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Gastroenterology Practitioner and Trainee Numbers in Canada 2018: Annual Report From the Canadian Association of Gastroenterology

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Abstract

Background: It is necessary for health planners, educators and physician and patient organizations to be aware of trends in gastroenterologist (GI) numbers in order to ensure that patients have timely access to care.

Methods: The number of GIs in practice and the number of trainees in the specialty was determined for 2018 using three national databases compared with previous years.

Results: In 2018, there were 787 GIs in Canada, which equated to 2.1 GIs per 100,000 population. There are marked differences between provinces with numbers ranging from 1.1 to 2.9 per 100,000. There are 53 GIs specializing in pediatric GI care. Forty-six per cent of practitioners under the age of 35 years are female. Seventy-two residents are training in adult GI and six in pediatrics. Approximately 75% of fellows in adult and pediatric GI are training on temporary visas. The number of adult GIs is decreasing despite increasing national population growth and service demand. The numbers of trainees in both adult and pediatric GI are lower than in 2010. If these trends continue, wait times for GI care, which are already poor, will likely increase further.

Conclusions: Continued monitoring of human resource numbers, patient access to care and validation of current data is required.

The purpose of this report is to present the number of gastroenterologists (GIs), both in practice and in training, in Canada for 2018. We also wished to examine the 2018 numbers by province and gender, compare the 2018 numbers with those of previous years and describe the practice settings and organization.

Keywords: *Canada; Gastroenterology human resources; Gender; Pediatric gastroenterology numbers*

Objectives

Background and rationale

In order for patients to receive timely access to gastrointestinal health care, gastroenterology consultation and investigation are required. GIs also need to contribute to education, research and administration. It is important that the Canadian Association of Gastroenterology (CAG) tracks the number of GIs in training, and in practice, in order to contribute to health care planning.

Methods

Two data sources are available, which can be used to determine GI numbers: the Canadian Medical Association (CMA) (1) database and the Canadian Institute of Health

Information—Scott's Medical Database (CIHI-SMDB) (2). The Canadian Post-MD Education Registry (CAPER) (3) was used to generate trainee and fellow counts. The methods that these databases use to record physician numbers have previously been reported (4)

The CMA has wider inclusion criteria and narrower exclusion criteria. However, despite this, the CMA database has consistently reported lower numbers than the CIHI-SMDB database until 2018 (Table 1), when both databases recorded almost identical numbers (CIHI-SMDB 787 adult GI + 53 pediatric GI, Total = 840, CMA 845). Analysis of the numbers of physicians by province between the two databases indicates that they are highly correlated ($r = 0.99$). For clarity, we have chosen to use the CIHI-SMDB database in this report for physician numbers and the CMA database and workforce survey (2017) (1) for practice characteristics and gender balance.

Results

Adult GI: National and Provincial Data

The total number of Adult GIs in 2018 was 787, a decrease of 14 from the previous year. Nationally, this gives a number of 2.1 GI per 100,000 population (Table 2). There is significant variation between provinces with the lowest number in Saskatchewan and the highest in Quebec.

Pediatric GI: National and Provincial Data

Pediatric GI numbers are very small with 1.4 physicians per million population on a national basis. There are approximately 6 million children under the age of 15 (Table 3), which gives a number of 8.8 pediatric GI per million children in this age group. There is variation between provinces; three provinces do not have any practitioners.

Table 1. Inclusion and exclusion criteria for Canadian Institute of Health Information—Scott's Medical Database (CIHI-SMDB) and Canadian Medical Association (CMA)

	CIHI-SMDB	CMA
Inclusion criteria		
Active physicians		
Clinical	X	X
Nonclinical	X	X
Part-time physicians		X
Semi-retired		X
Exclusion criteria		
Residents	X	X
Physicians (military)	X	
Physicians over 80		X
Retired	X	
Semi-retired	X	
Physicians not wanting to be recorded	X	

Practice Setting and Time in Clinical Practice (CMA 2017 Workforce Summary) (1)

The main, but not necessarily only, practice settings include: academic health science centres (AHSC; 36%), private offices/clinic (28%), community hospitals (23%), non-AHSC teaching hospitals (7%), walk-in clinics (2%) and community clinics (2%). It is likely that hospital-based practitioners are not exclusively engaged in GI practice. We do not know their percentage devoted to GI clinical practice. The majority are in solo practice (39%), while 20% are in group practice, 34% are hospital based and 5% are in interprofessional practice.

