









BMJ Open Taxonomy of advanced access practice profiles among family physicians, nurse practitioners and nurses in university-affiliated team-based primary healthcare clinics in Quebec

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ABSTRACT

Objectives The advanced access model is highly recommended to improve timely access to primary healthcare (PHC). However, its adoption varies among PHC providers. We aim to identify the advanced access profiles of PHC providers.

Design A cross-sectional study was conducted between October 2019 and March 2020. Latent class analysis (LCA) measures were used to identify PHC provider profiles based on 14 variables, 2 organisational context characteristics (clinical size and geographical area) and 12 advanced access strategies.

Setting and participants All family physicians, nurse practitioners and nurses working in the 49 university-affiliated team-based PHC clinics in Quebec, Canada, were invited, of which 35 participated.

Primary outcome measure The LCA was based on 335 respondents. We determined the optimal number of profiles using statistical criteria (Akaike information criterion, Bayesian information criterion) and qualitatively named each of the six advanced access profiles.

Results (1) *Low supply and demand planification* (25%) was characterised by the smallest proportion of strategies used to balance supply and demand. (2) *Reactive interprofessional collaboration* (25%) was characterised by high collaboration and long opening periods for appointment scheduling. (3) *Structured interprofessional collaboration* (19%) was characterised by high use of interprofessional team meetings. (4) *Small urban delegating practices* (13%) was exclusively composed of family physicians and characterised by task delegation to other PHC providers on the team. (5) *Comprehensive practices in urban settings* (13%) was characterised by including as many services as possible on each visit. (6) *Rural agility* (4%) was characterised by the highest uptake of advanced access strategies based on flexibility, including adjusting the schedule to demand and having a large number of open-slot appointments available in the next 48 hours.

Conclusion The different patterns of advanced access strategy adoption confirm the need for training to be

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ This is the first study in Canada to identify different profiles of advanced access among primary healthcare (PHC) providers.
- ⇒ The study data came from a large number of PHC providers and settings located across the province of Quebec and had a relatively high overall response rate of 48%.
- ⇒ The survey was assessed by face validity conducted with five experts.
- ⇒ University-affiliated team-based clinics in Quebec have particular characteristics that may limit the generalisability of the findings—notably their teaching mission and remuneration modalities.

tailored to individuals, categories of PHC providers and contexts.

INTRODUCTION

Access to primary healthcare (PHC) is a key performance indicator used to assess health systems across the world.^{1 2} Advanced access is an organisational patient-centred model designed in early 2000 to improve access to PHC services for patients and support their relational and informational continuity with a PHC provider or team.^{3 4} Advanced access improves the ability of patients to schedule an appointment with the right PHC provider in a timely manner according to the relative urgency of their health problem.⁵ Since its development, the advanced access model has been revised to better reflect current interdisciplinary team practice.⁶ Figure 1 presents a summary of the five revised pillars of advanced access.

Pillars

Definition

Examples of strategies

1	Comprehensive planning for needs, supply and recurring variations	<p>Comprehensive planning for the needs and characteristics of registered patients by the clinical team members to provide the number of appointments required. This considers recurring seasonal variations in demand and supply</p> <p>Extending visit intervals to decrease demand for visits and redesigning doctor scheduling systems to increase supply</p>
2	Regular adjustment of supply to demand	<p>Regular adjustment of service provision by clinical team members to match and maintain a balance with patients' needs</p> <p>Adding resources or increasing the supply of visits during a period of time</p>
3	Processes of appointment booking and scheduling	<p>The appointment scheduling system must facilitate patient contact with their clinic and provide timely availability of clinical team members according to their patients' needs</p> <p>Planning physicians' schedules over 2–4 weeks and smoothing out the demand for visits in order to offer same-day appointments for acute and urgent cases</p>
4	Integration and optimization of collaborative practice	<p>The integration and optimization of a collaborative practice to provide timely health care and services to patients based on their needs and the roles, responsibilities and skills of team members</p> <p>Develop or enhance inter-professional practice between physicians and other healthcare providers (e.g., collective prescription with nurses)</p>
5	Communication about advanced access and its functionalities	<p>Information about the principles and functionalities of advanced access is provided to patients and members of the clinical team and updated when organizational changes occur. This communication incorporates satisfaction of patients and of all clinic members regarding advanced access</p> <p>Communication strategies encompass a range of tools, such as letters, phone messages, local newspaper ads, posters</p>

Figure 1 Five pillars of the advanced access model, definitions and examples of strategies.

