The declining comprehensiveness of primary care

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Abstract

Background: Recent studies suggest that comprehensiveness of primary care has declined steadily over the past decade. This study tracks the participation rates of general practitioners and family physicians in 6 nonoffice settings across Ontario and examines among which types of physicians this decline in comprehensiveness has occurred.

Methods: Billing (claims) records were used to determine the proportions of fee-for-service general practitioners and family physicians who provided emergency, inpatient, nursing home, house call, anesthesia or obstetrical services from 1989/90 to 1999/2000. "Office-only" physicians were those who worked in none of these nonoffice settings. The relation of various physician characteristics to comprehensiveness of care was tested with multivariate analysis for 1999/2000.

Results: The proportion of "office-only" general practitioners and family physicians rose from 14% in 1989/90 to 24% in 1999/2000 ($p < 0.001$). Significant increases in this proportion were noted among general practitioners and family physicians of all ages, both sexes and all practice locations. In 1999/2000, recent graduates (who had completed medical school within the past 7 years) had higher participation rates for emergency medicine (40% v. 5% for physicians aged 65 years and older); female physicians had higher participation rates for obstetrics (16% v. 11% for males); and older physicians had higher participation rates for nursing home visits and house calls (20% and 57% respectively v. 11% and 37% for recent graduates). However, "office-only" physicians were more likely to be female (odds ratio [OR] 2.65, 95% confidence interval [CI] 2.37–2.96), recent graduates (OR 1.35, 95% CI 1.15–1.60), aged 65 years and older (OR 1.45, 95% CI 1.20–1.75) or practising in a city with a medical school (OR 2.30, 95% CI 2.06–2.56) and were less likely to be rural physicians (OR 0.31, 95% CI 0.24–0.41) or certified in family medicine (OR 0.58, 95% CI 0.52–0.66).

Interpretation: There has been a decline in the provision of comprehensive care by general practitioners and family physicians in Ontario. The decline is evident across all age groups and for both male and female physicians. It is also evident in rural areas and in cities with and without medical schools.

Primary care is often the initial point of access to the health care system. Patients who require medical assistance first see their general practitioner or family physician (GP/FP), who manages the patient's medical condition on a continuing basis and coordinates the use of other health services. The breadth of services that patients require may be comprehensive, as is the knowledge base needed to treat multiple, complex medical conditions.

The concepts of comprehensiveness and continuity of care appear in many popular definitions of primary care and generalist care,[1–3] as well as in the principles of family medicine of the College of Family Physicians of Canada.[4] These 2 concepts are clearly linked. A physician is more likely to provide continuous care if the care provided is comprehensive enough to encompass the many different conditions that a patient may develop in his or her lifetime.

One indicator of comprehensiveness is the extent to which GPs/FPs work in multiple environments. The primary care office is the principle setting in which

Research

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physicians encounter their patients. However, patients may also present with acute conditions requiring emergency assessment, surgery or admission to hospital. Patients with chronic, disabling conditions may require long-term care. The extent to which a physician follows his or her patients through these different stages of care is one measure of comprehensiveness. Using this measure, recent studies suggest that comprehensiveness of care has steadily declined over the past decade. GPs/FPs are now less likely to work in inpatient hospital wards,[5,6] nursing homes[5] or emergency departments,[5] do house calls,[5,6] provide anesthesia[5,7] or deliver babies.[5,6,8,9] More and more GPs/FPs are practising exclusively in their offices.[5]

Such trends raise important questions for planners and policy-makers. Critics might argue that declining comprehensiveness of care leads to less continuity and, ultimately, poorer quality of care. When patients are seen by different health care providers each time they are moved to a different care setting, valuable information is lost, and no one is available to coordinate a patient's care. Others might claim that fragmentation of primary care is inevitable. The increasing complexity of medical care demands a higher degree of specialization than in the past. Individual physicians can no longer be expected to maintain an ever-increasing level of expertise across all care settings.

This study explores the circumstances behind the decline in comprehensiveness of primary care. One hypothesis is that it is driven by the aging of the physician population. Older physicians are less likely to practise emergency medicine and obstetrics,[10] and they account for a growing proportion of the pool of physicians. An alternative hypothesis is that the decline is driven by the lifestyle preferences of young physicians, who may want more time for family and leisure activities.

The second dimension to be studied is geography. What differences exist among physicians in cities with academic centres, those in other urban communities and those in rural areas? Rural areas with little or no access to specialist services are particularly reliant on GPs'/FPs' maintaining practice in multiple settings. Has comprehensiveness of care in these communities declined as well? The third dimension to be considered is physician training. Is comprehensiveness of care greater among GPs/FPs who hold College of Family Physicians of Canada certification (CCFP), which is an indicator of completion of a family practice certification examination and either a family practice residency or a successful examination of clinical competency?

