Current State of Quantitative Data Available for Examining the Work of Family Physicians in Canada

État actuel des données quantitatives disponibles pour examiner le travail des médecins de famille au Canada

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Abstract

In Canada, there is no single source of data describing the number, distribution and work of family physicians (FPs). This study examines the state of national and provincial/territorial data sources for FPs in comparison with the College of Family Physicians of Canada's Family Medicine Professional Profile. Data sources were assessed through key informant interviews and document analysis. Findings indicate that there is significant variability on what is measured across jurisdictions, resulting in comparability challenges. A measurement framework that accurately describes the number, distribution and work of FPs with a pan-Canadian data collection strategy is urgently needed for effective health human resource planning.

Résumé

Au Canada, il n'y a pas de source unique de données qui décrivent le nombre, la répartition et le travail des médecins de famille (MF). Cette étude examine l'état des sources de données nationales et provinciales ou territoriales pour les MF, comparativement au profil professionnel en médecine de famille du Collège des médecins de famille du Canada. Les sources de données ont été évaluées au moyen d'entrevues avec des informateurs clés et d'une analyse de documents. Les résultats indiquent qu'il existe une importante variabilité entre les autorités en ce qui concerne les indices mesurés, ce qui entraîne des problèmes de comparabilité. Un cadre de mesure qui décrit avec précision le nombre, la répartition et le travail des MF – avec une stratégie pancanadienne pour la collecte des données – est nécessaire de toute urgence pour assurer une planification efficace des ressources humaines en santé.

Introduction

Universal healthcare is a source of pride for Canadians. With evidence that countries with strong primary healthcare systems have better health outcomes and health equity, lower mortality rates and lower costs (Macinko et al. 2003; Starfield and Shi 2002; Starfield 2012), access to a family physician (FP) and/or primary care (PC) team has been an ongoing governmental priority (First Ministers of Canada 2003). FPs represent approximately half of the physician workforce in Canada (CIHI 2019). But access to an FP does not guarantee that each patient will receive the same breadth of clinical care. Understanding the scope of work that FPs choose to include in their clinical practices is crucial for physician workforce planning.

In 2019, the College of Family Physicians of Canada (CFPC) released the Family Medicine Professional Profile (FMPP), a position statement that describes the scope of practice and training for FPs (CFPC 2021). The FMPP provides a framework that could be used for FP resource analysis and planning. The framework recognizes that FPs are capable of providing comprehensive medical care for people of all ages, life stages and clinical problems. They can provide both acute and chronic care, from preventive to palliative care. FPs work across care settings and regulatory environments including PC, emergency care, home and long-term care, hospital care and maternal and newborn care.

In Canada, there are numerous national and provincial/territorial (P/T) data sources that collect information on FPs, used by P/T governments to make important policy decisions about workforce planning and healthcare delivery. Unfortunately, these data lack the necessary information on the right number and mix of health workers (Bourgeault et al. 2019). In order to effectively plan for Canadians to have access to FPs, it is important to have an accurate understanding of not only the number of FPs but also where they are working and their scope of practice.

Based on the authors' knowledge, this is the first study that comprehensively explores the current state of national and P/T quantitative data describing the characteristics (demographics and education), practice location and scope of practice of FPs using the FMPP as a

framework for comparison. This study also examines data accessibility and limitations to assess the feasibility of using the data. The findings are important for P/T policy makers as they provide a detailed assessment of the content, limitations and accessibility of quantitative data and highlight opportunities to improve the data needed to inform effective physician workforce planning and delivery in Canada.

Method

This study combined the analysis of key informant interviews and a document review.

To identify the data sources with information on the number, distribution, mix and activities of FPs in Canada, we conducted a Google and Google Scholar search and identified key reports and publications. Keyword search terms included combinations of "family medicine" or "family physicians" or "primary care" and "data" or "data sources" and "Canada." Of the 114 reports and publications reviewed, 67 assisted with the identification of potential data sources with relevant information. The data sources were further augmented through key informant interviews (Appendix 1, available online at longwoods.com/content/26578, identifies the data sources included in this study).

