). Après rajustement en fonction de l'âge et du sexe, les DMC de l'Université de l'EMNO, de l'Université de Sherbrooke et de l'Université de Montréal étaient plus enclins à se spécialiser en MF, tandis que les diplômés de l'Université McGill, de l'Université de Toronto, de l'Université Queen's et de l'Université de Calgary l'étaient moins. Sur le plan national, la proportion de DMC s'inscrivant en MF s'est accrue pour passer de 36,2 % (2000-2004) à 43,0 % (2019-2023) (CAMP=0,36 %, IC à 95 % de 0,22 à 0,51 %). Plusieurs universités ont vu une hausse significative avec le temps dans la proportion de diplômés inscrits en MF (Université Laval, Université de Sherbrooke, Université de Montréal, Université McGill, Université Western, Université du Manitoba et Université de la Colombie-Britannique), tandis que l'Université de l'EMNO a connu un déclin chez les diplômés entrant en MF (CAMP=-1,01 %, IC à 95 % de -1,65 à -0,37 %). Sur le plan régional, la croissance était la plus élevée au Québec (CAMP=0,52 %, IC à 95 % de 0,34 à 0,71 %), suivi par l'Ontario (CAMP=0,33 %, IC à 95 % de 0,16 à 0,50 %), le Centre et l'Ouest du pays (CAMP=0,25 %, IC à 95 % de 0,01 à 0,49 %), et l'Est canadien (CAMP=0,07 %, IC à 95 % de -0,17 à 0,30 %).

Conclusion Il existe des variations considérables dans la proportion de DMC se spécialisant en MF selon la faculté de médecine. Ces constatations peuvent mettre en évidence les différences selon la faculté dans les caractéristiques des étudiants en médecine, le cursus médical prédoctoral, les mandats en matière de responsabilité sociale et les expériences des étudiants. Des efforts constants pour mieux comprendre et traiter ces différences sont essentiels pour renforcer les effectifs en soins primaires au Canada.

Primary care is an essential component of a well-functioning, cost-effective health care system.[1] As the first point of contact with the health care system for most Canadians, it plays a crucial role in ensuring access to timely and comprehensive primary care.[2,3] With its focus on the patient-physician relationship, whole-person care, and continuity of care, primary care is fundamental to meeting the health care needs of the Canadian population.[4] As such, a strong and sufficient supply of family physicians is essential to high-performing health systems.

A national survey reported the number of Canadians without regular access to a primary care provider increased to more than 6.5 million in 2023 from 4.5 million in 2019.[5,6] Numerous factors contributed to this crisis, including the COVID-19 pandemic, which posed a substantial strain on the health care workforce, with many physicians retiring or leaving practice prematurely.[7,8] This crisis is anticipated to worsen over time, with 1 in 6 family physicians projected to retire in the next 5 years, leaving fewer new graduates to replace them.[9,10] In addition to the declining number of medical graduates ranking family medicine as their first-choice specialty, an increasing proportion of medical graduates matched to family medicine ranked a different specialty as their first choice, rising to 25.0% in 2023 from 15.4% in 2015.[11-13] After the first round of the 2025 residency match, 276 family medicine training positions were unmatched, with 92 positions unfilled after the second iteration of the match.[14] In addition, fewer family physicians are providing comprehensive care, with a 40% increase in family physicians pursuing focused practice, rising to 1 in 5 in 2021 from 1 in 13 in 1993.[15,16]

Several individual factors may impact a medical student's intention to enter family medicine. Factors such as older age, marital status, and having a family member or friend practising family medicine were reported as predictors of students' choices to enter family medicine residency.[17] However, institution-level factors may also influence choice of specialty. Medical school entrance requirements may select candidates who are more or less interested in primary care provision.[18] Medical school experiences, including exposure to mentors who practise comprehensive family medicine, a specific focus on community-based practice included in the curriculum, exposure and emphasis on the value of rural experience, and institutional support for the pursuit of family medicine, were shown to influence choice of family medicine specialty training.[19,20] Medical schools in Canada have a social accountability mandate to address the priority health concerns of the population they serve, such as the widespread shortage of family physicians available to provide primary care.[21]

This study aims to describe the proportion of Canadian medical graduates (CMGs) who specialized in family medicine over time and their distribution across Canadian medical schools.

Methods

Study design and data sources

We conducted a retrospective, repeated cross-sectional study of all CMGs between 2000 and 2023. We used data from the Canadian Post-MD Education Registry (CAPER), the central repository for statistical information on postgraduate medical education in Canada, to capture the proportion of CMGs who specialized in family medicine by undergraduate medical school. CAPER annually collects individual-level demographic, training, and practice data for all postgraduate medical residents and fellows in Canada. Data used for this study include the place of medical school graduation (free-text field citing university name and country of location), trainee age (calculated based on date of birth), trainee sex (male or female), and first-year trainee status in a postgraduate training program in Canada. CAPER data do not include information on gender. As such, all analyses in this study examine sex rather than gender. This study followed the Strengthening the Reporting of Observational Studies in Epidemiology checklist.[22]

Study population

Our population of interest is all CMGs entering the first year of a postgraduate training program in Canada. Medical graduates were included if they received an undergraduate medical degree between 2000 and 2023 and were subsequently registered as a first-year postgraduate trainee in Canada between 2000 and 2024. All trainees in postgraduate medical training on November 1 of each calendar year are included in the data submitted by each of the 17 faculties of medicine to CAPER. Medical graduates were excluded if they had graduated from an undergraduate medical education program internationally. CMGs who pursued postgraduate training in other countries were also excluded.