Age of the GI Physician Population

There are smaller numbers in the under 35 years of age and over 65 years of age cohorts. The largest number of GI physicians is in the 35–44 age group (Table 4). Approximately 110 are over the age of 65 and we can expect that some will retire each year. An average of 12 gave up their licenses per year between 2014 and 2017 (CMA). Others may have retired from clinical practice but kept their license or reduced workload. We do not know whether the number of trainees and fellows entering practice is appropriate for the number retiring and decreasing their workload.

Gender

Based on CMA data, females make up 31% of the GI workforce (Table 5). When the numbers of female and male GIs are analyzed by age group, the proportion of female practitioners shows a progressive increase with decreasing age, with the profession moving closer to parity in the number of females and males if this trend continues.

In adult gastroenterology practice, the majority (60%) of practitioners are male, a proportion unchanged since 2015. In contrast, numbers for pediatric GI practice are near opposite balance, where an average of 64% of practitioners are female.

Trainees

Core trainees

Core trainees are residents who have completed 3 years of internal medicine and are completing core training in GI. Canadian citizens (CC) and permanent residents (PR) are most likely to add to the Canadian workforce and they are presented separately from visa trainees who are in Canada on educational visas and are likely to return to their home countries.

Adult GI

Trainee numbers are CC–PR just over three quarters of the peak in 2012. Visa trainees are close to their 9-year average (Table 6).

Pediatric GI

Pediatric trainee numbers peaked in 2011 and are currently about 40% of that number. Visa trainee numbers are very small and no more than one or two per year (Table 7).

Table 2. Number of adult gastroenterologists by year, province, national total and number of GI per 100,000 population (5,6)

Year	NL	PE	NS	NB	QC	ON	MB	SK	AB	BC	Total
2010	8	1	18	7	195	228	13	8	98	60	636
2011	8	1	20	11	210	233	14	11	97	60	665
2012	10	2	19	13	219	247	14	11	109	62	706
2013	9	2	19	14	224	252	14	12	108	61	715
2014	11	2	19	14	234	271	17	11	113	65	757
2015	12	1	19	13	246	281	15	12	114	66	779
2016	11	1	20	13	240	287	15	13	121	76	797
2017	10	1	20	12	243	289	14	14	121	77	801
2018	7	2	22	15	241	266	20	13	119	82	787
#/100,000	1.3	1.3	2.3	1.9	2.9	1.9	1.5	1.1	2.8	1.6	2.1

AB, Alberta; BC, British Columbia; MB, Manitoba; NB, New Brunswick; NL, Newfoundland and Labrador; NS, Nova Scotia; ON, Ontario; PE, Prince Edward Island; QC, Quebec; SK, Saskatchewan.

Table 3. Number of pediatric gastroenterologists by year, province, national total and number per 100,000 population (5,6)

Year	NL	PE	NS	NB	QC	ON	MB	SK	AB	BC	Total
2010	1	0	0	0	11	11	0	0	9	3	35
2011	1	0	0	0	13	11	0	0	8	3	36
2012	1	0	0	0	13	14	0	0	9	4	41
2013	2	0	0	0	14	14	0	0	10	4	44
2014	2	0	1	0	14	13	1	0	10	4	45
2015	1	0	1	0	14	14	1	0	12	4	47
2016	1	0	1	0	14	16	1	0	13	5	51
2017	1	0	1	0	15	18	1	0	13	5	54
2018	2	0	1	0	14	18	1	0	11	6	53
#/100,000	0.4	0	0.1	0	0.2	0.1	0.1	0	0.3	0.1	0.14

AB, Alberta; BC, British Columbia; MB, Manitoba; NB, New Brunswick; NL, Newfoundland and Labrador; NS, Nova Scotia; ON, Ontario; PE, Prince Edward Island; QC, Quebec; SK, Saskatchewan.