Implementing advanced access requires organisational changes to move from a supply-driven model, where services, schedules and appointment planning are generally defined by providers' preferences, to a supply-demand balancing model where schedules are planned based on patients' needs.^{7 8} Benefits of advanced access have been demonstrated in various healthcare systems, such as reduced wait times and missed appointments and improved professional and patient satisfaction as well as provider productivity.^{9 10}

Recent studies have shown that, despite the wide dissemination of advanced access in interdisciplinary

team-based PHC clinics, there is considerable variation in the combinations of advanced access strategies adopted across clinics and even among providers within the same organisation, which may impede timely responses to patients' needs.^{11–15}

The advanced access model has been promoted widely around the world and across Canada. It is considered a priority for decision-makers in Canada, as less than half of patients are able to get a same-day or next-day appointment with a primary care provider.¹ To our knowledge, no study has measured the extent to which advanced access strategies have been implemented by each category of PHC provider.

Taxonomies have proven to be innovative and effective when applied to organisational PHC services and public health research due to their explanatory potential.¹⁶ This approach has been used in PHC studies to identify characteristics to ensure better access, continuity and inter-professional collaboration^{2 17 18} and seems promising to determine advanced access profiles and to foster effective adoption strategies tailored to healthcare professions. Based on a taxonomy approach, the aim of this study is to identify profiles of PHC providers defined by clusters of respondents with similar characteristics related to their use of advanced access strategies. The results will allow for identification of areas for improvement to adapt training on advanced access for different profiles.

METHODS

Study design

The study was based on a cross-sectional study based on an open-ended electronic survey hosted on a web platform specifically designed for the sole purpose of data collection.¹⁴ The questionnaire was available in both English and French. We followed the Strengthening the Reporting of Observational Studies in Epidemiology reporting guidelines for cross-sectional online surveys.¹⁹

Setting

We conducted the study in Quebec, the second most populous province of Canada. Most healthcare services are funded through a Beveridgean public health insurance system, and essential care is usually free at the point of service.²⁰ Of the various PHC models, the predominant model is family medicine groups (FMGs), a team-based PHC model based on groups of family physicians, nurses, nurse practitioners, social workers and pharmacists who provide services to enrolled patients on a non-geographical basis.²¹ Among the 330 FMGs across the province, 49 are affiliated with universities and have a research and teaching mission for family medicine residents.¹⁴

The e-survey was distributed from October 2019 to March 2020 to family physicians, nurse practitioners and nurses working in university-affiliated team-based PHC clinics. Although university-affiliated clinics have residents, they were not invited to participate in this survey. Residents have different functioning modes and specific adjustments are required for implementation of advanced access with them.^{22–24}

We originally invited all family physicians, nurse practitioners and nurses from all university-affiliated clinics (n=49) to participate in the study. Of the 46 university-affiliated clinics that agreed to participate, we were able to reach 35 before the study was interrupted by the COVID-19 pandemic in March 2020. Our sample consisted of 1074 potential respondents to the questionnaire, including 724 family physicians, 79 nurse practitioners and 271 nurses. Respondents were asked to complete the anonymous e-survey on a voluntary basis.

We disseminated the self-administered survey through a designated contact person in each clinic, who invited the providers to participate in the study. In line with the method of Dillman *et al*,²⁵ we sent three reminders to maximise the response rate.