Exposure

Undergraduate medical school was the primary exposure of interest. All 17 Canadian medical schools were included in the study, including NOSM University (NOSMU), for which data were included from 2009 onward, after its first graduating class. The secondary exposure of interest was the geographic region (province or grouping of provinces where there was ≥1 medical school) in which the undergraduate medical degree was awarded. The medical schools were divided based on region as follows: Eastern (Memorial University of Newfoundland and Dalhousie University), Quebec (Laval University, University of Sherbrooke, University of Montréal, and McGill University), Ontario (University of Ottawa, Queen's University, University of Toronto, McMaster University, Western University, and NOSMU) and Central-Western (University of Manitoba, University of Saskatchewan, University of Alberta, University of Calgary, and University of British Columbia).

Additional study variables included year of medical degree conferral, age, and sex. Age was reported as 1 of 4 age categories (≤26, 27 to 28, 29 to 30, and ≥31 years).

Outcomes

The primary outcome was entrance into a family medicine postgraduate training program in Canada, defined as the field of training identified by standardized codes (10600=family medicine, 10640=family medicine–rural stream). All other specialty codes were defined as postgraduate training in other specialties.

Statistical analyses

We reported descriptive statistics for CMGs entering postgraduate training, stratified by entrance into family medicine or other specialties. We then calculated the proportion of CMGs specializing in family medicine over time, by undergraduate medical school and geographic region, and estimated the relative and absolute change between the end (2019-2023) and beginning of the study period (2000-2004), except for NOSMU, for which the beginning of the study period was 2009-2013. We determined the mean proportion of CMGs specializing in family medicine in 5-year time periods to reduce variation imposed by chance within individual years. CMGs were age-sex standardized to the age and sex distribution of the total CMG population in 2023 using direct standardization.

We fit linear regressions on the proportion of CMGs specializing in family medicine to provide relative effects with accompanying 95% confidence intervals (CIs). We included time as a continuous variable in the model. We interpreted the model results as the average annual percent change (AAPC) in the proportion of CMGs specializing in family medicine. We used Poisson regression models to estimate incidence rate ratios (IRRs) with 95% CIs of the proportion of CMGs specializing in family medicine. We included age, sex, and year in the model. As a sensitivity analysis, we modelled IRRs for the last 5 years (2019-2023) of the study only.

All statistical analyses were performed using R, version 4.4.1.

Ethics approval

This study received approval from the Bruyère Health Research Ethics Board (project ID M16-24-033).

Results

Our study included 55,883 CMGs pursuing postgraduate medical training in Canada over the 23-year study period, of which 22,849 (40.9%) specialized in family medicine (**Table 1**). Quebec had the greatest proportion of CMGs specializing in family medicine (7711 [44.5%]) relative to the other regions. By medical school, at least half of graduates from NOSMU (517 [57.2%]) and University of Montréal (2793 [50.1%]) specialized in family medicine. The medical schools with the lowest proportion of graduates that pursued family medicine were McGill University (1112 [31.7%]), Queen's University (711 [31.8%]), and University of Toronto (1714 [33.0%]). Overall, entry into family medicine training increased with age (37.9% among those ≤26 years vs 51.7% among those ≥31 years), and a higher proportion of female CMGs specialized in family medicine than males (45.5% vs 34.9%) (**Table 1**).

After adjusting for age and sex differences, medical graduates from all Canadian medical schools except Queen's University, University of Toronto, and University of Calgary were more likely to enter family medicine compared to those from McGill University. The largest effects were observed for the University of Sherbrooke (IRR=1.56, 95% CI 1.44 to 1.68), University of Montréal (IRR=1.56, 95% CI 1.45 to 1.67), and NOSMU (IRR=1.54, 95% CI 1.39 to 1.71). In contrast, medical graduates from Queen's University (IRR=0.99, 95% CI 0.90 to 1.09), University of Toronto (IRR=1.03, 95% CI 0.95 to 1.11), and University of Calgary (IRR=1.06, 95% CI 0.97 to 1.15) showed no significant difference in the likelihood of specializing in family medicine compared to McGill University (**Table 2**).

A sensitivity analysis limited to the most recent 5 years (2019-2023) showed similar findings. During this period, medical graduates from Laval University, University of Sherbrooke, University of Montréal, Western University, NOSMU, and University of Manitoba remained significantly more likely to pursue family medicine training compared to those from McGill University. Notably, Queen's University was the only school where medical graduates were significantly less likely to enter family medicine training (IRR=0.80, 95% CI 0.66 to 0.97). No significant differences were observed for medical graduates from the remaining medical schools (Supplemental Table 1, available from **CFPlus***).

