Does better access to FPs decrease the likelihood of emergency department use?

Results from the Primary Care Access Survey

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Abstract

Objective To determine whether better access to FP services decreases the likelihood of emergency department (ED) use among the Ontario population.

Design Population-based telephone survey.

Setting Ontario.

Participants A total of 8502 Ontario residents aged 16 years and older.

Main outcome measures Emergency department use in the 12 months before the survey.

Results Among the general population, having a regular FP was associated with having better access to FPs for immediate care ($P < .001$) but was not associated with a decreased likelihood of ED visits (odds ratio [OR] = 1.49, $P = .03$). Better actual access to FP services for immediate care was associated with a decreased likelihood of ED use (OR = 0.62, $P < .001$) among the general population. Among those with chronic diseases, having a regular FP was associated with a decreased likelihood of ED use (OR = 0.47, $P = .01$). Of the Ontario population, 39.3% wanted to see FPs for immediate care at least once a year; 63.1% of them had seen FPs without difficulties and were significantly less likely to use EDs than those who did not see FPs or had difficulties accessing physicians when needed (OR = 0.62, $P < .001$). Having a chronic health condition, recent immigrant status, residence in rural and northern parts of Ontario, and lower educational and income levels were significant predictors of a higher likelihood of ED use, independent of access to FPs ($P < .05$).

Conclusion A decreased likelihood of ED use is strongly associated with having a regular FP among those with chronic diseases and with having access to FPs for immediate care among the general population. Further research is needed to understand what accounts for a higher likelihood of ED use among those with regular FPs, new immigrants, residents of northern and rural areas of Ontario, and people with low socioeconomic status when actual access and sociodemographic characteristics have been taken into consideration. More important, this study demonstrates a need of distinguishing between potential and actual access to care, as having a regular FP and having timely and effective access to FP care might mean different things and have different effects on ED use.

EDITOR'S KEY POINTS

- The goal of this study was to examine whether better access to FPs decreases emergency department (ED) use among the general population of Ontario.
- This study showed that having a regular doctor was associated with a decreased likelihood of ED use only among the population with chronic diseases but not among the general population. However, better access for immediate care was associated with a decreased likelihood of ED use among the general population.
- There was a higher likelihood of ED use among those with regular FPs, new immigrants, residents of northern and rural areas of Ontario, and people with low socioeconomic status.

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Un meilleur accès aux MF diminue-t-il la probabilité de recours aux services des urgences?

Résultats du sondage sur l'accès aux soins primaires

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Résumé

Objectif Déterminer si un meilleur accès aux services des MF réduit la probabilité de recourir aux services des urgences (SU).

Type d'étude Enquête démographique par téléphone.

Contexte L'Ontario.

Participants Un total de 8502 Ontariens de 16 ans et plus.

Principal paramètre à l'étude Utilisation des services des urgences au cours des 12 mois précédant l'enquête.

Résultats Chez l'ensemble de la population, le fait d'avoir un MF régulier était associé à un meilleur accès aux MF pour des soins immédiats ($P<,001$) mais ne s'accompagnait pas d'une diminution de la probabilité de consulter un DU (rapport de cotes [RC]=1,49, $P<,03$). Les membres de la population qui avaient un meilleur accès régulier aux services de MF pour des soins immédiats avaient une moindre probabilité d'utiliser les SU (RC=0,62, $P<,001$). Pour les malades chroniques, le fait d'avoir un accès régulier aux MF s'accompagnait d'une diminution de la probabilité de recourir aux SU (RC=0,47, $P<,01$). Une proportion de 39,3% des Ontariens souhaitaient rencontrer un MF pour des soins immédiats au moins une fois par an; 63,1% d'entre eux avaient vu des MF sans difficulté et étaient significativement moins susceptibles de visiter les SU que ceux qui n'avaient pas vu de MF ou qui avaient eu de la difficulté à en rencontrer un lorsque nécessaire (RC=0,62, $P<,001$). Le fait de souffrir d'une maladie chronique, et celui d'être un immigrant récent, d'habiter une région rurale ou le nord de l'Ontario, ou d'avoir un faible niveau d'instruction et de revenu étaient des facteurs de prédiction significatifs pour une plus grande probabilité de visiter des SU et ce, indépendamment de l'accès aux MF ($P<,05$).