Survey

The survey (see online supplemental appendix 1) was based on two existing questionnaires to assess adoption of advanced access strategies.^{26 27} The first section of the survey was based on the Health Quality Ontario survey.²⁶ We identified relevant questions for our study and adapted them to the three targeted categories of providers. We supplemented the section related to inter-professional collaboration with questions on partnership based on a short, validated questionnaire developed by Orchard *et al*.²⁷

Content validity was evaluated qualitatively by the research team committee (n=5), which included experts on advanced access, interprofessional collaboration and survey reporting. They rated each item based on its relevance to the advanced access model and were prompted to comment on the formulation of the items. The survey was pretested with four PHC providers using cognitive testing²⁸ and pilot tested in the spring of 2018 with 24 team-based PHC clinics in one region. A total of 197 PHC providers responded to the pilot survey. Following that pilot study, some of the questions were reformulated, and a few response scales were adjusted. We removed items for which there was no variation or important ceiling effects and added questions requiring numerical responses (eg, number of weeks).²⁹

The final self-administered e-survey included 30 questions for family physicians and nurse practitioners and 29 questions for nurses as nurses do not have their own patient roster, the question on panel size was removed. Five questions were open-ended, whereas the rest were closed. The questionnaire took about 20 min to complete.

Data analysis

In a taxonomy, individuals are grouped into classes according to similarities based on a clustering classification algorithm such as latent class analysis (LCA). LCA allows for the processing of a large amount of information, complex interactions and the generation of relatively homogeneous groups of individuals based on strong internal consistency.³⁰ LCA is a model-based approach that identifies clusters of people with similar characteristics that are not directly observable. LCA hypothesises an unobserved categorical variable with *n* categories, where each category represents a latent class.^{31 32}

The taxonomy in this study was based on key advanced access strategies, the size of the clinic and the geographical context. LCA estimates the probability that each participant is a member of each latent class based on maximum likelihood estimation. Each participant is then assigned to the group to which they have the highest probability of belonging, meaning that individuals in the same class

share a common joint probability distribution among the observed characteristics (eg, the same advanced access strategy adoption probability profile).

For the LCA, we used only the common characteristics shared by the three types of providers. We excluded answers to open questions and removed from the LCA three characteristics with more than 35% of data missing. Also, the expert committee decided to exclude characteristics that were not relevant to distinguishing groups, notably the possibility of making appointments online, anticipating patients' needs and renewing prescriptions for more than 1 year.

The data analysis was conducted over five steps: (1) descriptive analyses were used to describe respondents' characteristics (sex, years of practice, etc) and response frequencies (% valid) by each category of provider; (2) intraclass correlation coefficients (ICCs) were measured per clinic for all characteristics selected for the taxonomy^{33 34}; (3) LCA was used to identify latent classes with different patterns of advanced access strategy adoption among PHC providers; (4) three meetings with the expert committee were held to characterise and name each of the classes according to what distinguished it from the others³⁵; (5) statistical tests (Fisher tests) were conducted to analyse associations between latent class membership and characteristics such as number of years of practice, type of PHC provider and median for the third next available appointment (Savage test). The outcome measure was the advanced access strategy profiles of PHC providers.

Determination of the optimal number of classes in our model was made by the expert committee, who were informed by the Akaike information criterion (AIC),³⁵ the Bayesian information criterion (BIC)³⁶ and entropy, which is a measure of the precision with which respondents can be assigned to classes based on their probabilities.³⁵ For this study, different numbers of class models were compared, and the interpretation of each model was assessed.

Public involvement

A five-person patient partner committee was involved at every stage of the project.

They were asked to give input on questionnaires, the data collection process and reports produced to disseminate the results to study participants.

RESULTS

Flow of respondents and characteristics

Of 1074 PHC providers working in 1 of the 35 participating clinics in the study, a total of 514 responded to the e-survey, for an overall response rate of 48%, including 44% of family physicians (n=324/724), 56% of nurse practitioners (n=44/79) and 54% of nurses (n=146/271). The LCA technique automatically excludes missing data, meaning that of the 514 participants in the e-survey, 335 respondents answered elements selected for the LCA.