Findings by characteristics of CMGs remained consistent after adjusting for age and sex. Female CMGs were significantly more likely than males to specialize in family medicine (IRR=1.30, 95% CI 1.26 to 1.33), and older age was similarly associated with increased likelihood of entry, with CMGs aged 31 years or older being 1.5 times more likely to pursue family medicine training compared to those aged 26 years or younger (IRR=1.47, 95% CI 1.41 to 1.53) (**Table 2**).

Trends over time in CMGs specializing in family medicine

Between the beginning (2000-2004) and end of the study (2019-2023), the relative proportion of CMGs specializing in family medicine in Canada increased by 18.8%,

*__Supplemental Table 1__ is available from **https://www.cfp.ca**. Go to the full text of the article online and click on the **CFPlus** tab.

a significant trend after adjusting for changes in age and sex (AAPC=0.36%, 95% CI 0.22% to 0.51%). The largest relative increase occurred in Quebec (31.2%, AAPC=0.52%, 95% CI 0.34% to 0.71%), followed by Ontario (15.2%, AAPC=0.33%, 95% CI 0.16% to 0.50%). The Central-Western region had a smaller but significant increase (9.8%, AAPC=0.25%, 95% CI 0.01% to 0.49%), while no significant change was observed in the Eastern region (13.2%, AAPC=0.07%, 95% CI -0.17% to 0.30%) (**Table 3**).

Trends over time in CMGs specializing in family medicine by medical school

Over the study period, the largest increases in the proportion of CMGs specializing in family medicine were observed at McGill University (49.6% relative increase, AAPC=0.44%, 95% CI 0.20% to 0.69%) and Western University (44.8%, AAPC=0.63%, 95% CI 0.26% to 1.00%), both of which were statistically significant. Several other schools also exhibited significant upward trends,

Table 1. Characteristics of Canadian medical graduates from 2000 to 2023

CHARACTERISTICS	OVERALL, N (N=55,883)	FAMILY MEDICINE GRADUATES, n (%) n=22,849 (40.9%)	OTHER SPECIALTY GRADUATES, n (%) n=33,034 (59.2%)
Sex			
• Female	31,425	14,302 (45.5)	17,123 (54.5)
• Male	24,458	8547 (34.9)	15,911 (65.1)
Age, y			
• ≤26	31,914	12,104 (37.9)	19,810 (62.1)
• 27-28	12,259	5206 (42.5)	7053 (57.5)
• 29-30	5513	2335 (42.4)	3178 (57.6)
• ≥31	6197	3204 (51.7)	2993 (48.3)
School of graduation			
• Memorial University of Newfoundland	1525	595 (39.0)	930 (61.0)
• Dalhousie University	2329	940 (40.4)	1389 (59.6)
• Laval University	4451	1992 (44.8)	2459 (55.2)
• University of Sherbrooke	3790	1814 (47.9)	1976 (52.1)
• University of Montréal	5578	2793 (50.1)	2785 (49.9)
• McGill University	3508	1112 (31.7)	2396 (68.3)
• University of Ottawa	3314	1429 (43.1)	1885 (56.9)
• Queen's University	2235	711 (31.8)	1524 (68.2)
• University of Toronto	5188	1714 (33.0)	3474 (67.0)
• McMaster University	3979	1700 (42.7)	2279 (57.3)
• Western University	3371	1411 (41.9)	1960 (58.1)
• NOSM University	904	517 (57.2)	387 (42.8)
• University of Manitoba	2283	959 (42.0)	1324 (58.0)
• University of Saskatchewan	1796	669 (37.2)	1127 (62.8)
• University of Alberta	3398	1323 (38.9)	2075 (61.1)
• University of Calgary	3099	1121 (36.2)	1978 (63.8)
• University of British Columbia	5135	2049 (39.9)	3086 (60.1)
Region			
• Central-Western	15,711	6121 (39.0)	9590 (61.0)
• Eastern	3854	1535 (39.8)	2319 (60.2)
• Ontario	18,991	7482 (39.4)	11,509 (60.6)
• Quebec	17,327	7711 (44.5)	9616 (55.5)
Graduation period			
• 2000-2004	7610	2754 (36.2)	4856 (63.8)
• 2005-2009	10,072	3722 (37.0)	6350 (63.0)
• 2010-2014	12,876	5343 (41.5)	7533 (58.5)
• 2015-2019	14,036	6226 (44.4)	7810 (55.6)
• 2020-2023	11,289	4804 (42.6)	6485 (57.4)

including Laval University (AAPC=0.71%, 95% CI 0.38% to 1.03%), the University of Sherbrooke (AAPC=0.67%, 95% CI 0.22% to 1.13%), the University of Montréal (AAPC=0.64%, 95% CI 0.44% to 0.85%), the University of Manitoba (AAPC=0.70%, 95% CI 0.23% to 1.03%), and the University of British Columbia (AAPC=0.41%, 95% CI 0.13% to 0.69%) (**Table 3**).

In contrast, NOSMU had a significant decline in the proportion of graduates specializing in family medicine (AAPC=-1.01%, 95% CI -1.65% to -0.37%). Although small decreases were observed at Queen's University (AAPC=-0.06%, 95% CI -0.43% to 0.30%) and Dalhousie University (AAPC=-0.14%, 95% CI -0.51% to 0.23%), these changes were not statistically significant.

