

Patient-reported access to primary care in Ontario

Effect of organizational characteristics

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Abstract

Objective To describe patient-reported access to primary health care across 4 organizational models of primary care in Ontario, and to explore how access is associated with patient, provider, and practice characteristics.

Design Cross-sectional survey.

Setting One hundred thirty-seven randomly selected primary care practices in Ontario using 1 of 4 delivery models (fee for service, established capitation, reformed capitation, and community health centres).

Participants Patients included were at least 18 years of age, were not severely ill or cognitively impaired, were not known to the survey administrator, had consenting providers at 1 of the participating primary care practices, and were able to communicate in English or French either directly or through a translator.

Main outcome measures Patient-reported access was measured by a 4-item scale derived from the previously validated adult version of the Primary Care Assessment Tool. Questions were asked about physician availability during and outside of regular office hours and access to health information via telephone. Responses to the scale were normalized, with higher scores reflecting greater patient-reported access. Linear regressions were used to identify characteristics independently associated with access to care.

Results Established capitation model practices had the highest patient-reported access, although the difference in scores between models was small. Our multilevel regression model identified several patient factors that were significantly ($P = .05$) associated with higher patient-reported access, including older age, female sex, good-to-excellent self-reported health, less mental health disability, and not working. Provider experience (measured as years since graduation) was the only provider or practice characteristic independently associated with improved patient-reported access.

Conclusion This study adds to what is known about access to primary care. The study found that established capitation models outperformed all the other organizational models, including reformed capitation models, independent of provider and practice variables save provider experience. This suggests that the capitation models might provide better access to care and that it might take time to realize the benefits of organizational reforms.

EDITOR'S KEY POINTS

- Established capitation models provided the best patient-reported access and provider experience was the only provider or practice factor that was independently associated with better patient-reported access. This is an unexpected and important finding in the context of investments that have been made to improve patient-reported access to primary care in Ontario through organizational changes such as the introduction of nurse practitioners and other allied health professionals and mandated after-hours services.
- Decision makers and providers should be advised that the effect of organizational changes on accessibility might take time to be fully realized. It is possible that the benefits of the organizational reforms were not yet realized when the data were collected, as the reformed models had just emerged in the years preceding the study.
- Further exploration of the way heuristics and cognitive bias affect provider behaviour in the primary care setting is warranted.

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Accès aux soins primaires en Ontario tel que signalé par les patients

Effet des caractéristiques organisationnelles

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Résumé

Objectif Décrire l'accès aux soins primaires tel que signalé par les patients dans 4 modèles organisationnels de soins primaires en Ontario et explorer comment l'accès est associé aux caractéristiques des patients, des professionnels et de la pratique.

POINTS DE REPÈRE DU RÉDACTEUR

- Les modèles par capitation établie ont offert le meilleur accès selon les patients et l'expérience du professionnel était le seul facteur relié au professionnel ou à la pratique qui était indépendamment associé à un meilleur accès tel que signalé par les patients. C'est une constatation inattendue et importante dans le contexte des investissements pour améliorer l'accès aux soins primaires selon les patients en Ontario au moyen de changements organisationnels comme l'instauration des services d'infirmières praticiennes et d'autres professionnels de la santé et les services obligatoires après les heures normales.
- Les décideurs et les professionnels devraient savoir que les effets des changements organisationnels sur l'accessibilité peuvent prendre du temps à se concrétiser pleinement. Il est possible que les avantages des réformes organisationnelles n'avaient pas encore été réalisés lorsque les données ont été recueillies, puisque les modèles réformés venaient juste d'être instaurés durant les années précédant l'étude.
- Il s'imposerait d'explorer plus en profondeur la façon dont les biais heuristiques et cognitifs influencent le comportement des professionnels dans les milieux de soins primaires.

Cet article a fait l'objet d'une révision par des pairs.
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Type d'étude Sondage transversal.

