

# Patients' perceptions of the quality of care after primary care reform

## Family medicine groups in Quebec

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### ABSTRACT

**OBJECTIVE** To evaluate how a primary care reform, which aimed to promote interprofessional and interorganizational collaborative practices, affected patients' experiences of the core dimensions of primary care.

**DESIGN** Before-and-after comparison of patients' perceptions of care at the beginning of family medicine group (FMG) implementation (15 to 20 months after accreditation) and 18 months later.

**SETTING** Five FMGs in the province of Quebec from various settings and types of practice.

**PARTICIPANTS** A random sample of patients was selected in each FMG; a total of 1046 participants completed both the baseline and follow-up questionnaires.

**MAIN OUTCOME MEASURES** Patients' perceptions of relational and informational continuity, organizational and first-contact accessibility, attitude and efficiency of the clinic's personnel and waiting times (service responsiveness), physician-nurse and primary care physician-specialist coordination, and intra-FMG collaboration were assessed over the telephone, mostly using a modified version of the Primary Care Assessment Tool. Additional items covered patients' opinions about consulting nurses, patients' use of emergency services, and patients' recall of health promotion and preventive care received.

**RESULTS** A total of 1275 patients were interviewed at the study baseline, and 82% also completed the follow-up interviews after 18 months ( $n=1046$ ). Overall, perceptions of relational and informational continuity increased significantly ( $P<.05$ ), whereas organizational and first-contact accessibility and service responsiveness did not change significantly. Perception of physician-nurse coordination remained unchanged, but perception of primary care physician-specialist coordination decreased significantly ( $P<.05$ ). The proportion of participants reporting visits with nurses and reporting use of FMGs' emergency services increased significantly from baseline to follow-up ( $P<.05$ ).

**CONCLUSION** This reorganization of primary care services resulted in considerable changes in care practices, which led to improvements in patients' experiences of the continuity of care but not to improvements in their experiences of the accessibility of care.

### EDITOR'S KEY POINTS

- Accessibility of health care is an important issue being tackled by primary health care reforms across industrialized countries.
- Family medicine groups were implemented by Quebec's Ministry of Health and Social Services in 2004 to improve accessibility, continuity, and coordination of health care in Quebec.
- Implementation of family medicine groups did result in some changes in care practices: an increase in patients' use of clinic after-hours services and an increase in patients' willingness to see nurses. These resulted in substantial changes in patients' perceptions of care continuity. Accessibility was not, however, perceived to improve, and this underlines the difficulty of improving continuity and accessibility simultaneously with a single organizational model and limited resources.

This article has been peer reviewed.  
*Can Fam Physician* 2010;56:e273-82

# Opinion des patients sur la qualité des soins après la réforme des soins primaires

## Le cas des unités de médecine familiale au Québec

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### RÉSUMÉ

**OBJECTIF** Déterminer comment une réforme des soins primaires visant une meilleure collaboration entre professions et organismes pouvait modifier l'opinion des patients sur certains aspects clés des soins primaires.

**TYPE D'ÉTUDE** Comparaison avant-après de ce que les patients pensaient des soins peu après la création des unités de médecine familiale (UMF) (15 à 20 mois après leur accréditation) et 18 mois plus tard.

**CONTEXTE** Cinq UMF de la province de Québec représentant divers milieux et types de pratique.

**PARTICIPANTS** Un échantillon aléatoire de patients a été choisi dans chaque UMF; au total, 1046 participants ont répondu au questionnaire initial et à celui du suivi.

**PRINCIPAUX PARAMÈTRES À L'ÉTUDE** On a consulté les patients par téléphone pour obtenir leur opinion sur la continuité de la relation et de l'information, la facilité d'accès à l'organisation et à la première rencontre, l'attitude et l'efficacité du personnel de la clinique et le délai pour obtenir les services, la coordination médecins-infirmiers et omnipraticiens-spécialistes, et la collaboration intra-UMF, en utilisant principalement une version modifiée de l'Outil d'évaluation des soins primaires. D'autres questions portaient sur l'opinion des patients concernant le fait d'être vus par des infirmiers, leur utilisation des services d'urgence, et ce qu'ils avaient reçu comme conseils de prévention et de promotion de la santé.