Table 2. Likelihood of entering family medicine postgraduate training by medical school, sex, and age from 2000 to 2023

VARIABLE	IRR (95% CI)	*P* VALUE
Medical school		
• McGill University	Reference	NA
• Memorial University of Newfoundland	1.17* (1.06 to 1.30)	.002
• Dalhousie University	1.19* (1.09 to 1.30)	<.001
• Laval University	1.40* (1.30 to 1.50)	<.001
• University of Sherbrooke	1.56* (1.44 to 1.68)	<.001
• University of Montréal	1.56* (1.45 to 1.67)	<.001
• University of Ottawa	1.33* (1.23 to 1.43)	<.001
• Queen's University	0.99 (0.90 to 1.09)	.900
• University of Toronto	1.03 (0.95 to 1.11)	.500
• McMaster University	1.33* (1.23 to 1.44)	<.001
• Western University	1.35* (1.25 to 1.47)	<.001
• NOSM University	1.54* (1.39 to 1.71)	<.001
• University of Manitoba	1.32* (1.21 to 1.44)	<.001
• University of Saskatchewan	1.17* (1.06 to 1.29)	.001
• University of Alberta	1.24* (1.14 to 1.34)	<.001
• University of Calgary	1.06 (0.97 to 1.15)	.200
• University of British Columbia	1.18* (1.09 to 1.27)	<.001
Sex		
• Male	Reference	NA
• Female	1.30* (1.26 to 1.33)	<.001
Age		
• ≤26	Reference	NA
• 27-28	1.20* (1.16 to 1.24)	<.001
• 29-30	1.21* (1.15 to 1.26)	<.001
• ≥31	1.47* (1.41 to 1.53)	<.001

CI—confidence interval, IRR—incidence rate ratio, NA—not applicable.
*Indicates statistical significance.

Discussion

In this population-based study of 55,883 CMGs between 2000 and 2023, we observed substantial variation across medical schools in the proportion of graduates specializing in family medicine. Although the overall proportions of CMGs specializing in family medicine in Canada increased over the study period, important differences persisted after adjusting for demographic characteristics. McGill University, Queen's University, and University of Toronto had the lowest proportion of CMGs specializing in family medicine, while NOSMU and University of Montréal had the highest. Notably, McGill University and Western University showed the largest relative increases over time, while NOSMU experienced a decline. These findings suggest that institutional, regional, and policy-level factors influence the family medicine workforce in Canada.

Several mechanisms may explain differences in the number of graduates entering family medicine between institutions. These include admission processes that may inadvertently favour applicants less inclined toward family medicine, along with training environment. Prior research found that early clinical exposure, mentorship, interest in family medicine on entry into medical school, and curriculum that highlights primary care influence medical graduates' choice of family medicine as a specialty.[18,23-29]

In contrast, medical schools may also foster a "hidden curriculum" in which medical education and institutional culture may devalue specialization in family medicine.[30,31] Consistent with existing literature, older age and female sex were also identified as factors associated with specialization in family medicine.[17,23] Additional factors, including marital status, rural background, being a first-generation university student, having a social justice orientation, and interest in family medicine at the time of medical school entry, were linked to a greater likelihood of pursuing family medicine postgraduate training.[17,23] Given that student career preferences are an important determinant of the future physician workforce, these considerations could be incorporated into admission strategies to align with population health needs.[17] As part of their social accountability mandates, these results call for introspection by medical schools regarding their curricula and admission practices to better understand how they contribute to the family medicine workforce.

Of particular interest is the decline in CMGs pursuing family medicine training after graduating from NOSMU, a university founded with a clear social accountability mandate to serve northern Ontario.[32] By the end of the study period, NOSMU graduated 8% fewer students entering family medicine postgraduate training compared to its first 5 years. While NOSMU continues to maintain a relatively high proportion of graduates choosing family medicine, examining the factors behind this decline may

offer valuable insights for programs and institutions committed to strengthening primary care.

The regional differences observed in our study further emphasize the role of policy, remuneration structures, and practice models.[26] For example, medical schools in Quebec had a higher proportion of graduates entering family medicine (44.5%) compared to approximately 39% in all other regions. However, it is important to interpret these findings with caution as Quebec's primary care system differs substantially from other Canadian provinces, with specific service requirements for new family medicine graduates.[33,34] With the exception of Quebec, entry into family medicine training is relatively uniform across Canadian provinces. These findings suggest that variation in the contribution of family physicians is less a result of regional differences and rather a reflection of institutional factors in individual medical schools.