All data sources with information on number, distribution and scope of practice of FPs, except P/T administrative and electronic medical record (EMR) data sets, were included.

A list of key informants for each data source was derived for the interviews based on the informants' expert knowledge and position in the organization. These interviews aimed to collect information on the purpose of the organization, its reasons for data collection, the collection method, the data elements, availability of data, access, linkage and limitations. The interviews also permitted the identification of additional data sources. About 30- to 60-minute telephonic and in-person interviews were conducted. The interview guide was tested with a quantitative subject matter expert (Appendix 2, available online at longwoods.com/content/26578). The interviewer took detailed notes at each interview. With the exception of two potential respondents, all key informants participated. In total, 66 interviews were completed. Information on data content, accessibility, linkages and limitations, as well as potential data sources, was extracted from the interview notes. Ethics approval was not required for this study because an ethics exemption was obtained from the University of Toronto.

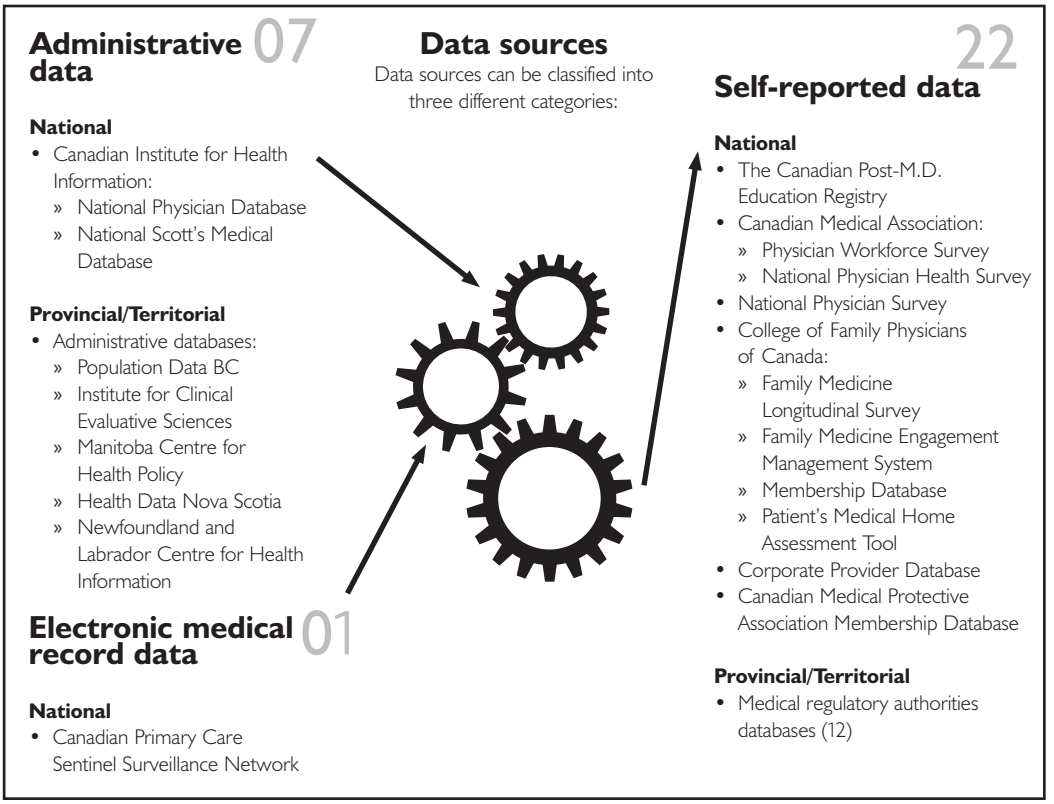
Data elements relevant to the composition and location of FPs and relevant measures of scope of practice in relation to the FMPP were abstracted for each data source. Each data element was mapped in relation to source, physician characteristics, geography and the FMPP. We also analyzed data gaps, limitations and feasibility of accessing data.