**RÉSULTATS** Sur les 1275 patients interviewés lors de l'appel initial, 82% ont également répondu au questionnaire 18 mois plus tard. Dans l'ensemble, on jugeait qu'il y avait une amélioration significative de la continuité de la relation et de l'information ( $P < ,05$ ), alors que l'accès à l'organisation et à la première rencontre de même que le délai pour obtenir les services n'avaient pas changé de façon significative. L'opinion sur la coordination médecins-infirmiers n'avait pas changé, mais celle concernant la coordination omnipraticiens-spécialistes avait diminué de façon significative ( $P < ,05$ ). Entre le questionnaire initial et celui du suivi, il y a eu une augmentation significative de la proportion des patients disant avoir consulté des infirmiers et infirmières, et avoir visité les services d'urgence des UMF ( $P < ,05$ ).

**CONCLUSION** Cette réorganisation des services de soins primaires a causé des changements considérables de la pratique, avec comme résultat une meilleure perception des patients sur la continuité des soins, mais non sur l'accès aux soins.

### POINTS DE REPÈRE DU RÉDACTEUR

- L'accessibilité aux soins de santé est un objectif important de la réforme des soins de santé primaires dans les pays industrialisés.
- Les groupes de médecine familiale ont été instaurés au Québec en 2004 par le ministre de la Santé et des Services sociaux afin d'améliorer l'accessibilité, la continuité et la coordination des soins dans cette province.
- La création des groupes de médecine familiale a modifié certaines façons de faire: plus de patients ont consulté en dehors des heures régulières et ont été acceptés d'être vus par des infirmiers. Ces changements ont modifié considérablement l'opinion des patients sur la continuité des soins. L'accessibilité n'était toutefois pas jugée meilleure, ce qui indique qu'il est difficile d'améliorer simultanément la continuité et l'accessibilité avec un modèle uniquement organisationnel et des ressources limitées.

Cet article a fait l'objet d'une révision par des pairs.  
*Can Fam Physician* 2010;56:e273-82

Patients living in many industrialized countries must wait longer than a day to get appointments with their primary care providers, and 30% of Canadians must wait more than 6 days.<sup>1</sup> Initiatives to improve care accessibility, however, can compromise relational continuity of care,<sup>2,3</sup> which is particularly valued by patients with chronic or serious health problems.<sup>4-6</sup> A succession of national<sup>7,8</sup> and provincial commissions<sup>9-12</sup> in Canada have argued that, in order to address both accessibility and continuity of care, health reforms must begin with primary care, likely because of the strong correlation between health outcomes and the strength of a country's primary health care system in countries of the Organisation for Economic Co-operation and Development.<sup>13</sup>

The province of Quebec is divided into 95 local health networks, each of which includes local community health centres (CLSCs) that have been merged into health and social services centres since June 2004. Approximately 15% of primary care services are provided through CLSCs, and the rest are provided through the physician-run clinics and private practices that are the norm elsewhere in Canada.<sup>14</sup> In 2002, Quebec's Ministry of Health and Social Services (MSSQ) launched a reform of its health services that revolved mostly around a key concept: family medicine groups (FMGs). An FMG is an administrative arrangement for existing practices (solo

practices, CLSCs, or networks); 8 to 10 physicians who wish to participate are grouped together to collaborate with 1 to 2 nurses to offer primary care services, including patient follow-up, health promotion, and preventive care, to a set of registered patients. It offers patients access to care 24 hours a day, 7 days a week, through regular appointments, walk-in clinics, home visits, and after-hours health coverage using telephone hot-lines and emergency on-call services (Table 1). The services provided by FMGs are coordinated with those offered by regional health agencies and other health networks.<sup>15,16</sup> As with other similar Canadian and international initiatives, the essential objective of this reorganization of primary care services was to promote interprofessional and interorganizational collaborative practices in order to improve accessibility, continuity, and coordination of health care.<sup>9</sup>

Some research projects have evaluated the effects of various primary care reforms in Canadian provinces.<sup>16-23</sup> Among these, only a few have measured patients' perceptions of the quality of the care they received. Khan et al<sup>22</sup> used a prospective cohort survey to compare the perceptions of care for patients registered or not registered with primary health care teams. Howard and colleagues<sup>20</sup> described patients' perceptions of care in 2 interprofessional clinics. We were only able to find 2 studies that compared patients' perceptions of care before and after a