Conclusion On observe une forte association entre le fait pour un malade chronique d'avoir régulièrement accès aux MF et pour la population générale d'avoir accès aux MF pour des soins immédiats et une moindre probabilité d'utiliser les SU. D'autres études seront nécessaires pour comprendre les raisons qui expliquent que les gens qui ont un MF habituel, les nouveaux immigrants, les résidents des régions nordiques et rurales de l'Ontario et ceux qui ont un statut socioéconomique bas sont plus susceptibles de consulter les SU lorsqu'on tient compte de l'accès réel et des caractéristiques socioéconomiques. Un aspect plus important de cette étude est la démonstration qu'il faut distinguer entre un accès potentiel ou réel aux soins, puisque le fait d'avoir un MF habituel et celui d'avoir un accès efficace et en temps opportun aux soins d'un MF pourraient avoir une signification et des effets différents sur le recours aux SU.

POINTS DE REPÈRE DU RÉDACTEUR

- Cette étude avait pour but de déterminer si un meilleur accès à des MF diminue le recours aux services des urgences (SU) dans la population générale de l'Ontario.
- L'étude a démontré que le fait d'avoir un MF habituel était associé à une moindre probabilité d'utiliser les SU seulement pour les malades chroniques et non pour l'ensemble de la population. Toutefois, on observait que dans la population générale, un meilleur accès à des soins immédiats était associé à une diminution de la probabilité d'utiliser les SU.
- La probabilité d'utiliser les SU était plus élevée chez les gens qui avaient un MF régulier, les nouveaux immigrants, les résidents des régions nordiques et rurales de l'Ontario et les gens avec un statut socioéconomique bas.

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High rates of emergency department (ED) use are often attributed to patients turning to EDs for primary care because they either do not have regular FPs or have problems accessing them when needed.[1-5] However, existing studies of the relationship between FP access and ED use provide conflicting results. Some studies have concluded that having FPs can prevent unnecessary use of EDs,[2,6-9] while others have reported that those with usual sources of care are not necessarily less likely to visit EDs than those without such care.[10-13] The conflicting results might be due to multiple meanings of *access to FPs*. According to Andersen, access to care has 2 dimensions: potential and actual (or realized). *Potential access* means the presence of resources (such as availability of FPs).[10] *Actual access* is defined as the ability to access care when the need arises. Few of the previous studies accounted for both potential and actual access[4,11] when studying the relationship between access to FPs and ED use. Also, previous studies typically included only ED users,[12,13] the elderly,[3,9,14] or other population groups[15] rather than the general population. The purpose of our study is to examine whether better access (both potential and actual) to FPs decreases ED use among the general population of Ontario. For this purpose we focus on immediate-care needs, which refer to urgent health problems that require immediate attention (eg, when a person is sick, has the flu, or other health concerns).[16,17]

The Ontario government, like many other provincial governments, has been active in strengthening primary health care and reducing ED crowding.[18-20] Lessons learned from Ontario could have implications for other jurisdictions.

METHODS

The Primary Care Access Survey (PCAS), a population-based telephone survey developed by the Ontario Ministry of Health and Long-Term Care, provides an important source of information on primary health care issues.[17] The PCAS, which started in January 2006, targets Ontario residents aged 16 years and older. Data collection and processing are conducted by the Institute for Social Research, an independent research institute based at York University in Toronto, Ont. Using standardized sampling, the survey is conducted in waves of 3-month intervals with about 150 respondents for each of the 14 Local Health Integration Networks (LHINs) (ie, regional health authorities in the province), for a total sample of 2100 per wave. In this study, we combined data from the 4 waves covering a full calendar year (2008) to even out seasonal fluctuations in ED use. The average survey response rate in 2008 was 57%. This study received approval from the Research Ethics Board of Laurentian University in Sudbury, Ont.

Emergency department use was measured by whether a respondent had been to an ED in the past year owing to a health-related problem. Having or not having a regular FP was used as a measure of potential access to FP services. Having a regular FP could mean better potential access to FP services. In the PCAS, this variable was derived from a series of questions. A regular FP refers to the doctor (ie, a family doctor, family physician, GP, or medical doctor) who the respondent has seen before and will likely see again.[16,19] The variable of actual access was derived from the following survey question: "Not counting any specialist or regular checkups and monitoring of an ongoing health issue, in the last 12 months did you want to see a family doctor because you were sick, had the flu, or were concerned that you had a health problem?" The 3 categories of actual access were as follows: *no need* to see an FP for immediate care; *immediate-care needs met* (ie, saw an FP for immediate care without any problems); and *immediate care needs unmet* (ie, wanted to see an FP for immediate care but either did not see one or saw one but experienced access problems).