Contexte Un groupe de 137 pratiques de soins primaires en Ontario choisies au hasard selon 1 de 4 modèles de prestation (rémunération à l'acte, capitation établie, capitation réformée et centres de santé communautaires).

Participants Les répondants au sondage étaient des patients d'au moins 18 ans, n'étaient pas gravement malades ou atteints d'une déficience cognitive, n'étaient pas connus de l'administrateur du sondage, fréquentaient la pratique de soins primaires d'un professionnel consentant à participer à l'étude et pouvaient communiquer en anglais ou en français directement ou avec l'aide d'un traducteur.

Principaux paramètres à l'étude L'accès tel que signalé par les patients était mesuré en fonction d'une échelle en 4 points dérivée de la version antérieurement validée pour les adultes de l'Outil d'évaluation des soins primaires. Des questions étaient posées sur l'accessibilité du médecin durant et après les heures normales de travail et sur l'accès à des renseignements sur la santé par téléphone. Les réponses à cette échelle ont été normalisées et les scores plus élevés représentaient le plus grand accès tel que rapporté par les patients. Des régressions linéaires ont servi à identifier les caractéristiques indépendamment associées à l'accès aux soins.

Résultats Les pratiques utilisant un modèle de capitation établie étaient considérées comme offrant le plus grand accès selon les patients, quoique les différences de scores entre les modèles fussent petites. Notre modèle de régression à multiples niveaux a permis de cerner différents facteurs relatifs aux patients qui étaient significativement ($P=.05$) associés à un plus grand accès selon les patients, notamment le fait d'être plus âgé, d'être une femme, d'avoir un état de santé de bon à excellent selon l'intéressé, d'avoir moins d'incapacité due à la santé mentale et de ne pas travailler. L'expérience du professionnel (mesurée en fonction du nombre d'années depuis le diplôme) était la seule caractéristique liée au professionnel ou à la pratique qui était indépendamment associée à un meilleur accès tel que signalé par les patients.

Conclusion Cette étude élargit les connaissances à propos de l'accès aux soins primaires. Ses conclusions font valoir que les modèles par capitation établie ont surpassé tous les autres modèles organisationnels, y compris les modèles par capitation réformée, indépendamment des variables liées au professionnel et à la pratique, exception faite de l'expérience du professionnel. Ces constatations laissent entendre que les modèles par capitation offrent un meilleur accès aux soins et qu'il peut falloir du temps avant que se concrétisent les bénéfices des réformes organisationnelles.

The Canada Health Act enshrines access to health care as 1 of the 5 principles that all provinces and territories must uphold.¹ However, Canadians increasingly report that they are unable to access health services when needed² and, in international surveys, are less likely to report good access to care compared with patients in other countries.³ In response to these concerns, improved access to health care has become a key component of Canada's health care system renewal and primary care reform efforts.⁴⁻⁷

First-contact accessibility, or *patient-reported access* as it is referred to in this paper, is the ease with which clients can initiate contact with their primary health care provider for a new or existing health problem.⁸ Patient-reported access has emerged as a core attribute of primary care⁹ and is associated independently with improved quality of care in studies from Canada¹⁰ and the United Kingdom.¹¹ However, little is known about how patient-reported access varies by the organizational features of primary care, such as the size of the practice population, the type and number of providers in a practice, or the availability of after-hours services.

The purpose of this study is to understand patient-reported access to primary care in each of the 4 main organizational models of primary care in Ontario. We had 2 primary research questions: Does patient-reported access to primary care services differ among the 4 organizational models, and what organizational factors of practices are associated with the provision of accessible primary care?

These questions are particularly pertinent given the efforts and investments made during the past 2 decades in Ontario to develop primary care services and improve quality of care, including access to care. From these efforts new "reformed" models of primary care have emerged that provide expanded services such as care 24 hours a day, 7 days a week, and services from allied health professionals. This study will provide important

new information on the performance of these reformed models that will be relevant to other jurisdictions undergoing similar reform efforts.