**Table 1. Attributes of FMG reform to improve accessibility to care and care continuity**

ASPECT OF CARE	BEFORE FMGs	AFTER FMGs
Constitution of practices	PCPs operate within medical practices (in general 3-4 physicians) that share mainly administrative services	Regrouping of 8-10 physicians who share clinical activities (discussing patients' cases, sharing after-hours care) and nursing and administrative services to improve access to primary care
Chronic disease, health promotion, and preventive care	PCPs provide care for patients with chronic diseases and are in charge of health promotion and preventive care	1-2 nurses with increased responsibilities take charge of the follow-up of patients with chronic diseases, health promotion, and preventive care so PCPs are released to achieve other tasks within their competencies (improves accessibility)
Coordination of care	Medical activities are not coordinated with those of other primary care services	FMG services are coordinated with those offered in local health agencies so psychosocial resources are made available to patients in the FMG
Continuity of care	Patients change physicians often and sometimes seek advice from multiple physicians for the same problem	Patients are registered, which improves continuity by linking patients to PCPs and to the professional teams of their FMGs
Accessibility of care	Patients have problems accessing the medical system; often this means visits to emergency departments or walk-in clinics	Health coverage 24 h/d, 7 d/wk, by the FMG using health hot-lines and emergency on-call services
Relational and informational continuity	Patients are in charge of coordinating their own care	Electronic patient records within the FMG (although these were not yet available at the time of the study); care pathways for the interdisciplinary follow-up of patients with chronic diseases, to promote patient empowerment, treatment adherence, and prevention; service agreement with local health agencies to improve patient access to technical and specialized expertise

FMG—family medicine group, PCP—primary care physician.

primary care reform in Canada, but these surveyed different sets of patients at baseline and follow-up, and participants were not randomly selected.<sup>15,16</sup>

In this article, we report on a study to evaluate the effects of FMGs on patients' perceptions of accessibility, relational continuity, coordination, and comprehensiveness of care, which were assessed in the same patients at the beginning of FMG implementation (15 to 20 months after accreditation) and again 18 months later. Results reported here are part of a broader project that also evaluated the extent of interprofessional collaboration and interorganizational relations in FMGs using a qualitative methodology that was reported elsewhere.<sup>24</sup>

## METHODS

### Design, settings, and procedures

This is a before-and-after comparison of the perceptions of patients from 5 FMGs in 2 regions of the province of Quebec. At the start of this study, 13 FMGs had already been accredited. We initially selected 6 of these FMGs to participate in the study, in order to cover a spectrum of settings (urban, suburban, semirural, and rural) and types of practice (private, academic, hospital-based, and CLSCs). Each FMG was staffed by 2 nurses and a number of physicians (6 to 19). One FMG withdrew from the project before patient selection, owing to a lack of physician availability. Patients registered with physicians from the 5 participating FMGs were initially identified from Quebec's public health insurance service (Régie de l'assurance maladie du Québec) and were eligible for the study if they spoke French, were able to give informed consent, and were aged 18 years or older.

A random sample of patients was then selected in each FMG. We calculated that a minimum sample size of 250 participants in each FMG would be needed to detect a standardized minimal effect size of 0.25 within each FMG in the targeted outcome (80% power). Taking into account an anticipated low response rate, random samples of approximated 1000 individuals were selected in each FMG using computer-generated random numbers. Selected patients were sent impersonal letters, signed by all physicians from the FMG, asking for their authorization to transmit their contact information to the research team. If patients agreed, they were contacted by telephone by a member of the research team and invited to join the study. Those interested in participating were sent an information leaflet together with the consent form and the questionnaire by mail. A member of the research team then contacted the patient to complete the questionnaire over the telephone. The first telephone interview (baseline) was performed following receipt of the signed consent form, at the beginning of FMG implementation, in the summer of 2004. There was a delay of 15 to 20 months, depending on the FMG,

between FMG accreditation and baseline measurements. This delay was necessary for the FMGs to register an adequate number of patients before baseline sampling. The same subjects were interviewed again 18 months later (follow-up) in the winter of 2006. This study was approved by the research ethics committees of Laval University and the Centre hospitalier affilié universitaire de Québec.