The key characteristics selected for the LCA were based on 14 variables, 2 organisational context characteristics and 12 advanced access strategies. The variables used had to be dichotomised in this LCA analysis because some variables, such as urban/rural, could not be made continuous. Small variations related to the representativity of the three categories of PHC providers were observed: family physicians and nurse practitioners were slightly more represented in our sample (family physicians represented 67% of the sample vs 71% of respondents included in the LCA; nurse practitioners represented 7% of the sample vs 10% of respondents included in the LCA), whereas nurses were slightly less represented (28% of the sample vs 19% of respondents included in the LCA). There were no statistical differences between the sample and the respondents in χ^2 comparisons ($p=0.051$). Figure 2 summarises the characteristics of the respondents included in the LCA.

Intraclass correlation coefficients

The ICC results indicated how much of the total variation in the model was explained by clinical organisation rather than individual behaviour. Figure 3 shows that strategies such as regularly measuring time to the third next available appointment, having the schedule open to booking appointments for fewer than 4 weeks and using reminder lists to facilitate follow-up of certain clients (all $ICC \geq 0.3$) appear to be more likely to be implemented at the clinical level.

Latent class analysis

First, we determined the optimal number of classes in our model based on the AIC and BIC. The AIC value decreased for the estimated models from the two-class to the six-class model, whereas the BIC was lowest for the two-class model. The six-class model appeared to have a relevant interpretation with similar power (proportion of respondents) as the five-class model. Thus, we chose the six-class model as the final model, which also had a better entropy value (0.757) than the two-class model (0.580), which conforms with the LCA literature.^{37–39} LCA results are summarised in online supplemental appendix 1. Figure 4 presents the distribution of respondents in each profile by type of PHC provider and number of years of practice over 6 years.

Figure 5 presents the probabilities of each advanced access strategy being used per cluster from the six-class model. The six advanced access profiles are presented based on the key characteristics used in the latent classes.

One profile, labelled *Low supply and demand planification*, was characterised by the lowest uptake of strategies designed to balance supply and demand, such as adjusting the schedule to demand (loading 0.09) or extending the interval between follow-ups (0.11). However, it included strategies integrated to review the appointment system, such as having more than 20% of open-slots within the next 48 hours (0.43) and fewer than 4 weeks open for booking appointments (0.62). It also included the

	Family physicians N = 237	Nurse practitioners N = 34	Nurses N = 64
Women, n (%)	165 (70%)	31 (91%)	61 (95%)
median [min-max]			
Years of practice	10 [0-50]	5 [1-30]	16 [1-41]
Number of half-days per week*	8 [1-10]	N/R	N/R
Number of hours worked per week*	N/R	35 [7-43]	35 [1-51]
Number of patients assigned	650 [100-2400]	380 [0-1600]	N/R
Patients seen on average per half-day	N/R	5 [4-6]	4 [0-25]

Figure 2 Characteristics of the 335 respondents included in the latent class analysis. *Working time is organised as half-days for family physicians and hours for nurse practitioners and nurses.

Variable	Measure n (%)	ICC
• Extend the interval between follow-ups	Yes 207 (62) No 128 (38)	0.06
• Create alternatives to in-person visits	Yes 212 (63) No 123 (37)	0.01
• Delegate tasks to other professionals in the team when appropriate	Yes 239 (71) No 96 (29)	0.02
• Adjust the schedule to demand	Yes 119 (36) No 216 (64)	0.11
• Use reminder lists to facilitate follow-up for certain clientele	Yes 167 (50) No 168 (50)	0.30
• Include as many services as possible on each visit	Yes 278 (83) No 57 (17)	0.05
• Less than 4 weeks open for booking appointments	Yes (≤ 4 weeks) 174 (52) No (> 4 weeks) 161 (48)	0.37
• Interprofessional team meetings	Yes 222 (66) No 113 (34)	0.19
• Change the duration of appointments	Yes 87 (26) No 248 (74)	0.09
• More than 20% of open-slots for urgent or semi-urgent patient needs	Yes ($\geq 20\%$) 132 (39) No ($< 20\%$) 203 (61)	0.01
• Regularly calculate time to the third next available appointment	Yes 123 (37) No 212 (63)	0.34
• Orchard collaboration score over 32	Yes ($\geq 32/40$) 115 (34) No (< 32) 220 (66)	0.01

Figure 3 Intraclass correlation coefficients for the key characteristics of advanced access strategies selected for latent class analysis. ICC, intraclass correlation coefficient.