While our study demonstrates the proportion of graduates specializing in family medicine increased over the last 2 decades, these changes may not be sufficient to meet the growing needs of Canada's population. Approximately 40% of medical graduates in our study entered family medicine training; however, each year fewer chose to provide comprehensive care and instead pursued focused practice.[15,16,35] In addition, a recent analysis found an increasing proportion of family medicine graduates would have preferred to train in another specialty.[11] Several factors may be contributing

Table 3. Time trends in the proportion of Canadian medical graduates entering a family medicine postgraduate training program in Canada

UNIVERSITY OR REGION	OVERALL STUDY, N (%)	2000-2004,* n (%)	2019-2023, n (%)	DIFFERENCE BETWEEN 2000-2004 AND 2019-2023, %		AVERAGE ANNUAL PERCENT CHANGE
				ABSOLUTE	RELATIVE	
Canada	22,849 (40.9)	2754† (36.2)	6082 (43.0)	6.8	18.8	0.36 (0.22 to 0.51)‡
Eastern	1535 (39.8)	238 (37.3)	399 (42.2)	4.9	13.2	0.07 (-0.17 to 0.30)
• Memorial University of Newfoundland	595 (39.0)	83 (33.7)	168 (42.8)	9.0	26.7	0.33 (-0.02 to 0.70)
• Dalhousie University	940 (40.4)	155 (39.4)	231 (41.8)	2.3	5.9	-0.14 (-0.51 to 0.23)
Quebec	7711 (44.5)	831 (37.6)	2180 (49.3)	11.7	31.2	0.52 (0.34 to 0.71)‡
• Laval University	1992 (44.8)	218 (37.5)	610 (51.2)	13.8	36.7	0.71 (0.38 to 1.03)‡
• University of Sherbrooke	1814 (47.9)	196 (42.4)	491 (51.2)	8.8	20.7	0.67 (0.22 to 1.13)‡
• University of Montréal	2793 (50.1)	312 (41.8)	757 (53.8)	12.0	28.6	0.64 (0.44 to 0.85)‡
• McGill University	1112 (31.7)	105 (24.9)	322 (37.2)	12.3	49.6	0.44 (0.20 to 0.69)‡
Ontario	7482 (39.4)	915† (34.5)	1878 (39.7)	5.2	15.2	0.33 (0.16 to 0.50)‡
• University of Ottawa	1429 (43.1)	169 (39.3)	335 (41.1)	1.8	4.6	0.33 (-0.11 to 0.77)
• Queen's University	711 (31.8)	107 (28.6)	150 (30.1)	1.5	5.1	-0.06 (-0.43 to 0.30)
• University of Toronto	1714 (33.0)	252 (29.9)	424 (33.5)	3.6	12.1	0.16 (-0.08 to 0.39)
• McMaster University	1700 (42.7)	227 (43.3)	401 (39.9)	3.4	7.8	0.10 (-0.24 to 0.45)
• Western University	1411 (41.9)	160 (33.3)	401 (48.3)	14.9	44.8	0.63 (0.26 to 1.00)‡
• NOSM University	517 (57.2)	170† (62.0)	167 (53.7)	8.4	13.5	-1.01 (-1.65 to -0.37)‡
Central-Western	6121 (39.0)	770 (36.5)	1625 (40.1)	3.6	9.8	0.25 (0.01 to 0.49)‡
• University of Manitoba	959 (42.0)	128 (35.7)	260 (47.6)	12.0	33.6	0.70 (0.38 to 1.03)‡
• University of Saskatchewan	669 (37.3)	100 (37.0)	189 (38.7)	1.7	4.6	0.26 (-0.13 to 0.64)
• University of Alberta	1323 (38.9)	195 (37.6)	317 (38.9)	1.3	3.5	0.09 (-0.31 to 0.49)
• University of Calgary	1121 (36.2)	143 (37.3)	276 (35.6)	1.7	4.6	0.06 (-0.35 to 0.46)
• University of British Columbia	2049 (39.9)	204 (35.4)	583 (40.9)	5.4	15.4	0.41 (0.13 to 0.69)‡

*The beginning of the study period for NOSM University is from 2009-2013.
†NOSM University opened in 2005 and the first class graduated in 2009. The value for NOSM University presented here represents graduates from 2009-2013. The 2009-2013 value for NOSM University is not included in total for Canada or Ontario in years 2000-2004.
‡Indicates statistical significance.

to these trends. Increasing administrative burden, complexity of care, and concerns surrounding remuneration make practising comprehensive family medicine increasingly unsustainable.[15,16,35]

Overall, the Canadian Institute for Health Information reported negative growth (-0.1%) in the supply of practising family physicians between 2022 and 2023, with the increase in overall physician numbers driven solely by other specialties (2.9%).[36] These findings are concerning, as access to primary care remains a key concern for many Canadians and is outlined as a priority health human resource policy recommendation by the Canadian Medical Association (CMA). Medical schools play a vital role in shaping the future health workforce and supporting social accountability mandates outlined by professional associations such as the CMA.[37] The challenging working conditions in family medicine introduce additional complexities that must also be acknowledged and addressed to support continued growth in the family physician workforce.