Independent variables included age, sex, marital status, education, employment status, income, chronic health condition, immigration status, and place of residence (**Table 1**). *Chronic health condition* refers to whether a respondent has been diagnosed with high blood pressure, diabetes, arthritis, heart disease, stroke, cancer, asthma, other respiratory problems, or depression. *Immigration status* has 3 categories: non-immigrants, established immigrants (ie, having been in Canada for 10 or more years), and recent immigrants (having been in Canada for less than 10 years). *Place of residence* refers to whether respondents live in 1) northern (ie, areas covered by the northeast and northwest LHINs) or southern (ie, areas covered by all other LHINs) Ontario and 2) in urban or rural areas. *Urban areas* are defined as communities with an urban core population of 100 000 or more (ie, census metropolitan areas) or at least 10 000 (ie, census agglomerations) and all neighbouring municipalities in which 50% or more of the employed population commutes to the urban core.[21] *Rural areas* are defined as all areas outside urban areas. Identification of place of residence was based on postal codes by using Statistics Canada's 2008 Postal Code Conversion File. The 4 categories of place of residence are the following: southern-urban, southern-rural, northern-urban, and northern-rural areas.

The provincial weight was used to adjust for design effects related to household size and LHIN population. The post-stratification weights were calculated based on the 2007 Ontario population estimates to adjust the

Table 1. Potential and actual access to FPs, by sociodemographic characteristics, place of residence, and chronic health condition (Ontario, 2008): *N* = *8052*.

		POTENTIAL ACCESS		ACTUAL ACCESS			
POPULATION CHARACTERISTICS	TOTAL, %	THOSE WHO HAVE REGULAR FPs, %	*P* VALUE*	THOSE WHO HAD A NEED TO SEE AN FP, %	THOSE WHO SAW AN FP,† %	THOSE WITH MET NEEDS,‡ %	*P* VALUE*
Total	100.0	93.0		39.3	24.8	63.1	
Gender			<.001				.32
• Male	49.0	91.8		34.3	22.0	64.1	
• Female	51.0	94.2		44.1	27.5	62.3	
Age, y			<.001				<.001
• 16-34	31.7	91.1		43.7	23.4	53.5	
• 35-64	52.1	93.2		39.0	25.5	65.4	
• ≥65	16.2	96.2		31.6	25.2	79.7	
Marital status			<.001				<.001
• Married	63.9	93.8		38.7	25.2	65.1	
• Other	36.1	91.5		40.2	24.0	59.7	
Education			.50				.24
• <Bachelor degree	69.5	93.1		39.0	24.3	62.3	
• ≥Bachelor degree	30.5	92.7		40.0	25.8	64.5	
Employment			.05				<.001
• Employed	61.9	92.6		39.5	24.1	61.0	
• Other	38.1	93.7		38.8	25.8	66.5	
Income (2007)			<.001				.16
• <$30 000	17.0	89.9		39.8	24.0	60.3	
• Other	83.0	93.6		39.2	24.9	63.5	
Immigrant status			<.001				.03
• Recent immigrants (<10 y in Canada)	4.6	91.4		45.3	25.3	55.8	
• Established immigrants (≥10 y in Canada)	19.9	95.2		39.6	24.1	60.9	
• Nonimmigrants	75.5	92.5		38.8	25.0	64.4	
Chronic condition			<.001				.97
• No chronic condition	45.5	92.1		35.5	22.4	63.1	
• Chronic condition	54.5	93.8		42.4	26.8	63.2	
Place of residence			<.001				.02
• Southern-urban	71.7	93.6		39.6	25.4	64.1	
• Southern-rural	21.2	93.0		39.4	24.9	63.2	
• Northern-urban	3.8	88.0		36.1	19.4	53.7	
• Northern-rural	3.2	86.2		34.7	17.2	49.6	