Methods

Ontario Health Insurance Plan (OHIP) data were examined for fiscal years 1989/90–1999/2000. From 1989/90 to 1991/92, the data source was the National Physician Database (NPDB), which is maintained by the Canadian Institute for Health Information. This database contains aggregate information about each physician's billings. From 1992/93 to 1999/2000, the data source was the disaggregated OHIP claims file (upon which the NPDB is based). Two data sources were used in order to maximize the time considered in the analysis. Results from the 2 databases were not significantly different from 1992/93 to 1997/98 when the databases overlapped.

The OHIP database contains information about each medical service billed by each doctor for each patient, including the number of services performed and payment received. Physicians who were specialists certified by the Royal College of Physicians and Surgeons of Canada were excluded from the study, as were GPs/FPs with extremely low fee-for-service practice activity (defined as having price-adjusted billings that were less than $35 000 per year).[5] The excluded GPs/FPs represent either physicians with a minimal clinical practice or those who derive the majority of their income from alternative payment plans such as capitation or salary. In 1999/2000, 1263 (13%) individuals were excluded from a total of 9807 GPs/FPs. The Ontario Physician Human Resource Data Centre (OPHRDC) provided additional information about each physician's age, sex, postal code of practice, and whether or not a physician had a CCFP or a CCFP (EM), the latter indicating an additional year of emergency medicine training or extensive emergency experience and a successful examination of clinical competency.

The outcome variables of interest were binary (yes/no) variables representing whether a physician performed a minimum threshold number of services. These thresholds were as follows: emergency department, nursing home and inpatient hospital care, 50 visits per year; house calls, 10 visits per year; obstetrics, at least 2 deliveries per year; and anesthesia, at least $1000 in billings per year. "Office-only" physicians were those who did not meet any of these criteria. A sensitivity analysis was conducted, in which the values for these criteria were quintupled.

Physicians were classified into 3 categories based on their age and stage of practice, namely, physicians aged 65 years and more, recent graduates (medical school graduation within the past 7 years) and established physicians (aged less than 65 years and not recent graduates). Physicians were also classified by their main practice location. "Urban with medical school" included the cities of Toronto, London, Kingston, Ottawa and Hamilton, Ontario. "Rural/small town" described communities with a population of less than 10 000 located outside a census metropolitan area or census agglomeration as defined by Statistics Canada.[11] "Urban — other" referred to all other regions.

Comparisons between 1989/90 and 1999/2000 in the outcome variables were tested with logistic regressions. In the cross-sectional analysis for the year 1999/2000, a multivariate logistic regression was performed on each outcome variable to examine the impact of physician age, sex, location and training variables.

Results

Baseline information about the physician workforce in the 2 time periods 1989/90 and 1999/2000 is presented in Table 1. The proportion of physicians who were women rose, while the proportion of recent graduates declined ($p < 0.001$). There was little change in the geographic distribution of physicians.

Fig. 1 shows time trends in physician participation for each type of service. There was a significant and steady drop in participation for all services ($p < 0.001$). The pro-

portion of physicians who worked only in their office rose from 14% to 24% ($p < 0.001$).

Table 2 shows changes in comprehensiveness of care over time by physician demographics and practice location. There was a significant decline in comprehensiveness of care in all age groups for all services, except for anesthesia among recent graduates and physicians aged 65 years or more. Likewise, there was a significant decline in comprehensiveness of care by both sexes for all services, except for nursing home visits by female physicians. Lastly, there was a significant decline in all types of regions for all services, except for nursing home visits in urban communities with a medical school.

Table 1: Characteristics of general practitioners and family physicians (GPs/FPs) in 1989/90 and 1999/2000

Characteristic	No. (and %) of GPs/FPs* 1989/90	1999/2000
Recent graduate†	2043 (25)	1149 (13)
Established physician†	5438 (68)	6735 (79)
Age ≥ 65 yr	561 (7)	660 (8)
Female†	1550 (19)	2643 (31)
Practice location		
Urban with medical school	3703 (46)	3782 (44)
Urban – other†	3433 (43)	3824 (45)
Rural/small town	875 (11)	917 (11)
Family practice certification		
None (GP)	NA	4885 (57)
CCFP	NA	3659 (43)
CCFP(EM)	NA	305 (4)
Total no. of physicians	8042	8544