Table 4. Age groups and percentages of the GI population in each group (1)

Age group	<35	35–44	45–54	55–64	>65
Percentage	8	38	24	17	13

Table 5. Percentage of females by age group (1).

Age group	<35	35–44	45–54	55–64	>65
Percentage of female	46	41	32	13	10

Fellows

Fellows are GIs who have completed core training and are doing additional training without exam certification on completion.

Adult GI

There have always been more visa fellows than CC–PR. CC–PR fellows peaked in 2013 and are currently 67% of peak (Table 8). Fellowship positions are being taken up by non-Canadian trainees who now outnumber CC–PR by nearly 3:1.

Pediatric GI

The pattern is similar to the adult fellows with a ratio of visa to CC–PR of over 3:1. The numbers appear to be stable or increasing slightly (Table 9).

Entering Practice

In 2018, there were 72 CC–PR adult GI trainees in the system. The average over the 5 years from 2014 to 2018 was 75. Assuming that half graduate each year, since GI is a 2-year program, this gives an average of approximately 38 trainees available to enter practice either postcore training or postfellowship.

Validation

The data collected by the CMA and CIHI-SMDB has not been validated by CAG. This could be done by provincial surveys. The numbers of pediatric GIs are so small that it is possible to compare actuals and database numbers. One of us (M.C.), a pediatric GI compared CIHI-SMDB numbers with actual numbers. We estimate that, in 2018, there were

Table 6. Canadian citizens (CC) and permanent residents (PR) and visa trainees in adult GI by year (7)

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018
CC–PR	79	91	94	80	76	78	79	71	72
Visa	15	11	10	9	7	8	13	11	9

Table 7. Canadian citizens (CC) and permanent residents (PR) and visa trainees in pediatric GI by year (7)

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018
CC–PR	13	16	7	8	9	14	11	5	6
Visa	1	0	0	2	2	1	1	1	2

Table 8. Canadian citizens (CC) and permanent residents (PR) and visa fellows in adult GI by year (7)

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018
CC–PR	9	15	21	28	22	25	22	29	19
Visa	26	24	29	35	42	49	42	47	54

Table 9. Canadian citizens (CC) and permanent residents (PR) and visa fellows in pediatric GI by year (7)

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018
CC–PR	2	1	9	8	7	6	5	6	5
Visa	15	14	17	12	10	14	11	13	17

70 pediatric GIs delivering 46 clinical Full Time Equivalent (FTE). This contrasts with the CIHI-SMDB of 53, which approximates the clinical FTE number but not the overall number. There is a need to validate the CIHI-SMDB and CMA data by direct measurement through the provincial GI associations.

Discussion

The ultimate aims of GI human resource planning are to provide adequate access to care and to allow the specialty to contribute to education, research and administration. Physician head counts are a crude measure of clinical and other service availability. The percentage of time that physicians spend in clinical practice, as opposed to administrative duties or working part-time, clearly has an impact on the availability of clinical care. This may vary by province. We do not have data on this number. Other factors affecting the availability of clinical care include the efficiency of the system, rates of referral and disease burden of the population.

The number of physicians in practice is determined by the number of trainees and fellows entering practice, the number of physicians retiring or reducing workload and the number of physicians immigrating to, or emigrating from, the country. We are able to track some, but not all, of these parameters. We do not know what percentage of time these physicians spend in the delivery of liver care or internal medicine.