Results

We identified 25 data sources with relevant data on FP characteristics, geography and the FMPP domains (Figure 1). There were three main types of data sources:

- 10 national and 12 P/T databases that collected self-reported data (forms, questionnaires);
- two national administrative databases; and
- one national database that had EMRs comprising patient and population-level data.

FIGURE 1. Quantitative data sources



We found that there is no single national database that can provide all the information related to the characteristics, geography and scope of practice of FPs in relation to the FMPP. Table 1 shows that there is significant variation in the data elements that are being collected in each database. Information on the number of FPs (certified, non-certified and graduates) can be found in the Canadian Post-M.D. Education Registry (CAPER), the CFPC Member Engagement Management System (CMEMS), the CFPC membership database, the Canadian Medical Protective Association (CMPA), 12 medical regulatory authorities (MRA) databases, the National Physician Database (NPDB) and Scott's Medical Database (SMDB). The Canadian Medical Association (CMA) Workforce Survey (WFS), the

National Physician Health Survey, the National Physician Survey (NPS), the Corporate Provider Database (CPDB), the Family Medicine Longitudinal Survey (FMLS), the CMEMS, the CMPA, the 12 MRAs and the NPDB have some information on physician activity.

Overall, the CMA WFS, the CMEMS, the Patient's Medical Home (PMH) Assessment Tool, the CMPA database and the 12 MRA databases have the most information related to physician characteristics, geography and the FMPP. Because the goal of family medicine training is to encourage a broad scope of practice, the data sources with this information would be of utmost importance to workforce planners.

TABLE 1. National data in relation to physician characteristics, geography and FMPP

	FMPP Domains												
National data sources	**Physician characteristics**	**Physician geography**	**Comprehensive care**	**Leadership**	**Advocacy**	**Scholarship**	**Work setting and arrangements**	**Patient's Medical Home**	**Community-adaptive**	**Continuity of care**	**Collaboration**	**Relationship and patient-centred**	**Professionalism**
Canadian Post-M.D. Education Registry	✓	✓											
Canadian Medical Association (CMA) Workforce Survey	✓	✓	✓	✓		✓	✓	✓					✓
CMA National Physician Health Survey			✓	✓		✓	✓				✓		✓
Family Medicine Longitudinal Survey	✓	✓	✓				✓			✓			
College of Family Physicians Membership Database	✓	✓				✓							
Family Medicine Engagement Management System	✓	✓	✓	✓	✓	✓	✓	✓					
National Physician Survey	✓	✓	✓			✓	✓	✓					
Patient's Medical Home Assessment Tool			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Corporate Provider Database	✓	✓	✓				✓	✓					
Canadian Medical Protective Association Membership Database	✓	✓	✓	✓		✓							✓
Canadian Institute for Health Information (CIHI) National Physician Database	✓	✓	✓							✓			
CIHI Scott's Medical Database	✓	✓											
Canadian Primary Care Sentinel Surveillance Network	✓	✓	✓							✓			

FMPP = Family Medicine Professional Profile

TABLE 2. Limitations of data sources

	Limitations										
National data sources	**Gaps with respect to FMPP content**	**Data collection varies with organizational priorities**	**Data elements are not standardized**	**Low response rate**	**Physicians cannot be identified**	**All jurisdictions are not participating**	**Data collection is variable**	**Data collection is based on physicians' utilization of tools or services**	**Database is currently unavailable**	**Data collection is based mainly on FFS-based billings**	**Physician participation is limited**
Canadian Post-M.D. Education Registry	✓										
Canadian Medical Association (CMA) Workforce Survey	✓	✓		✓							
CMA National Physician Health Survey	✓	✓		✓							
Family Medicine Longitudinal Survey	✓			✓							
College of Family Physicians Membership Database	✓										
Family Medicine Engagement Management System	✓								✓		
National Physician Survey	✓			✓							
Patient's Medical Home Assessment Tool	✓				✓			✓			
Corporate Provider Database	✓		✓			✓			✓		
Canadian Medical Protective Association Membership Database	✓							✓			
Canadian Institute for Health Information (CIHI) National Physician Database	✓				✓	✓				✓	
CIHI Scott's Medical Database	✓										
Canadian Primary Care Sentinel Surveillance Network	✓										✓

FMPP = Family Medicine Professional Profile

All 11 MRAs collect information on physician characteristics, physician geography and professionalism. The latter is defined as a physician's commitment to the health and well-being of patients and society through ethical practice and adherence to a set of personal standards and code of conduct (Royal College of Physicians and Surgeons of Canada 2021).