*Significance between groups according to sociodemographic characteristics, place of residence, and chronic health condition based on χ^2 test.
†Those who saw an FP without any problems of accessing one.
‡Percentage of those with met needs calculated by the following: percentage of those who saw an FP/percentage of those who had a need to see an FP.

sample distribution by sex and age to the Ontario population. After exclusion of cases with missing values and application of provincial and post-stratification weights, the weighted sample had 8052 cases. Multivariate logistic regression was used to test the association between the 2 variables of interest (ie, potential and actual access to FPs) and ED use, controlling for 9 independent variables. All variables were entered into

the model simultaneously. Statistical significance was defined as a probability of a type 1 error of less than 5% (2-tailed). Results of the multivariate analysis were presented as odds ratios (ORs) with 95% CIs.

Statistical analysis was conducted using PASW Statistics, version 18.

RESULTS

Potential access to FPs

Of the Ontario population, 93.0% had regular FPs. Having a regular FP was associated with all sociodemographic characteristics (other than education and employment), chronic conditions, and place of residence (**Table 1**). Residents of northern parts of Ontario (86.2% to 88.0%), those with a low income (89.9%), the younger population (91.1%), and recent immigrants (91.4%) were least likely to have regular FPs.

Actual access to FPs

Of the respondents, 39.3% indicated that they wanted to see FPs for immediate care at least once in the year before the survey, and 63.1% of them (or 25% of the Ontario population) actually saw a doctor without experiencing any problems (**Table 1**). Actual access (measured by percentage of those with immediate care needs met) was associated with age, marital status, employment, immigrant status, and place of residence ($P<.05$). Residents of northern-rural (49.6%) and northern-urban (53.7%) parts of the province, the younger population (53.5%), and recent immigrants (55.8%) were least able to see FPs for immediate care when needed.

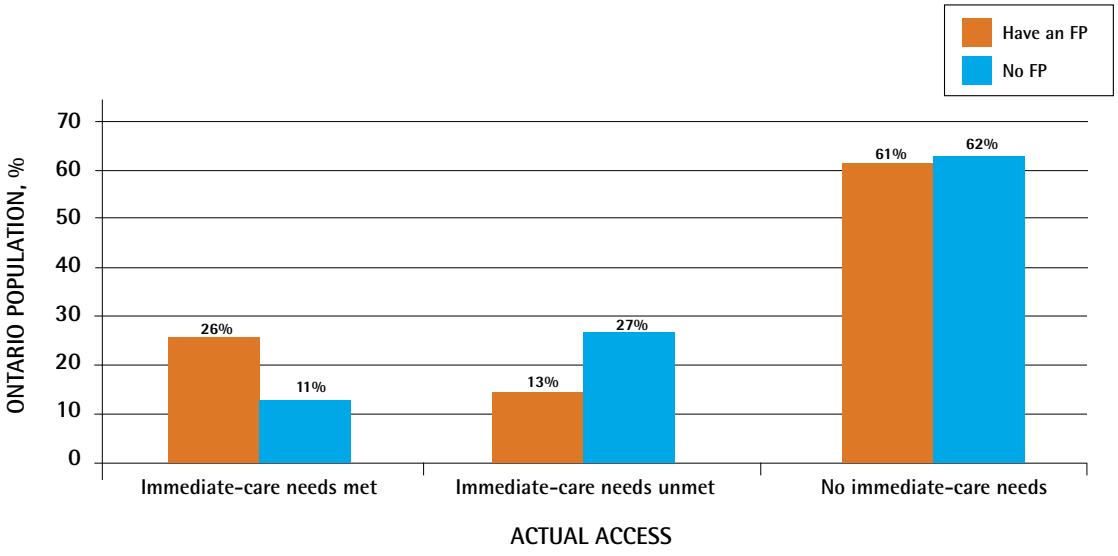
Those with regular FPs were more than 2 times more likely to have immediate-care needs met, compared with those without regular FPs (**Figure 1**). Conversely, the percentage of those with unmet immediate-care needs was higher among those without regular FPs. The association was statistically significant ($P<.001$).

Regression analysis

Potential and actual access as predictors of ED use. Having a regular FP (ie, having better potential access to FP services) was associated with an increased likelihood of ED use (OR = 1.49, $P=.03$) among the general population (**Table 2**). Among those with chronic diseases, having a regular FP was associated with a decreased likelihood of ED use (OR = 0.47, $P=.01$). Better actual access to an FP for immediate care was associated with a decreased likelihood of ED use (OR = 0.62, $P<.001$) among the general population but not among those with chronic diseases (OR = 1.34, $P=.10$).