Note: recent graduate = graduated from medical school within the past 7 years, established physician = neither recent graduate nor aged ≥ 65 yr, CCFP = certified family physician, CCFP(EM) = family physician with additional certification in emergency medicine, NA = not available.
*Unless stated otherwise.
†Difference in percentages between 1989/90 and 1999/2000 significant to $p < 0.01$

Table 3 lists, for each measure of comprehensiveness, the results of multivariate analyses revealing the impact of physician demographics, location and training in fiscal year 1999/2000. Female physicians were more likely than male physicians to deliver babies and significantly less likely to be performing all other non–office-based services. Recent graduates were more likely to do emergency work, but they were less inclined than established physicians to perform obstetrics, inpatient hospital care, house calls and nursing home visits. Older physicians were less likely to provide emergency, obstetrics and inpatient hospital services compared with established physicians, but they were equally likely to provide nursing home coverage and house calls.

Physicians in small and rural communities were most likely to provide comprehensive care, followed by physicians in "urban — other" regions and physicians in urban communities with a medical school. Having a CCFP was predictive of comprehensiveness of care. Physicians with a CCFP-EM were more likely to practise emergency and inpatient medicine and were less likely to work in nursing homes or do house calls.

Similar declines in comprehensiveness of care by physician sex, age and location were also demonstrated in the sensitivity analysis, in which thresholds for performing a service were increased by a factor of 5. These results are available on request from the author.

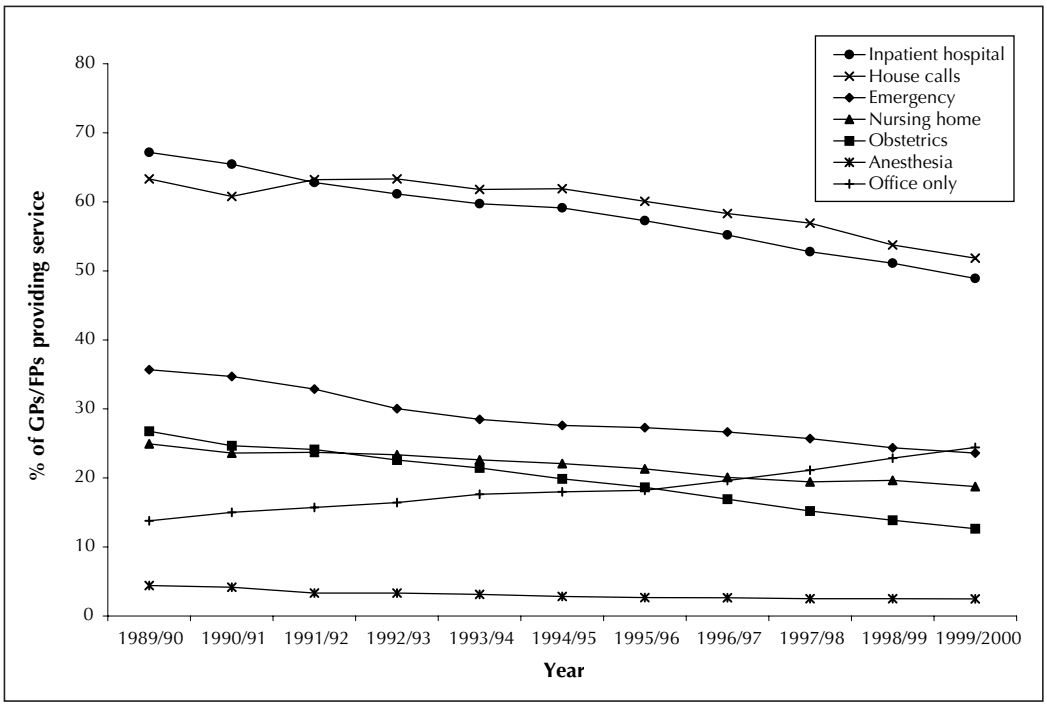

Fig. 1: Comprehensiveness of primary care in Ontario, 1989/90–1999/2000.

Interpretation

This study demonstrates a pervasive decrease in the comprehensiveness of primary care in Ontario. Physicians in all age groups, of both sexes and in all practice locations showed significant levels of decline in the comprehensiveness of the care they provided from 1989/90 to 1999/2000. Decreases in comprehensiveness of care occurred even in rural areas, where GPs/FPs do not have the same latitude to shift patient care to specialists. This finding suggests that either patients are facing barriers to access, or it may be that a decreasing number of GPs/FPs who provide comprehensive care are assuming the workload of those dropping out of nonoffice settings.