Descriptions of the main human resource databases that generate gastroenterology numbers have previously been given (4). The two main databases that provide estimates of gastroenterology practitioner numbers are now almost identical in their estimates. Historically, the CMA database has reported a lower number of GIs, but it is now almost identical to CIHI. We can be reasonably confident that 787 GIs are engaged primarily in adult GI practice. There is less certainty with regard to the number engaged in pediatric GI but it is between 53 and 70. We cannot be certain whether a total of 840 represents a small increase or decrease from 2017. It depends on whether CMA or CIHI-SMDB numbers for 2017 are used. As we continue to track the databases, this may become clearer in future years. The need for validation studies of the databases is shown by our results of a review of pediatric GI, which shows poor correlation with the CIHI-SMDB database.

The number of GIs in adult practice was lower in 2018 than in 2017. Canada's population had record growth at 1.4% in 2018–2019 (8); the population is aging and service demand is growing in volume and complexity, all of which would suggest that an increase in numbers, rather than a decrease of 1.8%, is necessary. Trainee numbers are also at close to the lowest they have been since 2010. These trends need to be monitored and action taken to increase numbers if necessary.

Some of the gastroenterology practice, and certainly much of endoscopic practice, can be carried out by surgical colleagues. Therefore, as we have previously shown in the practice audit

of access to care, it is not a matter of a "correct" or "incorrect" number of GIs but whether patients have appropriate access to timely care (9). No studies have been done in recent years. To get a better idea of access trends, there is a need to repeat the practice audits of access to care, or to establish monitoring practices, throughout the country.

There is considerable variation between provinces with regard to the number of GIs per 100,000 population. These data are difficult to interpret. Each province regulates its own health care system. The only valid measure of whether the provincial variation in physician numbers is significant would be measures of wait times and access to specialty consultation and investigation.

The number of pediatric GIs is low, and several provinces do not have any access to the specialty. The impact of this on the care of children with gastrointestinal disease is unknown. It is likely that, in the provinces without pediatric GIs, some of that work is performed by physicians who are trained in adult gastroenterology. Studies assessing the impact of low pediatric GI numbers on patient care need to be conducted. The lack of agreement between the CIHI-SMDB numbers and our review is a concern and highlights the need to validate the databases by direct measurement.

In the younger GI age groups, the numbers of males and females are nearly equal. The changing gender balance of the specialty and trends in paternity leave may, or may not, bring about differences in workload, leave or practice settings. We need to conduct age-matched studies of GIs in order to understand and predict any new possible trends.

An appropriate number of trainees could be defined as the number needed to enter practice in order to replace practitioners who are transitioning to part-time clinical practice or retiring to ensure continuing clinical, administrative and academic practice. We cannot say with certainty whether or not the current number of trainees is adequate. However, we do know that over 100 members of the GI workforce are over the age of 65, an age when retirement or a reduction in practice is likely and we do know that an average of 12 retire their licence each year up to 2017.

CC and PR are accessing fellowships in decreasing numbers, but the number of fellows on an educational visa is increasing. Fellows with educational visas are likely to return to their home countries and their expertise will not be available to the Canadian public, nor will they be available to fill replacement positions as they become available. We do not know what the implications of this are for GI care without further detail on patient need for the care provided by fellow graduates and the positions they might replace.

In February 2020, the Royal College of Physicians and Surgeons launched its Medical Workforce Knowledge base (10). This is an interactive, well-designed site that promises to be invaluable GI resource for the study of human resource numbers. The first set of data cover the years up to 2017. Both adult and pediatric data are included. Data is included for residency quota, new trainees, new certificants and licensed physicians, and the site allows comparison with other specialties. The data sources are CARMS, CAPER, and CIHI. Our data is broadly similar to that of the College and we will work with the College so that agreement can be reached on numbers and trends.

This data for 2018 adds to our understanding of trends in gastroenterology human resources. There are significant gaps in our knowledge of GI human resources. We need much more information on the implications of the major trends observed in 2018—a decrease in the number of practitioners, low trainee numbers compared with historical data, increasing female representation and a decreasing number of Canadians in fellowship positions. Continued monitoring of trends is required.

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Conflict of Interest

The authors have no conflicts to declare.

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