However, there is significant variation in the type of data collected as compared to the descriptors used in the FMPP. In summary:

- Six MRAs collect data on comprehensive care and leadership.
- Five MRAs collect data on scholarship.
- Four MRAs collect data on work settings.
- Three MRAs collect data on the Patient's Medical Home.
- One MRA collects data on advocacy and continuity of care.
- No MRA collects data on the parameters community-adaptive and relationship and patient-centred.

There are several data limitations. First, the source of data has limitations. Self-reported data can result in social desirability bias and overestimate findings (O'Malley and Rich 2015). Administrative data can underestimate findings because billing codes identify one problem in a patient–physician visit versus multiple problems (Katz et al. 2012; O'Malley and Rich 2015). EMR data are limited by low physician participation in the Canadian Primary Care Sentinel Surveillance Network (CPCSSN) (Queenan et al. 2016). Table 2 details the limitations of national data.

The degree of data accessibility for relevant data sources is crucial to its use. Aggregate-level data from CAPER, CMA surveys, NPS, NPDB, the CMPA database and all the MRA databases are accessible, and record-level data requests require approvals and data sharing or legal agreements. Aggregate and/or record-level data from the CFPC membership database, FMLS, CPCSSN and one MRA require approvals and data sharing or legal agreements. Aggregate-level and record-level data from SMDB are accessible but can require approvals and legal agreements depending on the nature of the data request. Data from the PMH Assessment Tool are not available for external use. CMEMS and CPDB are under development.

There is potential for linkages between data sources because the majority of the organizations are using the Medical Identification Numbers for Canada (MINC) supported by the Medical Council of Canada and the Federation of Medical Regulatory Authorities of Canada. The MINC is a unique identifier assigned to each individual entering the Canadian medical education or practice system (Medical Council of Canada 2021). The MINC can only be shared with organizations that are licensed users in Canada. Currently, the FMLS and SMDB can be linked using probabilistic linkage (i.e., name, date of birth/age and sex) and the CFPC membership database can be linked using the MRA registration number. The NPDB, NPS, PMH Assessment Tool and CPCSSN cannot be linked with other data sources.

Limitations

A limitation of this study was that some organizations did not have or were unwilling to provide data dictionaries. This resulted in the derivation of those data elements, the unavailability of which could have restricted the collection of all data elements. Documentation on processes and policies with respect to data sharing was not always available. P/T administrative and EMR data were not examined. In addition, several databases contained data from samples that could have been unrepresentative or biased.

Discussion and Policy Implications

The Canadian federal government and multiple P/T jurisdictions have indicated that access to PC by Canadians is a key priority. Currently, access to an FP does not ensure access to the same range of clinical services because FPs can choose to provide a broad or narrow range of PC services to their patient population either individually or in team-based settings. To ensure that the right mix and number of FPs are available to offer care at the right time and place, it is crucial that policy makers responsible for decisions about FP distribution and supply are provided with data that accurately reflect the scope of practice of FPs.

Our study found that there is no single national data source that can be used to describe the work of FPs, and already existing sources lack comprehensive data. In the absence of data sources with consistent and reliable data across jurisdictions, policy makers are making decisions that have the potential to create inequitable outcomes for patients. The situation is similar in other countries. Australia recently announced the development of a National Medical Workforce Strategy to guide medical workforce planning activities at all levels of government to enable better population health planning, help identify gaps in primary healthcare services and ultimately improve patient health outcomes (Australian Government Department of Health 2020). In Australia and England, the lack of standardized definitions on service delivery and outcomes and data limitations across jurisdictions have resulted in calls for the development of a national primary healthcare data source that will produce reliable and high-quality data for service planning, thus resulting in optimal healthcare delivery for patients (Bradley et al. 2018; Thorpe and Sweeney 2019). Similar to other jurisdictions, there is an urgent need for the development of a physician workforce strategy that includes a consensus-driven measurement framework that accurately describes the number, distribution and scope of practice of FPs in Canada. This framework should be situated within a comprehensive health human resource data strategy.