Cities with teaching facilities registered the lowest levels of comprehensiveness of care. One reason may be that such areas have high concentrations of specialists, resulting in both ease of referral and greater patient expectations to be seen by a specialist. Academic centres may also have policies limiting GP/FP involvement in obstetrics, inpatient wards and emergency departments.

Although older physicians had the lowest participation in acute care settings such as emergency and inpatient wards, they remained as likely as younger, established physicians to provide nursing home coverage and do house calls. One explanation may be that older physicians tend to treat older patients,[10] which may reflect a natural tendency for physicians to age in step with their patients. Currently, recent graduates are less likely to work in these environments. As older physicians retire, there is the potential that older patients requiring care in these settings will be left unserved, or that responsibility for their care will pass from GPs/FPs to geriatric specialists.

Female physicians were more likely to provide obstetric care than males, but they were less likely to work in all other nonoffice settings and more likely to have an office-only practice. This finding suggests that the dramatic rise in the proportion of GPs/FPs who are women over the past decade[5] may have contributed to the overall decline in comprehensiveness of care. It must be emphasized, however, that many studies suggest that female physicians pro-

Table 2: Changes in comprehensiveness of care from 1989/90 to 1999/2000 by characteristics of GPs/FPs

			Participation rate of GPs/FPs, %						
Characteristic	Year	No. of GPs/FPs	Emergency	Obstetrics	Nursing home	House calls	Anesthesia	Inpatient hospital	Office only
Recent graduate	1989/90	2043	45	27	14	52	2.5	62	16
			⇓	⇓	↓	⇓		⇓	⇓
	1999/2000	1149	40	15	11	37	2.1	51	24
Established physician	1989/90	5438	34	28	28	67	5.1	69	13
			⇓	⇓	⇓	⇓	⇓	⇓	⇓
	1999/2000	6735	23	13	20	54	2.6	50	24
Age ≥ 65 yr	1989/90	561	16	11	34	72	4.3	61	15
			↓	⇓	⇓	⇓		⇓	⇓
	1999/2000	660	5	4	20	57	1.8	35	30
Female	1989/90	1550	23	26	11	45	2.3	55	25
			⇓	⇓		⇓	⇓	⇓	⇓
	1999/2000	2643	15	16	9	38	0.8	40	37
Male	1989/90	6492	39	27	28	68	4.9	70	11
			⇓	⇓	⇓	⇓	⇓	⇓	⇓
	1999/2000	5901	27	11	23	58	3.2	53	19
Urban with medical school	1989/90	3703	14	16	12	61	1.0	48	22
			⇓	⇓		⇓	↓	⇓	⇓
	1999/2000	3782	11	8	11	51	0.4	23	35
Urban – other	1989/90	3433	49	33	32	63	5.6	83	7.3
			⇓	⇓	⇓	⇓	⇓	⇓	⇓
	1999/2000	3824	26	14	21	49	2.8	67	18
Rural/small town	1989/90	875	75	52	53	76	14	86	3.4
			⇓	⇓	⇓	⇓	↓	⇓	↓
	1999/2000	917	66	27	43	66	9.4	80	6.3

Note: ⇓ indicates that change between 1989/90 and 1999/2000 is significant to $p \leq 0.001$, ↓ indicates significance to $0.001 < p \leq 0.01$. There was missing information about age, sex or practice location for a small number of physicians.

vide superior care in the office setting. Female physicians are better communicators,[12] spend more time with their patients,[12,13] focus more on preventive health care[14] and have higher quality-of-care assessments.[15] Some studies have found that patients report greater satisfaction with care offered by female physicians[16,17] and express a preference for female physicians.[18] This study highlights a de facto role differentiation by physician gender, and policymakers who are trying to plan how many doctors will be needed in the future may need to consider the impact of these trends.

Physicians with a CCFP were more likely to provide emergency and inpatient coverage and were less likely to have an office-only practice. This suggests that family medicine training programs may be having a positive impact. The fact that new graduates intending to work in family practice are now required to have a CCFP may mitigate future trends toward lower comprehensiveness of care by GPs/FPs. Further research could examine which types of family practice programs best prepare physicians for comprehensive practice.