### Outcomes

Patients' perceptions of first-contact accessibility, ongoing care (continuity), service responsiveness, and coordination and comprehensiveness of care were assessed by telephone mostly using a modified version of the adult edition of the Primary Care Assessment Tool.<sup>25,26</sup> Items from the Primary Care Assessment Survey<sup>27</sup> were added to the questionnaire to assess organizational accessibility. Additional items relative to the concentration of care, opinions about consulting nurses, collaboration, use of services, and overall perceptions of FMGs were also added to the questionnaire. Finally, patients' reports on the proportion of visits with nurses and the reasons for nurse visits were also recorded. Conceptual and operational definitions of some of the constructs have been detailed by Haggerty et al,<sup>14,28</sup> and the questionnaire is described in **Table 2**.<sup>25-27</sup> The French version of the instrument was validated in Quebec with 120 subjects who had had contact with the health care system during the past year.

Each attribute of care was calculated from the mean of all corresponding items. To facilitate interpretation, we expressed the results for each attribute of care as the proportion of patients who rated that aspect of care as equal to or higher than the minimum expected care level. The minimum expected care level was defined as a mean score of at least 3.0 for items scored using a 4-point Likert scale, a mean score of at least 4.0 for items scored using a 5-point Likert scale, and a mean score of at least 4.5 for items scored using a 6-point Likert scale. These minimal thresholds of care represent a quantitative expression of patients' expectations of care<sup>14</sup> and were conceptually defined in an earlier publication.<sup>28</sup>

### Statistical analysis

The outcomes of interest were the mean scores calculated from all of the items relating to each aspect of care. Data from baseline and follow-up were compared using generalized linear mixed models (Proc Mixed and Proc Glimmix) with repeated measures; FMG was included as a random effect to account for clustering, and time was included as a fixed effect. For categorical variables, raw proportions are presented in the tables, but models compared odds ratios. Baseline characteristics between patients who completed the study and those who withdrew after baseline measurements were compared

**Table 2.** Description of the questionnaire to evaluate patient experiences of the core dimensions of primary care

ASPECT OF CARE	ITEM CONTENT	NO. OF ITEMS	RESPONSE FORMAT	SOURCE AND VALIDATION
Concentration of care with regular physician	Patients' reports on the proportion of visits to the regular physician relative to the total number of visits to any physician of the clinic	1	Report	NA
Concentration of care with FMG	Patients' reports on the proportion of visits to the FMG relative to the total number of visits to any clinic	1	Report	NA
Relational continuity (or accumulated knowledge)	Confidence that regular physicians know the medical history and personal situation and will manage care on an ongoing basis	5	Evaluative	PCAT-AE <sup>25,26</sup>
Information continuity	Confidence that if patient needs to see an alternate physician, the regular physician will receive information about this visit	1	Evaluative	PCAT-AE
Organizational accessibility	Convenience of clinic location and office hours, waiting times for appointments, and ease of contacting the clinic and regular physician by telephone	5	Evaluative	PCAS <sup>27</sup>
Service responsiveness to patients	Patients' perceptions of the way they are treated, including attitude and efficiency of the reception personnel at the clinic and delays in the waiting room	3	Evaluative	1 item from PCAT-AE
First-contact accessibility (face-to-face and by telephone)	Confidence that patients could get advice or orientation within 1 d from their regular providers if they suddenly got sick and needed care at various times of day	6	Evaluative	PCAT-AE
Comprehensiveness (health promotion and preventive care)	Patients' recall of health promotion and preventive care received (list varies depending on age and sex)	11	Evaluative	PCAT-AE
Patients' opinions about consulting nurses for various reasons	Willingness to consult a nurse for health promotion, disease prevention, treatment of minor injuries or minor disease, and follow-up of long-term health problems	5	Evaluative	NA
Physician-nurse coordination	Confidence that nurse and PCP will communicate regarding visit with nurse and that PCP is concerned with the quality of care received from the nurse	6	Evaluative	NA
PCP-specialist coordination	Confidence that PCP and specialist will collaborate and communicate for patients' care	7	Evaluative	PCAT-AE
Intra-FMG collaboration	Confidence that health care providers from the FMG will collaborate in and communicate about patients' care (nurse-physician or physician-physician collaboration)	4	Evaluative	NA
Use of emergency services	Patients' reports on using any of 6 types of emergency services	6	Report	NA
Patients' overall perceptions of FMGs	Extent of information on FMGs provided and opinion on if there are more advantages to FMGs than disadvantages	2	Evaluative	NA