Medical education reform including the Queen's–Lakeridge Health Family Medicine Program and the planned opening of new medical schools with an emphasis on primary care, including Toronto Metropolitan University (2025), Simon Fraser University (2026), and York University (2028), represent promising steps toward increasing the number of graduates pursuing careers in family medicine and primary care.[38-41] In parallel, several provinces are implementing targeted strategies to improve the practice environment of family physicians, including introducing new pay incentives for family physicians, initiatives to reduce administrative burden, and a commitment to expand team-based primary care.[42-49]

Limitations

Our study has limitations. First, the study is descriptive in nature and therefore unable to infer causality. Unmeasured sociodemographic and additional factors (eg, rural upbringing, economic status) that may influence family medicine specialization and differ across schools were not available in our data and therefore were not accounted for in our analyses. Similarly, we did not have data on whether medical graduates attended a school's satellite campus, which may provide greater exposure to family medicine and community-based practice and influence specialization choice. Second, the CAPER data do not contain information on gender, and all analyses were conducted using sex. Using sex rather than gender as a determinant of career choice frames career pathways as biologically driven, overlooking the complex influence of social norms and cultural expectations captured by gender. Third, our study did not capture the specialty preferences of medical graduates. As such, we expect the discrepancies in family medicine specialization of medical graduates across medical schools presented in this study are underestimated, given applicants may have ranked another specialty as their first choice.[11] Finally, CAPER does not track physician practice data after postgraduate training. Therefore, we were unable to assess which trainees ultimately practised comprehensive family medicine and how this might vary by school, which are important areas of future inquiry.

Conclusion

While the overall proportion of CMGs specializing in family medicine is increasing, substantial differences exist across Canadian medical schools, suggesting some institutions may better fulfil their social accountability mandate. These findings have important implications for health system planning and ensuring equitable access to primary care. Understanding each medical school's contribution to the family physician workforce is crucial to aligning medical education with the health care needs of Canadians. Future studies should examine whether medical schools also differ in the proportion of graduates providing comprehensive care versus focused practice, and practice environments (urban vs rural and care in underserviced regions).

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Contributors

All authors contributed to conceptualizing and designing the study; to collecting, analyzing, and interpreting the data; and to preparing the manuscript for submission.

Competing interests

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References

1. van Weel C, Kidd MR. Why strengthening primary health care is essential to achieving universal health coverage. CMAJ. 2018 Apr 16;190(15):e463-6. **doi: 10.1503/cmaj.170784**.
2. Darvesh N, McGill SC. Improving Access to Primary Care: Environmental Scan [Internet]. Canadian Agency for Drugs and Technologies in Health; 2022 Jul [cited 2025 Nov 25]. Available from: **https://canjhealthtechnol.ca/index.php/cjht/article/view/ES0363/808**.
3. Canadian Institute for Health Information (CIHI). Better access to primary care key to improving health of Canadians [Internet]. CIHI; 2024 Oct 24 [cited 2025 Jun 10]. Available from: **https://www.cihi.ca/en/taking-the-pulse-measuring-shared-priorities-for-canadian-health-care-2024/better-access-to-primary-care-key-to-improving-health-of-canadians**.
4. Tannenbaum D, Konkin J, Parsons E, Saucier D, et al. CanMEDS–Family Medicine [Internet]. College of Family Physicians of Canada; 2009 Oct [cited 2025 Nov 25]. Available from: **https://www.cfpc.ca/CFPC/media/Resources/Care-of-the-Elderly/CanMeds-FM-Eng.pdf**.
5. MAP Centre for Urban Health Solutions, Unity Health Toronto. Primary Care Needs OurCare: The final report of the largest pan-Canadian conversation about primary care [Internet]. MAP Centre for Urban Health Solutions; 2024 [cited 2024 Jul 15]. Available from: **https://issuu.com/dfcm/docs/primary_care_needs_ourcare_the_final_report_of_the?fr=xKAE9_zU1NQ**.
6. Canadian Institute for Health Information (CIHI). Canadians with a regular health provider [Internet]. CIHI; 2025 Oct [cited 2025 Nov 26]. Available from: **https://www.cihi.ca/en/indicators/canadians-with-a-regular-health-provider**.
7. Kiran T, Green ME, Wu CF, Kopp A, et al. Family Physicians Stopping Practice During the COVID-19 Pandemic in Ontario, Canada. Ann Fam Med. 2022 Sep-Oct;20(5):460-3. **doi: 10.1370/afm.2865**.