Other predictors of ED use. Those with chronic diseases were 3 times more likely to use the ED than those without a chronic disease ($P<.001$) (**Table 2**). Place of residence predicted ED use, independent of access to an FP. Residents of northern-rural areas were

Figure 1. Actual access to FPs* for immediate care among the population with and without a regular FP (Ontario, 2008)



*Actual access was significantly different among those with and without regular FPs based on χ^2 test ($P<.001$).

Table 2. Regression analysis of access to FPs and other predictors of emergency department use (Ontario, 2008): *N = 8052.*

VARIABLES IN THE MODEL*	ODDS RATIO OF AN EMERGENCY DEPARTMENT VISIT	95% CI FOR ODDS RATIO	*P* VALUE
Have a regular FP			
• No	1.00	Reference	
• Yes	1.49	1.03-2.14	.03
Actual access to an FP for immediate care			
• Have not seen an FP or had problems accessing a physician when needed	1.00	Reference	
• Have seen an FP without problems	0.62	0.47-0.82	< .001
• Have no need to see an FP for immediate care	0.45	0.35-0.57	< .001
Chronic disease			
• Do not have a chronic disease	1.00	Reference	
• Have a chronic disease	3.08	1.91-4.96	< .001
Among those with chronic disease			
• Do not have a regular FP	1.00	Reference	
• Have a regular FP	0.47	0.30-0.74	.01
Among those with chronic disease			
• Have not seen an FP or had problems accessing a physician when needed	1.00	Reference	
• Have seen an FP without problems	1.34	0.95-1.89	.10
• Have no need to see an FP for immediate care	1.01	0.79-1.45	.66
Place of residence			
• Southern-urban	1.00	Reference	
• Southern-rural	1.25	1.09-1.42	< .001
• Northern-urban	1.34	1.02-1.75	.04
• Northern-rural	1.63	1.23-2.16	< .001
Education			
• < Bachelor degree	1.00	Reference	
• ≥ Bachelor degree	1.16	1.02-1.32	.02
Total household income			
• ≥ $30 000	1.00	Reference	
• < $30 000	1.20	1.02-1.37	.03
Immigration status			
• Established immigrants (≥ 10 y in Canada)	1.00	Reference	
• Recent immigrants (< 10 y in Canada)	1.43	1.07-1.92	.02
• Nonimmigrants	1.30	1.12-1.51	< .001

*Other variables that were controlled for and not included in the model were gender, age, and marital and employment status ($P > .05$).

1.63 times more likely, northern-urban residents were 1.33 times more likely, and southern-rural residents were 1.25 times more likely to use EDs, compared with southern-urban residents of the province. Lower education and lower annual income (ie, less than $30 000) levels were associated with increased ED use by 20% ($P < .05$). Recent immigrants and nonimmigrants were more likely to use EDs by 43.0% and 30.0%, respectively, than more established immigrants.

DISCUSSION

Consistent with other studies,[4,22-24] our study showed that better actual access to FPs for immediate care was associated with a decreased likelihood of ED use: people who wanted to see and actually saw FPs without difficulties were significantly less likely to visit EDs compared with those who were unable to see physicians when needed or had experienced problems accessing

physicians ($P<.001$). However, having a regular FP per se was not associated with a decreased likelihood of ED use among the Ontario general population. Moreover, people with regular FPs were significantly more likely to use EDs than those without regular FPs ($P<.05$). Although this finding seems to be counterintuitive, it might be explained by the fact that adult Ontarians without FPs are generally able to access doctors for immediate-care needs in a more timely fashion than those with regular FPs.[16] According to Hay et al, 60% of those without regular FPs accessed same-day immediate care compared with only 26% of those who had regular FPs. In addition, those without regular FPs were more likely to use walk-in clinics (48%) than those with regular FPs (25%). This might suggest that people without regular FPs who rely on walk-in clinics have quicker access to immediate care and, therefore, are less likely to use EDs than those with regular FPs.