NA—not applicable; PCAS—Primary Care Assessment Survey; PCAT-AE—Primary Care Assessment Tool, adult edition; PCP—primary care physician.

using *t* tests for continuous variables and  $\chi^2$  tests for categorical variables. Intraclass correlation coefficients were estimated using adjusted  $R^2$ .<sup>29</sup>

## RESULTS

### Subjects

Of the 4880 patients invited to participate, 1603 authorized contact and 1275 completed the baseline

questionnaire. Of those completing the baseline questionnaire, 1046 (82%) also completed the follow-up questionnaire after 18 months. Reasons for dropping out of the study between baseline and follow-up included the following: wrong address ( $n=92$ , 7%); lack of interest ( $n=48$ , 4%); unable to contact participant after 8 attempts ( $n=41$ , 3%); not being registered with the FMGs anymore ( $n=20$ , 2%); death ( $n=16$ , 1%); sickness ( $n=8$ , 0.6%); being unfit to answer a survey over the telephone ( $n=2$ , 0.2%); admitted to a transition home ( $n=1$ , 0.1%);

and fear ( $n=1$ , 0.1%). Significant differences ( $P=.001$ ) were observed in the distribution of self-reported health status and main activity (eg, working, studying, retired) between patients who dropped out and those who participated in both data collections (Table 3).

**Table 3. Comparison of baseline characteristics of participants who completed the study and participants who withdrew from the study after baseline measurements: The mean (SD) ages of those who completed the study and those who withdrew were 55.3 (14.6) years and 53.2 (17.6) years, respectively ( $P=.087$ ).**

CHARACTERISTICS	COMPLETED STUDY, % N = 1046	WITHDREW FROM STUDY, % N = 229	P VALUE
Perceived health status			.001
• Bad	2.8	7.9	
• Acceptable	19.0	20.1	
• Good	36.1	30.1	
• Very good	31.4	26.6	
• Excellent	10.7	15.3	
Highest education level			.854
• Primary	17.4	16.2	
• Secondary	45.2	42.4	
• College (technical)	14.2	17.5	
• College (general)	5.2	5.7	
• University	18.0	18.3	
Sex			.289
• Female	64.4	68.1	
Main activity			.001
• Working	41.7	39.7	
• Studying	1.6	3.5	
• Retired	39.4	35.8	
• Unemployed	2.5	5.2	
• Keep house	8.9	5.7	
• Other	5.8	8.3	
• Declined to answer	0.1	1.8	

### Outcomes

To test sampling efficiency, intraclass correlation coefficients were calculated for key variables (relational continuity,  $R^2=0.04$ ; informational continuity,  $R^2=0.03$ ; organizational continuity,  $R^2=0.12$ ; face-to-face accessibility,  $R^2=0.38$ ; telephone accessibility,  $R^2=0.15$ ).

Patients' experiences of the core attributes of primary care are summarized in Table 4. Overall, concentration of care with the primary care physician (PCP) decreased significantly ( $P<.01$ ), whereas informational continuity significantly increased ( $P<.001$ ). Relational

continuity ( $P<.001$ ) and physician-nurse coordination ( $P<.05$ ) increased significantly only as continuous measures, but not as proportions of patients perceiving care to exceed the minimum expected care level. Coordination of care between PCPs and other specialists significantly decreased ( $P<.01$ ), but only as the proportion of patients perceiving care to exceed the minimum expected level of care. Organizational accessibility, service responsiveness toward patients, and first-contact accessibility did not change significantly overall ( $P>.05$ ). Participants' perceptions of the way FMG professionals collaborated as teams was already high at baseline and there was no overall change at follow-up. At follow-up there was a significant improvement in patients' evaluations of the sufficiency of information provided about FMGs ( $P<.001$ ), and the proportion of patients to see more advantages than disadvantages to being registered with FMGs did not change significantly at follow-up ( $P>.05$ ).