Profiles	Low Supply and Demand Planification n=85	Reactive Interprofessional Collaboration n=84	Structured Interprofessional Collaboration n=65	Small Urban Practices n=45	Comprehensive Practices n=43	Rural Agility n=13	p value
Types of PHC providers							
Family physicians	58 (25)	41 (17)	47 (20)	45 (19)	41 (17)	5 (2)	p <0.001
Nurse practitioners	16 (47)	11 (32)	5 (15)	0	1 (3)	1 (3)	
Nurses	11 (17)	32 (50)	13 (20)	0	1 (2)	7 (11)	
Years of practice over 6 years	54 (22)	63 (26)	48 (20)	36 (15)	35 (14)	8 (3)	p <0.001

Figure 4 Distribution of respondents in each profile. PHC, primary healthcare.

integration of interprofessional practices, such as interprofessional meetings (0.66). This profile represented one-quarter of all respondents (n=85) and was composed of half of nurse practitioners and one-quarter of family physicians.

A second profile, labelled *Reactive interprofessional collaboration*, was characterised by greater use of teamwork strategies, such as having the highest partnership score (0.47) and use of interprofessional team meetings (0.79). It also showed the highest probability of changing the duration of appointments (0.67) and included other strategies used to balance supply and demand and to review the appointment system, such as having more than

20% open-slots available within the next 48 hours (0.46). However, this profile showed the lowest probability of having fewer than 4 weeks open for booking appointments (0.21). This profile represented one-quarter of all respondents (n=84), including half of nurses, one-third of nurse practitioners and one-fifth of family physicians.

The profile labelled *Structured interprofessional collaboration* was characterised by having the second highest probability of being located in an urban area (0.98) and the highest probabilities of having interprofessional team meetings (0.83) and using reminder lists to facilitate follow-up for certain clients.¹ However, it showed low uptake of strategies designed to balance supply and

Profiles	Low Supply and Demand Planification n=85	Reactive Interprofessional Collaboration n=84	Structured Interprofessional Collaboration n=65	Small Urban Practices n=45	Comprehensive Practices n=43	Rural Agility n=13
Variable-response probabilities (loading)						
Organizational context characteristics						
Clinic Area Urban	0.94	0.96	0.98	0.82	1	0.08
Clinic Size Big	0.73	0.50	0.53	0.25	1	0
Advanced access strategies						
Extend the intervals between follow-ups	0.11	0.65	0.96	0.76	1	0.46
Create alternatives to in-person visits	0.33	0.87	0.85	0.31	0.71	1
Delegate tasks to other professionals in the team	0.47	0.68	0.87	1	0.78	0.52
Adjust the schedule to demand	0.09	0.71	0.22	0.16	0.34	1
Use reminder lists	0.48	0.42	1	0.26	0.26	0.46
Include as many services as possible on each visit	0.60	0.96	0.82	0.93	0.97	0.61
Less than 4 weeks open for booking appointments	0.62	0.21	0.44	0.77	0.86	0.32
Interprofessional team meetings	0.66	0.79	0.83	0.48	0.46	0.31
Change the duration of appointments	0	0.67	0.18	0.24	0	0.31
More than 20% of open-slots for semi and urgent patient needs	0.43	0.46	0.48	0.29	0.10	0.59
Regularly calculate time to the third next available appointment	0.23	0.48	0.32	0.58	0.31	0
Orchard collaboration score over 32	0.32	0.47	0.44	0.11	0.35	0.10

Figure 5 Cluster proportions and cluster-specific probabilities from the profiles of advanced access strategies used.

demand, such as adjusting the schedule to demand (0.22) or changing the duration of appointments (0.18). This profile represented one-fifth of all respondents (n=65) and was composed of family physicians (20%) and nurses (20%).

The profile labelled *Small urban delegating practices* was characterised by having a high probability of being located in an urban area (0.82) and a low probability of having more than 15 000 affiliated patients (0.25). This profile was also characterised by providers being most likely to delegate tasks to other providers in the team when appropriate and to regularly calculate the third next available appointment. This profile also showed the lowest probability of creating alternatives to in-person visits and using reminder lists to facilitate follow-up of certain clients. This profile was composed exclusively of family physicians (n=45) representing one-fifth of all respondents.