METHODS

This study uses data from a cross-sectional study, the COMP-PC (Comparison of Models of Primary Health Care in Ontario) study.¹² The COMP-PC study was designed to describe and compare the structure and process of care within the 4 main organizational models in Ontario, which include community health centres, fee-for-service practices (including family health groups, which were newly formed at the time of the study), and 2 capitation models (established models such as health service organizations and the newer reformed capitation models). **Table 1** provides the practice characteristics for each of these models.^{13,14}

The study used a cross-sectional design whereby we surveyed patients, providers, and practice administrators between October 2005 and June 2006 to examine several performance parameters in the practices in each of the 4 organizational models. The full methodology is presented in a separate publication and methods related to this project are detailed below.¹²

Practice sample

The unit of sampling and analysis was the practice. The sample-size calculation was based on the ability to detect a difference between primary care organizational models with an SD of 0.5, an interclass correlation of 0.2, an α of .05, and a β of .20. We aimed to collect information from 35 practices per model.

We approached all 94 practices in Ontario in the reformed capitation models, all 65 practices in the established capitation models, all 51 community health centres, and 155 randomly selected traditional and reformed

Table 1. Practice characteristics

CHARACTERISTIC	COMMUNITY HEALTH CENTRE	FEE-FOR-SERVICE PRACTICE*	REFORMED CAPITATION MODEL	ESTABLISHED CAPITATION MODEL
Physician remuneration	Salary	Fee for service	Blended	Capitation
Patient rosters	No	No	Yes	Yes
Group practice	Mandatory	Family health groups only [†]	Mandatory	Mandatory
Access 24 hours a day, 7 days a week	Mandatory	Family health groups only [†]	Mandatory	Mandatory
Funding for other allied primary care providers	Substantial	None	Some	Some

*Fee-for-service practices include family health groups, which were newly formed at the time of the study.

[†]Late in 2004, the Ontario Ministry of Health created a new model of care, the family health group, to which fee-for-service practices could transition. A family health group is a collaborative comprehensive primary care delivery model involving 3 or more physicians practising together. These physicians need not be located in the same physical office space, but must be within reasonable distance of each other.¹³ Fee-for-service practices converted to this new model quickly, so that by early 2006 most fee-for-service practices had become family health groups, and it became evident that most would transition by the year's end.

Data from Russell et al.¹⁴

fee-for-service practices across the province that were eligible for this study. Practices were eligible if they had worked under their organizational model for at least 1 year and if consent to participate was obtained from 50% of physicians and nurse practitioners in the practice.

Patient sample

We aimed to conduct 50 patient surveys at each included practice. The receptionist at each practice followed a prepared script and provided all patients presenting for appointments with an introduction to the study on the day of the survey administration. The survey administrator then approached each patient, provided more detailed information, determined eligibility, obtained consent, and then conducted the survey. Patients were eligible to participate if they were at least 18 years of age, were not severely ill or cognitively impaired, were not known to the survey administrator, had consenting providers, and were able to communicate in English or French either directly or through a translator. Severely ill patients and those who were acutely ill or in distress were excluded because we did not want to overburden these patients with the time and effort required to complete the survey.

Survey instruments

The survey instruments were adapted from the adult version of the Primary Care Assessment Tool.¹⁵ The bilingual (French and English) patient survey was divided into 2 sections, one to be completed in the waiting room before the appointment and the other to be completed after the primary care visit. Provider and practice surveys were completed by consenting family physicians or nurse practitioners and practice administrators, respectively. The surveys contained items describing practice environment (including team structure, hours of operation, and availability of medical and social services in the local community), as well as questions about the providers' demographic information.

Patient-reported access measure

Patient-reported access was measured using a 4-item scale included in the survey that was adapted from the adult version of the Primary Care Assessment Tool¹⁵ and considered patient-reported access to care both during and outside of regular office hours, availability of same-day appointments, and access to health information via telephone. Respondents answered on a 4-point Likert scale ranging from "definitely yes" to "definitely not," with the option to indicate "not sure or don't remember." Responses to the scale were normalized, with higher scores reflecting greater patient-reported access.