The proportion of participants reporting visits with practice nurses increased significantly from baseline to follow-up ( $P<.05$ ). These proportions, however, varied among FMGs, ranging from 6% to 62% at baseline, and from 12% to 64% at follow-up. Reasons for visits with nurses included the following: disease prevention (40%), follow-up of chronic health problems (33%), and triage or previsit activities before the appointment with the physician (27%). At baseline, most patients' opinions about consulting nurses for various reasons were favourable (Table 5). Following the introduction of FMGs, patients' willingness to consult nurses increased significantly for all of the reasons explored ( $P<.01$ ). Ratings at follow-up did not differ significantly between patients with and without nurse visits during the past year ( $P=.59$  to  $.82$ ).

Comprehensiveness of care was evaluated by patients' recall of receiving the health promotion and preventive care recommended for their age and sex (Table 6). Counseling about safer sex and the prevention of falls increased between baseline and follow-up; counseling about drug or alcohol abuse decreased.

The proportion of patients reporting use of FMGs' emergency on-call services increased significantly from 16% to 24% between baseline and follow-up ( $P<.001$ ). Reported use of health hot-lines (Info-santé) significantly decreased from 21% to 18% ( $P=.041$ ), as did ambulance use, which decreased from 8% to 6% ( $P=.019$ ). Use of other emergency services (eg, hospital, 911) did not change significantly between baseline and follow-up.

## DISCUSSION

### Continuity

High continuity scores at baseline demonstrate that even at the beginning of the reform, patients generally had confidence in their ongoing relationships with

**Table 4. Mean (SE) level of patients' experiences of the core dimensions of primary care at baseline and 18 mo after FMG constitution**

ASPECT OF CARE	PATIENTS' LEVEL OF EXPERIENCE, MEAN (SE)		PATIENTS WHO RATED CARE EQUAL TO OR HIGHER THAN THE MINIMUM EXPECTED CARE LEVEL, %	
	BASELINE	18 MO AFTER FMG CONSTITUTION	BASELINE	18 MO AFTER FMG CONSTITUTION
Concentration of care, % visits				
• Percent of FMG visits to registered physician	77.2 (2.44)	74.0 (2.47)*	NA	NA
• Percent of all ambulatory visits to FMG	87.2 (1.80)	85.0 (1.82) <sup>†</sup>	NA	NA
Continuity <sup>‡</sup>				
• Relational continuity	3.49 (0.04)	3.55 (0.04) <sup>§</sup>	84.2	86.0
• Information continuity	3.33 (0.06)	3.43 (0.06) <sup>§</sup>	87.0	90.2 <sup>†</sup>
Organizational accessibility <sup>  </sup>	4.53 (0.17)	4.51 (0.17)	56.4	55.9
Service responsiveness toward patients <sup>  </sup>				
• Patients' perceptions of personnel's attitude and efficiency and of waiting time	4.86 (0.11)	4.84 (0.11)	72.7	71.5
First-contact accessibility <sup>‡</sup>				
• Face-to-face	2.27 (0.22)	2.30 (0.22)	23.0	25.3
• By telephone	2.74 (0.13)	2.78 (0.13)	47.0	48.9
Care coordination <sup>‡</sup>				
• Physician–nurse coordination	3.06 (0.10)	3.16 (0.10) <sup>†</sup>	53.5	59.8
• PCP–specialist coordination	3.21 (0.04)	3.15 (0.04)	69.0	63.6*
Intra-FMG collaboration <sup>¶</sup>	3.34 (0.02)	3.34 (0.02)	85.0	84.4
Patients' perceptions of FMGs <sup>‡</sup>				
• Had enough information about FMGs	2.79 (0.12)	3.04 (0.12) <sup>§</sup>	64.9	73.8 <sup>§</sup>
• More advantages to FMGs than disadvantages	3.27 (0.12)	3.28 (0.12)	82.0	81.3

FMG—family medicine group, PCP—primary care physician.

\*Significant difference before and after FMG constitution ( $P < .01$ ).

<sup>†</sup>Significant difference before and after FMG constitution ( $P < .05$ ).

<sup>‡</sup>A score of 1 = definitely not, 2 = probably not, 3 = probably, and 4 = definitely; minimum expected care level of 3.

<sup>§</sup>Significant difference before and after FMG constitution ( $P < .001$ ).

<sup>||</sup>A score of 1 = very low, 2 = low, 3 = fair, 4 = good, 5 = very good, and 6 = excellent; minimum expected care level of 4.5.