8. Kiran T, Wang R, Handford C, Laraya N, et al. Family physician practice patterns during COVID-19 and future intentions: Cross-sectional survey in Ontario, Canada. Can Fam Physician. 2022 Nov;68(11):836-46. **doi: 10.46747/cfp.6811836**.
9. Bayoumi I, Glazier RH, Jaakkimainen L, Premji K, et al. Trends in attachment to a primary care provider in Ontario, 2008-2018: an interrupted time-series analysis. CMAJ Open. 2023 Sep 5;11(5):e809-19. **doi: 10.9778/cmajo.20220167**.
10. Kiran T, Wang R, Handford C, Laraya N, et al. Keeping doors open: A cross-sectional survey of family physician practice patterns during COVID-19, needs, and intentions. medRxiv. 2021 Dec 21 [cited 2025 Nov 25]. **doi: 10.1101/2021.12.20.21267918**. Available from: **https://www.medrxiv.org/content/10.1101/2021.12.20.21267918v1**.
11. Myran D, Gibb M, Premji K, Liddy C, et al. Increased proportion of family medicine residents did not want to be family physicians: An unrecognized crisis in primary care. Can Fam Physician. 2025 Jun;71(6):383-7. **doi: 10.46747/cfp.7106383**.
12. Kester S. Fewer medical students are pursuing family practices, and these doctors are worried. CBC News [Internet]. 2022 Jul 11 [cited 2025 Nov 26]. Available from: **https://www.cbc.ca/news/canada/ottawa/fewer-medical-students-are-pursuing-family-practices-and-these-doctors-are-worried-1.6516261**.
13. Canadian Resident Matching Service (CaRMS). Quota and applications by discipline [Internet]. CaRMS; 2023 [cited 2024 May 17]. Available from: **https://www.carms.ca/data-reports/r1-data-reports/r-1-match-interactive-data**.
14. College of Family Physicians of Canada (CFPC). 2025 CaRMS Match [Internet]. CFPC; 2025 [cited 2025 Jun 10]. Available from: **https://www.cfpc.ca/en/education-professional-development/2023-carms-match-results**.
15. Foxman S. Family Medicine in Crisis [Internet]. College of Physicians and Surgeons of Ontario; 2023 Jun [cited 2025 Nov 26]. Available from: **https://dialogue.cpso.on.ca/2023/06/family-medicine-in-crisis**.
16. Ansari H, Glazier RH, Schultz SE, Green ME, et al. Family Physicians in Focused Practice in Ontario, Canada: A Population-Level Study of Trends From 1993/1994 Through 2021/2022. Ann Fam Med. 2025 May 27;23(3):181-90. **doi: 10.1370/afm.240377**.
17. Scott I, Gowans M, Wright B, Brenneis F, et al. Determinants of choosing a career in family medicine. CMAJ. 2011 Jan 11;183(1):e1-8. **doi: 10.1503/cmaj.091805**. Epub 2010 Oct 25.
18. Raleigh MF, Seehusen DA, Phillips JP, Prunuske J, et al. Influences of Medical School Admissions Practices on Primary Care Career Choice. Fam Med. 2022 Jul;54(7):536-41. **doi: 10.22454/FamMed.2022.260434**.
19. Phillips SP, Clarke M. More than an education: the hidden curriculum, professional attitudes and career choice. Med Educ. 2012 Sep;46(9):887-93. **doi: 10.1111/j.1365-2923.2012.04316.x**.
20. Mihan A, Kester N, Fitzgerald M, Fournier K, et al. Characteristics of Canadian physicians and their associations with practice patterns: a scoping review. Can Med Educ J. 2023 Apr 8;14(2):61-88. **doi: 10.36834/cmej.74205**.
21. Association of Faculties of Medicine of Canada (AFMC). Social Accountability [Internet]. AFMC; 2022 [cited 2025 Jun 9]. Available from: **https://www.afmc.ca/strategic-priorities/social-accountability**.
22. von Elm E, Altman DG, Egger M, Pocock SJ, et al. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: guidelines for reporting observational studies. Ann Intern Med. 2007 Oct 16;147(8):573-7. **doi: 10.7326/0003-4819-147-8-200710160-00010**. Erratum in: Ann Intern Med. 2008 Jan 15;148(2):168.
23. Gill H, McLeod S, Duerksen K, Szafran O. Factors influencing medical students' choice of family medicine: effects of rural versus urban background. Can Fam Physician. 2012 Nov;58(11):e649-57.
24. Bhatnagar V, Diaz S, Bucur PA. The Need for More Mentorship in Medical School. Cureus. 2020 May 6;12(5):e7984. **doi: 10.7759/cureus.7984**.
25. Phillips JP, Wendling AL, Prunuske J, Polverento ME, et al. Medical School Characteristics, Policies, and Practices That Support Primary Care Specialty Choice: A Scoping Review of 5 Decades of Research. Fam Med. 2022 Jul;54(7):542-54. **doi: 10.22454/FamMed.2022.440132**.
26. Grudniewicz A, Randall E, Lavergne MR, Marshall EG, et al. Factors influencing practice choices of early-career family physicians in Canada: a qualitative interview study. Hum Resour Health. 2023 Oct 26;21(1):84. **doi: 10.1186/s12960-023-00867-9**.
27. Edwards-Johnson J, Lee Y, Wendling A, Patel B, et al. Predictors of Primary Care Practice Among Medical Students at the Michigan State University College of Human Medicine. J Am Board Fam Med. 2022 Mar-Apr;35(2):370-9. **doi: 10.3122/jabfm.2022.02.210257**.
28. Seehusen DA, Raleigh MF, Phillips JP, Prunuske J, et al. Institutional Characteristics Influencing Medical Student Selection of Primary Care Careers: A Narrative Review and Synthesis. Fam Med. 2022 Jul;54(7):522-30. **doi: 10.22454/FamMed.2022.837424**.