Ethics approval

The study design was approved by the Ottawa Hospital Research Ethics Board.

Statistics

The psychometric properties of our patient-reported access scale were tested using the Cronbach α , a standard scale validation technique that varies from 0 to 1. A Cronbach α of 1 is perfect and, in general, an α of .7 is considered acceptable.¹⁶ Our scale received a Cronbach α of .67.

Descriptive patient and practice profiles were compiled and compared among the 4 organizational models using ANOVA (analysis of variance) or χ^2 tests as appropriate. Bivariate regression analysis was first used to evaluate the relationships between patient-reported access and each of the patient, provider, and practice variables. These regression analyses were then stratified by organizational model type to evaluate the transferability of the results between organizational models.

Patient-reported access scores were then compared across organizational models using multilevel regression analyses. Our regression analyses were specified as multilevel regression analyses with patients nested within practices. Four linear regression analyses were done: the first included only organizational model of the practice, the second additionally controlled for patient characteristics and practice context, the third regression included provider characteristics, and the fourth then also controlled for organizational factors. Within each regression analysis, the model dummies were forced in and forward selection was performed for nonmodel variables using entry and exit criteria of $P = .05$ and $P = .10$. The linearity of continuous variables was verified and, where appropriate, the variables were categorized.

RESULTS

In total, 35 fee-for-service practices, 35 community health centres, 35 reformed capitation model practices, and 32 established capitation model practices participated, with a total of 5361 respondents. The practice response rate demonstrated lower participation among the fee-for-service practices and reformed capitation model practices. We compared the profiles of the recruited family physicians to the profiles of all Ontario family physicians practising in these models to determine if there was selection bias and found that our sample was representative.¹²

Table 2 displays the patient, provider, and practice characteristics across the organizational models. There were differences across organizational models in many of these characteristics. The bivariate associations between each of these characteristics and the overall patient-reported access scores are shown.

Regression analysis results from the base model and the 3 other specifications are shown in **Table 3**. We found that established capitation model practices had the highest perceived levels of patient-reported access, although

Table 2. Patient, practice, and provider variables in each organizational model of primary care delivery and bivariate association with patient-reported access