A successful physician workforce strategy that will significantly improve health human resources and healthcare planning requires collaboration among P/T governments, regulatory authorities and academics including researchers and data holding organizations. In Canada, FPs are often the point of entry into the healthcare system and because their roles extend beyond PC including intrapartum care, hospitalist care, the need to define and document the scope of practice of FPs is imperative to enable effective physician workforce planning. Based on previous recommendations (Fooks et al. 2002) and the current call to action from the Canadian Health Workforce Network (CHWN 2021) and multiple organizations, we support the establishment of a national dedicated task force led by the federal government, with an explicit mandate to enhance health workforce data infrastructure across health professions in Canada (Bourgeault and Silas 2021). The mandate of the national body would be to help coordinate, monitor, evaluate and guide workforce policy and planning activities across the country (Bourgeault et al. 2015) and facilitate the alignment of policies and

regulations for implementation across federal and P/T governments. The Canadian Medical Forum, in which the CFPC is a partner, is well positioned to represent physician groups on the task force. A specific contribution of this initiative from the CFPC could be to develop a national measurement framework for family medicine guided by the FMPP. The task force should be funded by the federal government, and its mandate would include addressing the issues of data ownership and control. The success of this initiative will depend on effective leadership, adequate resourcing, establishment of accountability mechanisms, and, the commitment of and endorsement by all partners to build a vision that will foster the development of a reliable and accurate data infrastructure (Bourgeault et al. 2015; Federal/Provincial/Territorial ACHDHR 2007). Some of the key challenges will be obtaining consensus from all stakeholders as well as addressing any privacy issues related to collection and sharing of personal data. However, the growing recognition that a national physician workforce strategy is needed will serve as a facilitator for stakeholder participation.

This paper illuminates the extent of the challenges related to the availability of consistent data describing the work of FPs. Data that matter are key to effective healthcare planning. The time is now for the development of a consensus-based measurement framework with an effective data collection strategy leveraging the FMPP developed by the CFPC. Canada needs quality and comparable data on all healthcare providers, as demonstrated by this case study of FPs, to support better healthcare policy decisions for patients and their families.

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References

Australian Government. 2020, April 3. National Medical Workforce Strategy. The Department of Health. Retrieved January 5, 2021. <https://www1.health.gov.au/internet/main/publishing.nsf/Content/Health%20Workforce-nat-med-strategy>.

Bourgeault, I.L., C. Demers, Y. James and E. Bray. 2015. The Need for a Pan-Canadian Health Human Resources Strategy and Coordinated Action Plan. In A.S. Carson, J. Dixon and K.R. Nossal, eds., *Toward a Healthcare Strategy for Canadians*. McGill-Queens University Press.

Bourgeault, I., S. Simkin and C. Chamberland-Rowe. 2019. Poor Health Workforce Planning Is Costly, Risky and Inequitable. *CMAJ* 191(42): E1147–48. doi:10.1503/cmaj.191241.

Bourgeault, I.L. and L. Silas. 2021, April 16. Canada Needs Better Health Data Infrastructure to Support Our Health Care Heroes. *Toronto Star*. Retrieved April 25, 2021. <https://www.thestar.com/opinion/contributors/2021/04/16/canada-needs-better-health-data-infrastructure-to-support-our-health-care-heroes.html>.

Bradley, S.H., N.R. Lawrence and P. Carder. 2018. Using Primary Care Data for Health Research in England – An Overview. *Future Healthcare Journal* 5(3): 207–12. doi:10.7861/futurehosp.5-3-207.