<sup>¶</sup>A score of 1 = never, 2 = rarely, 3 = often, and 4 = always; minimum expected care level of 3.

**Table 5. Mean (SE) level of patients' willingness to consult nurses: A score of 1 = most unfavourable, 2 = rather unfavourable, 3 = more or less favourable, 4 = rather favourable, and 5 = most favourable.**

REASON FOR ENCOUNTER	PATIENTS' LEVEL OF OPINION, MEAN (SE)		PATIENTS WHO RATED PREVENTIVE CARE RECEIVED AS EQUAL TO OR HIGHER THAN THE MINIMUM EXPECTED CARE LEVEL OF 4, %	
	BASELINE	18 MO AFTER FMG CONSTITUTION	BASELINE	18 MO AFTER FMG CONSTITUTION
Health promotion	4.28 (0.05)	4.44 (0.05)*	84.5	88.7 <sup>†</sup>
Disease prevention	4.43 (0.04)	4.58 (0.04)*	89.3	93.5*
Treatment of minor injuries	4.38 (0.04)	4.49 (0.05)*	88.2	90.3
Treatment of minor diseases	4.24 (0.04)	4.42 (0.04)*	82.0	86.9 <sup>†</sup>
Follow-up of chronic health problems	4.28 (0.04)	4.45 (0.04)*	82.8	87.3 <sup>†</sup>

FMG—family medicine group.

\*Significant difference before and after FMG constitution ( $P < .001$ ).

<sup>†</sup>Significant difference before and after FMG constitution ( $P < .01$ ).

**Table 6. Patients' mean (SE) recalled comprehensiveness of health promotion and preventive care received: A score of 1 = definitely not, 2 = probably not, 3 = probably, and 4 = definitely.**

TYPE OF CARE OR RECOMMENDATION	PATIENTS' RECALL OF COMPREHENSIVENESS OF CARE, MEAN (SE)		PATIENTS WHO RATED PREVENTIVE CARE RECEIVED AS EQUAL TO OR HIGHER THAN THE MINIMUM EXPECTED CARE LEVEL OF 3, %	
	BASELINE	18 MO AFTER FMG CONSTITUTION	BASELINE	18 MO AFTER FMG CONSTITUTION
Medication uptake	3.61 (0.05)	3.56 (0.05)	86.4	86.1
Physical exercise	2.88 (0.12)	2.87 (0.12)	64.9	64.1
Alimentation	2.70 (0.12)	2.73 (0.12)	56.9	57.2
Emotional or nervous problems	2.66 (0.10)	2.62 (0.10)	53.6	51.0
Safer sex	2.31 (0.07)	2.45 (0.08)*	29.4	29.3
Drug or alcohol abuses	2.33 (0.08)	2.36 (0.08)	28.3	24.5 <sup>†</sup>
Smoking prevention	3.55 (0.09)	3.66 (0.09)	87.0	92.4
Osteoporosis	3.16 (0.11)	3.27 (0.11)	72.1	74.9
Blood cholesterol testing	3.68 (0.06)	3.70 (0.06)	90.7	92.5
Prevention of falls	2.17 (0.15)	2.49 (0.15)*	33.2	42.5*

FMG—family medicine group.

\*Significant difference before and after FMG constitution ( $P < .01$ ).

<sup>†</sup>Significant difference before and after FMG constitution ( $P < .05$ ).

their general practitioners. Both informational and relational continuity improved significantly at follow-up, but the 1.8% increase in the proportion of patients rating relational continuity as being above minimum expected levels of care was not statistically significant, meaning that this improvement was not clinically significant. Two other surveys of patients' perceptions of care following the same reform have been reported, but they used a different study design by interviewing different non-random samples of patients at baseline and follow-up: One, conducted in 5 different FMGs by Beaulieu et al,<sup>16</sup> reported significant improvements in both relational and informational continuity (no  $P$  values were reported). The other, conducted in 10 FMGs by the MSSQ,<sup>23</sup> reported improvements in relational continuity for half of the items surveyed.