The profile labelled *Comprehensive practices in urban settings* was characterised by the highest probabilities of providers working in an urban setting, including as many services as possible on each visit (0.97), extending the interval between follow-ups to balance supply and demand and leaving fewer than 4 weeks open for booking appointments. It was also characterised by not changing the duration of appointments and by the lowest uptake of having more than 20% of open-slots available within 48 hours and using reminder lists to facilitate follow-up of certain clients. This profile was composed of one-tenth of all respondents, mainly family physicians (17%).

The main characteristics of the last profile, labelled *Rural agility*, were being located in a rural area and having a small clinical size. Also, this profile was characterised by providers having the highest uptake of strategies used to balance supply and demand, such as creating alternatives to in-person visits and adjusting the schedule to demand. It also showed the highest probability of having more than 20% of open-slots for semi-urgent or urgent patient needs. This profile represented only 4% of all respondents (n=14), mainly nurses (n=7).

Regarding the main reported outcome, the third next available appointment, *Rural agility* was the only profile that scored favourably, with a median of 4 days compared with a median of 7 days for the profiles *Low supply and demand planification*, *Reactive interprofessional collaboration* and *Structured interprofessional collaboration*. Two profiles were associated with the longest reported third next available appointment at around 9 days, *Small urban delegating practices* and *Comprehensive practices in urban settings*.

DISCUSSION

The taxonomy proposed is based on six latent classes composed of six clusters of respondents that are distinct from the others on four characteristics, mainly balancing supply and demand strategies, interprofessional collaboration, schedule review and setting (rural, urban). ICC indicated which strategies are explained by clinical organisation rather than by individual behaviour, such as

having the schedule open to booking appointments for fewer than 4 weeks and using reminder lists to facilitate follow-up of certain clients (all ICC \geq 0.3). Three profiles, *Low supply and demand planification*, *Reactive interprofessional collaboration* and *Structured interprofessional collaboration*, were characterised by combinations of advanced access strategies that seemed to efficiently reduce time to the third next available appointment to a median of 7 days, and *Rural agility*, which was the only profile to reach a median of 4 days.

Estimating the volume of demand based on patients' needs and adjusting the appointment schedule accordingly is a key strategy to improving timely access highlighted in several studies.^{8 12 40} However, this strategy seemed to be well implemented by only two profiles, *Reactive interprofessional collaboration* and *Rural agility*. Reaching a balance between pre-booked and same-day appointments remains a challenge, as reported by Pickin *et al*⁴¹ 20 years ago, especially for certain vulnerable patients (eg, elderly, patients with chronic illnesses, mental health).^{8 42} The use of reminder list to overcome this challenge is used by the *Structured interprofessional collaboration* profile as well as strategies designed to optimise collaboration among providers that have been proven to help reduce the number of physician visits and improve timely access in PHC.⁴³ Previous studies have shown improved access in clinics through the adoption of strategies such as providing advice and following-up with new patients by phone,^{8 41} and creating alternatives to in-person visits was a strategy well implemented by four profiles in our study, especially *Rural agility*.

Moving from a supply driven model, in which services, schedules and appointment planning are generally defined by providers' preferences, to a more measured supply-demand balance seemed to be most difficult for those with the profile *Low supply and demand planification*, considering they had the lowest uptake of strategies designed to adjust supply to demand. This profile is mainly composed of nurse practitioners. A recent study on the implementation of advanced access among nurses highlighted that they were not sufficiently trained to implement the principles of advanced access. Nurse practitioners have redesigned the advanced access strategy of strictly measuring demand and supply by identifying demand patterns and reducing the imbalance on a regular or occasional basis.¹²