29. McGill Newsroom. Family Medicine Residency: New doctors headed to the Outaouais [Internet]. McGill University; 2025 May 21 [cited 2025 Jul 4]. Available from: **https://www.mcgill.ca/newsroom/channels/news/family-medicine-residency-new-doctors-headed-outaouais-365436**.
30. Collier R. Disrespect within medicine for family doctors affects medical students and patients. CMAJ. 2018 Jan 29;190(4):e121-2. **doi: 10.1503/cmaj.109-5542**.
31. Mahood SC. Medical education: Beware the hidden curriculum. Can Fam Physician. 2011 Sep;57(9):983-5.
32. NOSM University. Our vision, mission and values [Internet]. NOSM University; [cited 2025 Sep 15]. Available from: **https://www.nosm.ca/about/vision-mission-and-values**.
33. Corriveau B, Breton M, Kovacina N, Kiran T. Op-Ed: Examining Quebec's primary care: Challenges, solutions and patient priorities [Internet]. Department of Family Medicine, McGill University; 2023 May 26 [cited 2025 Jul 4]. Available from: **https://www.mcgill.ca/familymed/article/examining-quebecs-primary-care-challenges-solutions-and-patient-priorities**.
34. Ha TH. Why Quebec's family doctor crisis is the worst in Canada. Globe and Mail [Internet]. 2022 Nov 29 [cited 2025 Jul 4]:Canada. Available from: **https://www.theglobeandmail.com/canada/article-quebec-family-doctors-shortage**.
35. Canadian Institute for Health Information (CIHI). Changes in practice patterns of family physicians in Canada [Internet]. CIHI; 2024 Mar 26 [cited 2024 May 13]. Available from: **https://www.cihi.ca/en/changes-in-practice-patterns-of-family-physicians-in-canada**.
36. Canadian Institute for Health Information (CIHI). Physicians [Internet]. CIHI; [cited 2025 Sep 15]. Available from: **https://www.cihi.ca/en/physicians**.
37. Canadian Medical Association (CMA), Canadian Nurses Association, College of Family Physicians of Canada. Health human resource policy recommendations for F/P/T governments. Progress report & calls to action [Internet]. CMA; 2024 Apr [cited 2025 Nov 26]. Available from: **https://digitallibrary.cma.ca/link/digitallibrary89**.
38. Queen's University. Queen's-Lakeridge Health MD Family Medicine Program [Internet]. Queen's University; [cited 2024 May 16]. Available from: **https://meds.queensu.ca/academics/undergraduate/queens-lakeridge-health-md-family-medicine-program.**
39. Toronto Metropolitan University. School of Medicine [Internet]. Toronto Metropolitan University; [cited 2024 May 16]. Available from: **https://www.torontomu.ca/school-of-medicine**.
40. DeRosa K. New SFU medical school will include family doctor program: minister. Vancouver Sun [Internet]. 2023 Sep 20 [cited 2024 May 16]:Local News. Available from: **https://vancouversun.com/health/local-health/sfu-medical-school-bc-family-doctor-program**.
41. York University. With a bold vision to create the foremost community-based doctor education in Canada, York's School of Medicine slated to open in 2028. News@York [Internet]. 2024 Apr 3 [cited 2024 May 16]. Available from: **https://www.yorku.ca/news/2024/04/03/with-a-bold-vision-to-create-the-foremost-community-based-doctor-education-in-canada-yorks-school-of-medicine-slated-to-open-in-2028**.
42. CBC News. B.C. launches new payment model for family doctors. CBC News [Internet]. 2023 Feb 1 [cited 2024 May 22];British Columbia:[about 4 screens]. Available from: **https://www.cbc.ca/news/canada/british-columbia/bc-doctor-payment-model-2023-changes-1.6733569**.
43. BC Family Doctors. Our new report highlights success of LFP Payment Model [Internet]. BC Family Doctors; 2025 Mar 10 [cited 2025 Jun 10]. Available from: **https://bcfamilydocs.ca/our-new-report-highlights-success-of-b-c-s-lfp-payment-model**.
44. Government of Ontario. Ontario Taking Next Steps to Protect Primary Care. Ontario Newsroom [Internet]. 2025 May 7 [cited 2025 Jun 10];Health. Available from: **https://news.ontario.ca/en/release/1005885/ontario-taking-next-steps-to-protect-primary-care**.
45. Ontario Ministry of Finance. Chapter 1, Section B: Protect Ontario: Delivering Better Services. 2025 Ontario Budget [Internet]. Government of Ontario; [cited 2025 Jun 10]. Available from: **https://budget.ontario.ca/2025/chapter-1b-services.html**.
46. BC Family Doctors. Reduction of insurance-related paperwork and forms [Internet]. BC Family Doctors; 2025 Feb 20 [cited 2025 Jun 10]. Available from: **https://bcfamilydocs.ca/reduction-of-insurance-related-paperwork-and-forms**.
47. Doctors of BC. Administrative Burdens [Internet]. Doctors of BC; [cited 2025 Jun 10]. Available from: **https://www.doctorsofbc.ca/advocacy-policy/advocacy/administrative-burdens**.
48. Doctors Nova Scotia. Reducing physician administrative burden [Internet]. Doctors Nova Scotia; [cited 2025 Jun 10]. Available from: **https://doctorsns.com/contract-and-support/admin-burden**.
49. Ontario Medical Association. Ontario's doctors recommend immediate solutions for Ontario's health-care crisis [Internet]. Ontario Medical Association; 2024 Oct 16 [cited 2025 Nov 26]. Available from: **https://www.oma.org/newsroom/news-releases/2024/october/ontarios-doctors-recommend-immediate-solutions-for-ontarios-health-care-crisis**.

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