### Accessibility of care

Introducing FMGs did not affect patients' perceptions of care accessibility, even if they reported increased use of the clinics' after-hours care services. First-contact face-to-face accessibility seems to be most problematic, with 77% of patients rating it below the minimum expected care level at baseline and with no improvement at follow-up. The regrouping of smaller practices into FMGs might reduce patients' access to their own physicians. Delegating certain services to nurses, although improving access to a member of the primary care team in general, could also induce a sense of limited access to the PCP.<sup>30</sup> In addition, trade-offs between continuity and accessibility of care have been reported in the literature,<sup>5,31,32</sup> so it might have been too ambitious to aim at improving both aspects of care with a single organizational model.

Beaulieu et al<sup>16</sup> observed a significant improvement in first-contact accessibility, whereas the MSSQ<sup>23</sup> reported a degradation of first-contact accessibility during regular office hours but an improvement of accessibility outside regular office hours. Observed differences among studies might reflect variation of the FMG physician work force among regions, as one of the health regions represented in our project has one of the lowest ratios of family practitioners and inhabitants.

### Coordination of care

Baseline perception of PCP-specialist coordination was similar to levels reported in a simultaneous study performed in other Quebec health regions.<sup>14</sup> At follow-up, participants reported a slight reduction in the level of PCP-specialist coordination, in contrast to reports of the MSSQ<sup>23</sup> and Beaulieu et al.<sup>16</sup> The reform was not, however, specifically intended to improve PCP-specialist coordination. Indeed, according to a simultaneous qualitative analysis, few physicians considered the FMG to be an opportunity to redefine their link to secondary and tertiary care.<sup>24</sup> Perception of physician-nurse coordination did not change at follow-up either, but according to a simultaneous qualitative analysis of interviews with health care professionals, interprofessional collaboration was not yet mature but was growing after 18 months.<sup>24</sup>

### Nurses' roles

That a greater proportion of patients had seen nurses and that patients were more willing to be seen by nurses reflects some practice changes following reform. Two well-documented reviews<sup>33,34</sup> and a qualitative study<sup>30</sup> report that increased responsibility of primary care

nurses leads to improved patient satisfaction and care accessibility without affecting patient health outcomes.

With the increased role of nurse practitioners in primary care practices, the reform was expected to lead to patients reporting more comprehensive care (ie, health promotion and prevention). Improved counseling was indeed observed for 2 health topics following the reform, but counseling on other topics either remained the same or was reduced, likely a result of nurse shortages in some FMGs.

### Methodologic limitations

The internal validity of this study is strengthened by its longitudinal design, the randomized sampling of participants from among all FMG patients, the relatively large overall sample size and sample sizes in each FMG, and low attrition at 18 months' follow-up. However, the lack of concurrent control increases the risk of a change in outcome measures owing to external sources of variability. The study also presents many limitations concerning external validity. First, with only 26% of patients consenting to participate, conclusions to this study can hardly be extended to the complete population of FMG users in the province of Quebec, especially as we did not compare participants' characteristics with those of patients who did not consent to participate. Second, differences were observed in some of the characteristics of participants who withdrew from the study and those who completed the follow-up questionnaire, further hindering the generalizability of our results. Finally, only 5 FMGs were studied from among the 190 that were accredited by September 2009 across the province. This last limitation might, however, have been attenuated by the diversity of the FMGs included in the study, as 3 were located in rural or semirural areas and 2 were located in urban settings. The external validity of this study could also be limited because it was conducted at the beginning of the FMG implantation process. Participating physicians could be considered to be "champions," and we cannot rule out the possibility that their innovative minds influenced their care practices.

### Conclusion

The implementation of FMGs changed care practices considerably, which now affects the delivery of primary care in Quebec. For example, our study showed an increase in patients' use of clinic after-hours services and in patients' willingness to see nurses, which in turn led to a greater proportion of patients actually having seen nurses. These modifications in care practice also came with substantial changes in some aspects of the quality of care provided, as patients perceived some improvements in care continuity. Accessibility was not, however, perceived to improve, and this underlines the difficulty of improving continuity and accessibility simultaneously with a single organizational model and

limited resources. Differences among studies regarding the effects of the reform on first-contact accessibility likely highlight disparities between regions regarding the availability of health practitioners. The implementation of FMGs might therefore benefit from additional measures to increase family physicians' availability in regions suffering the most from shortages before implementation.

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All authors contributed to concept and design of the study; data gathering, analysis, and interpretation; and preparing the manuscript for submission.

### Competing interests

None declared.

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