The low proportion of open-slots for urgent care in the family physician-dominated profile *Comprehensive practices in urban settings*, associated with a longer delay to the third available appointment, compared with the nurse-dominated *Rural agility*, associated with shorter delays, can be explained by the providers' scopes of practice. With the implementation of advanced access, nurses have more flexibility to open up same-day or next-day appointment slots and are more easily accessible, as they can handle some patient needs autonomously and liaise with the medical team for other needs.¹³ The low proportion of open-slots for urgent care for family physicians aligns

with the¹ Commonwealth 2020 survey results, which showed that only 30% of Quebecers were able to access PHC within 2 days.¹ Some studies also explain this poor outcome by the reluctance of physicians to open up more same-day or next-day appointments due to apprehensions about flexible appointment scheduling and the misperception that implementing the advanced access model may trigger unlimited demand.^{42 44}

Our results on interprofessional practices concur with studies showing that the model of care and interprofessional collaboration in which physicians mainly provide autonomous care to their own patients and only delegate tasks to other PHC providers if required remains dominant.^{7 45 46} Indeed, a team-based PHC clinic, in which patient care is provided by an interdisciplinary team rather than solely by a family physician, combined with an expanded role for nurses to address common health problems, increases access and continuity.^{12 13 47}

Access to PHC services is a greater concern in rural areas than in urban areas. Distance to services and difficulty attracting and retaining providers are challenges often reported in the literature.^{48–50} Strategies such as creating alternatives to in-person visits and adjusting the schedule to demand, also identified in other studies, have focused on physicians as a way to improve access^{8 41} but were more often reported by nurses in our study. Differences between urban and rural practice contexts influence how providers work individually and as a team. A study comparing access and care practices between urban and rural clinics in Scotland showed that rural providers had to adjust to local needs and circumstances more than their urban counterparts. They adapted their availability by adjusting team composition, the extent of access to other services and by generally conducting more consultations per registered patient compared with urban PHC providers.⁵¹

The low uptake of strategies designed to adjust supply to demand, open slots for urgent care, remote strategies such as creating alternatives to in-person visits for family physicians and strategies related to integrating interprofessional practices should be addressed in future training programmes to improve access. This finding confirms the need for future training on advanced access to be tailored to individuals, categories of providers and contexts.

Some attributes of practice settings, such as the type of organisation and organisational culture, remuneration method, whether providers work alone or in teams and the extent and quality of interprofessional collaboration, appear to explain variations in service delivery.^{17 52} Because each setting has its own characteristics, which depend on individuals' characteristics, the categories of PHC providers and organisational contexts, it seems necessary to consider these differences when designing strategies that aim to change practices and improve the adoption of advanced access strategies.

Study strengths and limitations

One strength of this study is the relatively high number of providers included in the profiles (335 providers from 35 PHC clinics across the province), considering that data collection was unexpectedly halted by the COVID-19 pandemic and given the usually low response rate among PHC professionals in North America.⁵³ Another strength was that we conducted a face-validity assessment of the survey with five experts.

Nevertheless, certain aspects of this study may limit the generalisability of the findings. First, it was conducted in university-affiliated PHC clinics, whose particular characteristics—notably their teaching mission, the broad range of providers working alongside physicians,²² their remuneration modalities—set them apart from other PHC settings. Also, the outcome indicator used, known as the third next available appointment, was self-reported. Future research will need to measure this indicator directly from the schedules of providers in electronic medical records, which will improve the accuracy of this measure. Finally, another limitation is that we did not develop a survey for clerical staff, although they are essential actors in appointment planning.⁵⁴ Future research should consider the perspectives of both clerical staff and patients regarding advanced access.

CONCLUSION

Six profiles of combinations of advanced access strategies were identified with corresponding strengths and areas for improvement, which may enable the tailoring of future adoption strategies for advanced access. Some key strategies known to improve access, such as estimating the volume of demand based on patients' needs, adjusting the appointment schedule accordingly or opening more same-day or next-day appointments, were not equally implemented among the three categories of PHC providers, suggesting a need to tailor training to individuals and categories of professionals. The low uptake of remote strategies, such as creating alternatives to in-person visits for family physicians, or strategies related to integrating interprofessional practices requires improvement strategies that should be personalised, as it is necessary to distinguish and take into consideration individual professional practices as well as the context and group or organisational culture (values, beliefs) that may influence practices.

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