CHARACTERISTIC	ORGANIZATIONAL MODEL				ASSOCIATION WITH IMPROVED ACCESS	
	COMMUNITY HEALTH CENTRE	FEE FOR SERVICE	REFORMED CAPITATION	ESTABLISHED CAPITATION	β^* (% OF ACCESS SCORE)	95% CI
Patient profile						
• No. of patients	1219	1375	1494	1273	NA	NA
• Mean age, [†] years	46	49	51	51	0.12	0.09 to 0.14
• Male sex, [†] %	27	33	34	39	-0.84	-1.80 to 0.08
• Insured in Ontario, [†] %	92	96	97	97	0.37	-2.85 to 3.60
• White ethnicity, [†] %	77	87	94	95	0.67	-1.10 to 2.40
• Born in Canada, %	70	74	86	83	0.30	-0.82 to 1.40
• Household income above low income cutoff, ^{††} %	75	90	91	91	-0.49	-1.82 to 0.84
• College or university education, [†] %	40	47	46	45	-2.80	-3.70 to -2.00
• Main providers are nurse practitioners, [†] %	22	< 1	0	3	2.50	0.47 to 4.60
• Speak French or English at home, %	95	99	99	99	-2.30	-5.70 to 1.00
• Self-reported health status of good, very good, or excellent, %	76	81	83	82	1.70	0.58 to 2.70
• Have regular providers, %	93	99	99	99	1.90	-0.97 to 4.70
• Have at least 1 chronic condition, %	72	71	73	71	1.00	0.05 to 1.90
• No. of days with a mental health problem within the past 30 days	5.6	4.5	3.9	3.4	-0.18	-0.24 to -0.12
• No. of days with a physical health problem within the past 30 days	5.7	6.1	5.0	4.6	-0.01	-0.17 to -0.05
• Not working outside the home, %	62	65	63	63	3.20	2.40 to 4.10
• No. of primary care visits in the past year	8.3	7.1	5.3	4.8	0.11	0.06 to 0.16
Visit-specific information						
• Seeing regular provider for that visit, %	85	97	96	97	-1.30	-3.20 to 0.60
• Reason for visit is a chronic condition, [†] %	28	26	26	21	-2.00	-2.90 to -1.00
Provider profile (aggregated at the practice level)						
• No. of years since graduation [†]	19	22	23	29	0.30	0.17 to 0.42
• Female providers, [†] % of total	73	45	41	26	-2.40	-5.00 to 0.10
• CFPC Certification, %	79	81	69	63	-1.50	-4.40 to 1.40
• Canadian university graduates, %	92	90	97	88	3.20	-1.80 to 8.10
Practice organizational factors						
• Working hours spent on direct patient care, [†] %	57	60	50	46	-10.6	-17.4 to -3.9
• No. of patients per physician (1000s) [†]	1.3	1.8	1.4	2.0	-0.44	-1.50 to 0.67
• Mean no. of physicians	3.1	2.4	3.7	1.7	-0.22	-0.71 to 0.28
• Mean no. of nurses (excludes nurse practitioners)	2.7	0.5	2.0	1.1	0.02	-0.58 to 0.62
• Hours of operation per week	48	42	41	37	-0.06	-0.16 to 0.05
• Practice offers on-call services, %	82	50	89	96	4.78	1.81 to 7.74
• Practice is open on weekends, %	20	20	22	0	-1.70	-4.60 to 1.20
Practice setting						
• Rural, [†] %	10	8	13	0	-3.00	-7.00 to 1.10

CFPC—College of Family Physicians of Canada, NA—not applicable.

*Coefficient from bivariate linear regression represents the difference in patient-reported access score across groups for categorical variables, and for each additional number for continuous variables.

†Indicates variables that are significantly different between models at the $P = .05$ level.

†Low income cutoff is defined in Canada as an income threshold for which a family is likely to spend 20% more of its income on food, shelter, and clothing than the average family, leaving less income available for other expenses such as health, education, transportation, and recreation. Low income cutoffs are calculated for families and communities of different sizes.

the gaps among the 4 organizational models were small. The inclusion of patient and provider characteristics slightly reduced the differences between organizational models but did not eliminate them, nor did it change the relative rankings of the organizational models.

Our multilevel regression model identified several factors that were significantly ($P = .05$)

associated with higher patient-reported access: older age, female sex, good-to-excellent self-reported health, less mental health disability, and not working (**Table 3**). Provider age (measured as years since graduation) was the only provider or practice variable associated with improved patient-reported access.

Table 3. Comparison of patient-reported access scores across primary care organizational models with patient, provider, and organizational factors: Higher patient-reported access scores reflect greater access. All the variables listed under each category were considered for regression analyses. Only those that were statistically significant ($P = .05$) were retained and are shown.