Canadian Health Workforce Network (CHWN). 2021. Call to Action: Help Our Healthcare Heroes Now! Retrieved April 27, 2021. <https://www.hhr-rhs.ca/en/petition.html>.

Canadian Institute for Health Information (CIHI). 2019. *Physicians in Canada, 2019*. Retrieved January 12, 2021. <https://www.cihi.ca/sites/default/files/document/physicians-in-canada-report-en.pdf>.

The College of Family Physicians of Canada (CFPC). 2021. Family Medicine Professional Profile. Retrieved March 15, 2021. <https://www.cfpc.ca/fmprofile/>.

Federal/Provincial/Territorial Advisory Committee on Health Delivery and Human Resources (ACHDHR). 2007, March. A Framework for Collaborative Pan-Canadian Health Human Resources Planning. Retrieved April 25, 2021. <https://www.canada.ca/content/dam/hc-sc/migration/hc-sc/hcs-sss/alt_formats/hpb-dgps/pdf/pubs/hhr/2007-frame-cadre/2007-frame-cadre-eng.pdf>.

First Ministers of Canada. 2003, February 3. 2003 *First Ministers' Accord on Health Care Renewal*. Retrieved June 10, 2020. <http://www.scics.ca/wp-content/uploads/CMFiles/800039004_e1GTC-352011-6102.pdf>.

Fooks, C., K. Duvalko, P. Baranek, L. Lamothe and K. Rondeau. 2002, October. *Summary Report: Health Human Resources – Health Human Resource Planning in Canada: Physician and Nursing Work Force Issues*. Canadian Policy Research Networks Inc. Retrieved April 25, 2021. <https://qspace.library.queensu.ca/bitstream/handle/1974/6882/HealthHuman.pdf?sequence=2&isAllowed=y>.

Katz, A., G. Halas, M. Dillon and J. Sloshower. 2012. Describing the Content of Primary Care: Limitations of Canadian Billing Data. *BMC Family Practice* 13:7. doi:10.1186/1471-2296-13-7.

Macinko, J., B. Starfield and L. Shi. 2003. The Contribution of Primary Care Systems to Health Outcomes within Organisation for Economic Co-Operation and Development (OECD) Countries, 1970–1998. *Health Services Research* 38(3): 831–65. doi:10.1111/1475-6773.00149.

Medical Council of Canada. 2021. The Medical Identification Number for Canada Corporation. Retrieved January 30, 2021. <https://mcc.ca/examinations/minc/>.

O'Malley, A.S. and E.C. Rich. 2015. Measuring Comprehensiveness of Primary Care: Challenges and Opportunities. *Journal of General Internal Medicine* 30: 568–75. doi:10.1007/s11606-015-3300-z.

Queenan, J.A., T. Williamson, S. Khan, N. Drummond, S. Garies, R. Morkem et al. 2016. Representativeness of Patients and Providers in the Canadian Primary Care Sentinel Surveillance Network: A Cross-Sectional Study. *CMAJ Open* 4(1): E28–32. doi:10.9778/cmajo.20140128.

Royal College of Physicians and Surgeons of Canada. 2021. Professional Definition. Retrieved April 8, 2021. <https://www.royalcollege.ca/rcsite/canmeds/framework/canmeds-role-professional-e>.

Starfield, B. and L. Shi. 2002. Policy Relevant Determinants of Health: An International Perspective. *Health Policy* 60(3): 201–18. doi:10.1016/s0168-8510(01)00208-1.

Starfield, B. 2012. Primary Care: An Increasingly Important Contributor to Effectiveness, Equity, and Efficiency of Health Services. SESPAS Report 2012. *Gaceta Sanitaria* 26 (Suppl 1): 20–26. doi:10.1016/ gaceta.2011.10.009.

Thorpe, M. and S. Sweeney. 2019. *Call for the Establishment of a Primary Health Care National Minimum Data Set*. Deeble Institute for Health Policy Research. Retrieved December 18, 2020. <https://apo.org.au/sites/default/files/resource-files/2019-01/apo-nid214951.pdf>.