This study has several limitations. First, information about physicians who are not paid on a fee-for-service basis is unavailable. Second, data elements in the OHIP or OPHRDC datasets may be subject to coding error. However, OHIP regularly audits physicians for fraudulent claims, and OPHRDC calls each physician periodically to verify specialty and practice location information. Third, this study cannot assess the impact of declining comprehensiveness on quality of care, and further research is needed in this area. Fourth, the study does not consider whether declining comprehensiveness of primary care was a result of the relatively low remuneration for nonoffice services. For example, the fees for nursing home and hospital visits are one-third lower than for an intermediate office assessment.[19,20] Although the relative proportions of fees have not changed over time, the acute condition of inpatients, and hence the workload per patient, may have increased with decreasing hospital-bed capacity. Cost-containment measures directed at physicians during the mid-1990s,[21] such as fee decreases and expenditure caps, may have also discouraged physicians from providing low-paying services.

Some readers of this study may conclude that declining comprehensiveness of primary care is inevitable and, perhaps, desirable. It may be argued that the expectations of young physicians for quality family time are incompatible with a workload that spans all of the practice domains discussed in this paper. The increasing complexity of medical care demands greater specialization, and the ideal of the "super-FP" who can do everything is unrealistic. In the United States, a similar debate on the role of "hospitalists" has taken on great fervour. Hospitalists specialize in inpatient care, leaving primary care physicians to focus on ambulatory care.[22,23] Opponents decry the loss of continuity of care,[24–26] whereas supporters hail the benefits of a specialized knowledge base.[26–28] The evidence on the impact of hospitalists on patient care is mixed[29,30] and inconclusive.

The College of Family Physicians of Canada supports comprehensive primary care but proposes that one alternative could be the group family practice, or "family practice network."[31] Within such networks, individual physicians

Table 3: Results of multivariate analysis of characteristics of GPs/FPs related to comprehensiveness of care, 1999/2000

	Odds ratio (and 95% CI) for participation of GPs/FPs						
Characteristic	Emergency	Obstetrics	Nursing home	House calls	Anesthesia	Inpatient hospital	Office only
Recent graduate	2.32 (1.97–2.74)	0.72 (0.60–0.88)	0.41 (0.33–0.50)	0.46 (0.40–0.53)	0.93 (0.58–1.49)	0.75 (0.64–0.88)	1.35 (1.15–1.60)
Age ≥ 65 yr	0.16 (0.11–0.23)	0.42 (0.29–0.62)	0.96 (0.78–1.19)	1.01 (0.85–1.19)	0.64 (0.35–1.18)	0.55 (0.45–0.66)	1.45 (1.20–1.75)
Female	0.38 (0.33–0.44)	1.39 (1.21–1.61)	0.34 (0.29–0.40)	0.43 (0.39–0.48)	0.32 (0.20–0.50)	0.55 (0.49–0.61)	2.65 (2.37–2.96)
Urban with medical school	0.32 (0.28–0.37)	0.51 (0.44–0.60)	0.47 (0.41–0.53)	1.10 (1.01–1.21)	0.15 (0.08–0.25)	0.15 (0.13–0.17)	2.30 (2.06–2.56)
Rural/small town	6.26 (5.30–7.38)	2.32 (1.95–2.77)	2.84 (2.43–3.32)	1.97 (1.69–2.31)	3.51 (2.61–4.71)	1.92 (1.61–2.29)	0.31 (0.24–0.41)
CCFP	1.32 (1.16–1.50)	2.26 (1.95–2.61)	1.45 (1.28–1.64)	1.39 (1.25–1.53)	0.75 (0.54–1.03)	1.70 (1.52–1.90)	0.58 (0.52–0.66)
CCFP(EM)	27.80 (19.90–38.84)	0.66 (0.41–1.06)	0.50 (0.33–0.74)	0.36 (0.27–0.47)	1.72 (0.97–3.06)	2.85 (2.15–3.78)	0.09 (0.05–0.17)

Note: CI = confidence interval. Odds ratios are compared with a baseline physician who is male, neither a recent graduate nor aged > 65 yr, in an urban community without a medical school and is without family practice certification.

may specialize to some degree, but the group as a whole provides comprehensive care. An implicit assumption of this model, however, is that there will be a solid core of physicians who work in at least one nonoffice setting. This study, however, suggests that such a core is eroding. The proportion of "office-only" physicians has almost doubled in the past decade to its current level of one-quarter of all GPs/FPs. Proponents of these networks must consider how they will be sustainable if these trends continue.

Competing interests: In 1999, Dr. Chan was hired by the College of Family Physicians of Canada as a consultant to survey key leaders in the primary care community in Canada about the future role of family physicians in inpatient hospital medicine. He was also asked to develop policy options for the consideration of the college's Executive Committee and Board. This study was entirely separate from this paper on comprehensiveness of care in terms of funding and data sources.

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