FACTOR	PATIENT-REPORTED ACCESS SCORE (NORMALIZED)	ORGANIZATIONAL MODEL ONLY	REGRESSION MODEL 2*	REGRESSION MODEL 3*	REGRESSION MODEL 4*
Established capitation model	83	Reference	Reference	Reference	Reference
Community health centre	76	-6.70 (-9.30 to -4.20)	-6.00 (-8.60 to -3.50)	-4.70 (-7.40 to -2.00)	-5.20 (-7.90 to -2.40)
Fee for service	74	-9.40 (-11.9 to -6.80)	-9.10 (-11.6 to -6.60)	-7.80 (-10.5 to -5.10)	-7.50 (-10.3 to -4.60)
Reformed capitation model	75	-7.30 (-9.80 to -4.80)	-7.20 (-9.70 to -4.70)	-6.80 (-9.40 to -4.30)	-6.90 (-9.50 to -4.30)
Patient factors					
• Age			0.09 (0.06 to 0.13)	0.09 (0.06 to 0.13)	0.09 (0.06 to 0.12)
• Female sex			1.40 (0.50 to 2.40)	1.40 (0.47 to 2.30)	1.45 (0.54 to 2.40)
• Self-reported health good, very good, or excellent			1.60 (0.40 to 2.70)	1.60 (0.43 to 2.76)	1.60 (0.04 to 2.71)
• Mental health problems in past 30 days			-0.12 (-0.18 to -0.06)	-0.12 (-0.18 to -0.06)	-0.12 (-0.02 to -0.06)
• Not working			1.50 (0.48 to 2.60)	1.40 (0.32 to 2.41)	1.50 (0.46 to 2.55)
Provider factors					
• Mean years since graduation				0.17 (0.05 to 0.28)	0.14 (0.03 to 0.25)
Practice organizational factors					
• No. of patients per provider					-0.87 (-1.80 to 0.08)
• Has on-call hours					-2.44 (-5.10 to 0.19)
β		0.82	0.75	0.66	0.73

*Regression model 2: Control variables considered for adjustment included patient demographic characteristics, economic information, health status measures, practice rurality, and practice distance from health services such as hospitals. All variables from **Table 1** were included but only those with $P < .10$ were retained in the equation.

*Regression model 3: All variables included in regression model 2 were forced in, and additional control variables considered for adjustment were all from the provider profile.

*Regression model 4: All variables included in regression model 2 were forced in, and additional control variables for adjustment were practice organizational factors.

DISCUSSION

We had 2 main findings: first, that established capitation model practices provided the most patient-reported access to care, and second, that patient-reported access to care was independent of most measured practice and provider characteristics, save for provider experience (years since graduation).

Overall, the patient-reported access scores in our study are high, suggesting that patients are content with perceived access. This is not consistent with population surveys that have generally found Canadians report poor access to primary care.³ The higher scores in this study might be owing to the selection of participants in the waiting rooms of primary care practices who had already successfully accessed care. In this way our study population differs from the general population. An advantage of conducting the survey in the waiting room is that it minimizes important errors inherent in patient surveys such as recall bias. Among the patients, 82% consented to participate; selection bias is not likely an important issue owing to the very high response rate.

We found that established capitation models outperformed all the other organizational models and this effect was independent of provider and organizational variables other than provider experience. This is an unexpected and important finding in the context of investments that have been made to improve patient-reported access to primary care in Ontario through organizational changes such as the introduction of nurse practitioners and other allied health professionals and mandated after-hours services. Previous research on access to care suggested that practice factors such as the presence of nurses and the availability of care 24 hours a day, 7 days a week, can affect patient-reported access.¹⁷ We found in our earlier research in Ontario that specific organizational characteristics, such as the presence of nurse practitioners, affected other aspects of the quality of primary care service delivery such as chronic disease management and prevention.^{8,12,14}

It is possible that the benefits of the organizational reforms were not yet realized when our data were collected, as the reformed models had just emerged in the years preceding the study. Evidence from Ontario and other jurisdictions support this hypothesis. A 2009 study in Ontario that used health administrative data found that reformed capitation model practices provided less after-hours care and that patients had more nonurgent emergency department visits.¹⁸ Tourigny et al evaluated the effect of primary care reforms in Quebec, including mandated access 24 hours a day, 7 days a week.¹⁹ They found that 2 years after the reforms began there were improvements in patient experiences of continuity of care but these reforms did not affect patient-reported access.

Similarly, researchers in the United Kingdom explored the effect of organizational reforms and identified no effect on patient-reported access 1 year after the reforms.²⁰ A subsequent survey 2 years later found a modest improvement in access to care for patients with chronic illness but not for other patients.²¹ That provider experience was the only variable in our study significantly associated with improved patient-reported access might also mean that a “tincture of time” is essential. Others have also found that older family physicians in Canada appear to provide more patient visits than their younger counterparts.²²

Unmeasured systems and policies or an organizational ethos in the established capitation models might also explain their superior performance. This might include the use of open-access scheduling, the quality and duration of the patient-provider or patient-staff relationships, the provider beliefs, and the overall organizational culture (such as the importance placed on providing timely access to care). Barbara Starfield proposed that bricks-and-mortar changes to the system are unlikely to make a difference if we do not fully embrace a patient-centred health care system.²³ Provider remuneration policies, either those embedded within the organizational model of care or those in the form of supplementary financial incentives and penalties, also differ across the organizational models and could help to explain the superior patient-reported access in established capitation model practices. The established capitation model was the only organizational model in which a penalty was imposed by the province on the capitation fee if patients made visits to other primary care providers outside the practice, compared with end-of-year bonuses (reformed capitation models) or no incentive at all (community health centres and fee-for-service practices). Penalizing providers for poor patient-reported access might be more effective in changing provider behaviour than rewards are. In other domains, behavioural economists have identified a cognitive bias whereby people are “loss averse” and tend to act more to prevent losses than to achieve gains.²³ The evidence in health care for the effect of remuneration²⁴ and incentives²⁵ on provider or organizational behaviour is mixed. Our results suggest that further exploration of the way heuristics and cognitive bias affect provider behaviour in the primary care setting is warranted.

Limitations


In the time since our survey was conducted the landscape of primary care in Ontario has changed and new organizational models of primary care have emerged. However, the current 2 dominant models in Ontario (family health teams and family health organizations) share all of the key features of the reformed capitation models included in this survey (Table 1)^{13,14} and so we believe that our results are sufficiently generalizable to

allow comparisons with existing models of primary care. Additionally, our analysis provides new information to researchers in primary care who are interested in the relationships between access and organization of care.

The cross-sectional design of the study does not allow us to determine causality; thus, although we identified patient and provider characteristics associated with better patient-reported access, it is not possible to determine if these factors were directly responsible. In addition, we did not report on all attributes that might be associated with patient-reported access, such as the quality of the provider-patient relationship. The fact that the relationship between organizational model and patient-reported access persisted after controlling for all available patient, provider, and organization variables suggests that some attributes might be missing.

Further, while the first-contact accessibility scale we used was derived from a well-validated measure,¹⁵ we do not presume to have captured all of the dimensions of access. Finally, our multilevel regression model controlled for correlations at the practice level, but not at the provider level, as we could not link patients to individual doctors. The effect of this on our results would likely be minimal in group practices in which there are shared responsibilities for services such as after-hours care, telephone services, and patient scheduling. Despite these limitations, to our knowledge, this study is the most comprehensive evaluation of variables that could affect patient-reported access to care.

Conclusion

This study provides important new insights to providers and policy makers hoping to improve patient-reported access to primary care. We found that established capitation models provided the best patient-reported access, and provider experience was the only provider or practice factor that was independently associated with better patient-reported access. Decision makers and providers should be advised that the effect of organizational changes on accessibility might take time to be fully realized. 

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Contributors

Dr Muggah helped guide the analysis and was the principal writer of the manuscript. **Dr Hogg** conceived the project, oversaw the data collection and analysis, and participated in all phases of the writing. **Dr Dahrouge** participated in finalizing the study methodology, managed the quantitative component, and participated

in all phases of the writing. **Dr Russell** helped implement the study, worked on finalizing the methodology, and contributed to the writing and editing of the manuscript. **Dr Kristjansson** participated in editing and reviewing manuscript drafts. **Dr Muldoon** conceived the study and oversaw its implementation, and participated in the writing of the manuscript. **Dr Devlin** helped with the analysis and participated in the writing. All authors approved the final version of the manuscript.

Competing interests

None declared

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