Hay and colleagues also used the PCAS data for their analysis, but they reported no differences in ED use between the 2 groups of Ontarians (those with and those without regular FPs).[16,25] The apparent discrepancy could be because our analysis distinguished between actual and potential access, whereas Hay et al did not look at actual access (ie, ease or difficulties in accessing care when needed). However, our finding of a higher likelihood of ED use by those with regular FPs is consistent with the results reported by Weber et al.[11] This US national population-based study showed that individuals with no usual source of care were less likely to have had ED visits compared with those who used a physician's office as a usual source of care while controlling for unmet needs (actual access). This highlights the importance of both potential and actual access to FP services when studying associations between access to FPs and the use of EDs. Furthermore, although having a regular FP did not decrease the likelihood of ED use, it was related to better actual access, which, in turn, was associated with a decreased likelihood of ED use among the general population.

Our study showed that the association between access to FPs and use of EDs was different for the general population of Ontario and people with at least 1 chronic disease. Thus, people with chronic disease were 2 times less likely to use EDs if they had regular FPs. This result was consistent with Glazier and colleagues' finding that Ontarians with at least 1 chronic condition and without FPs were 1.22 times more likely to have ED visits than those who had regular physicians.[26] Similarly, Ionescu-Ittu et al reported that having a primary physician and a high level of continuity of care was associated with decreased ED use among elderly people in the province of Quebec.[3] (Elderly people are more likely to have chronic conditions.)

Interestingly, better actual access to FPs for immediate care was not associated with a decreased likelihood of ED use among people with at least 1 chronic disease, as it was among the general population. These differences can be explained by different health care needs of the general population and those with chronic disease. Seeing the same doctor is related to continuity of care and might be more important for people with chronic diseases than quick access to FPs and, therefore, people with chronic conditions might be less inclined to use EDs for their immediate-care needs if they have regular FPs. For the general population, quick access for immediate care might be more important than seeing the same doctor; therefore, when their FPs are not available, they might be more inclined to use EDs than those with chronic conditions in a similar situation. Further research is needed to gain a deeper understanding of this difference.

Our study results, showing that place of residence, immigrant status, and socioeconomic status (education and income levels) were associated with the likelihood of ED use, were in line with findings of other studies.[27-32] Previous research suggests that the increased use of EDs by new immigrants and those with low socioeconomic status is underpinned by increased health care needs of these groups.[28,29] Our study shows that individuals living in the northern-rural parts of Ontario were 63.0% more likely to visit EDs than those living in the southern-urban areas. Other studies linked more frequent ED visits in rural areas with poor primary care accessibility or lack of community-based care services or facilities.[27,30-32] Thus, higher rates of ED use in northern Ontario could be explained by the fact that in those areas a considerable amount of primary care is provided in hospital settings, including EDs. Another potential explanation for high ED use in rural areas is that the capitation-payment system favours the use of EDs over walk-in clinics.[33] Establishing more community-based primary care facilities in such regions might help reduce ED use for primary care needs.

Limitations

This study has a few limitations. It is based on survey data, the quality of which could be somewhat compromised by recall bias and nonresponses. The study sample might not adequately represent individuals without a landline telephone. We used a crude measure of ED use that does not specify reasons for ED visits and their urgency. The chronic disease variable is a combined category that includes a range of chronic conditions. Actual access is limited to seeing FPs for immediate care needs and does not include routine care such as regular checkups and monitoring of ongoing health issues. Although this study and others have found that those without regular FPs were able to access care for

immediate needs in a more timely fashion, the continuity of care they receive might be lacking and the overall quality of care compromised.[16,28] Finally, the study results are based on responses of those aged 16 and older and cannot be applied to children younger than 16. Despite these limitations, this study was based on a well designed and well conducted survey on a sample of Ontarians that is representative of the adult population of Ontario.

Conclusion

Our study shows that a decreased likelihood of ED use was strongly associated with having a regular FP among those with chronic diseases and effective access to FP services for immediate-care needs among the general population. Further research is needed to understand what accounts for a higher likelihood of ED use among those with regular FPs, new immigrants, residents of northern and rural areas of the province, and people with low socioeconomic status when actual access and sociodemographic characteristics have been taken into consideration. Most important, our study demonstrates a need to distinguish between potential and actual access to care, as having a regular FP and having timely and effective access to FP care might mean different things and have different effects on ED use. It is hoped that the findings of this study will shed some new light on the complex relationships between access to FPs and use of ED services and help Ontario, as well as other jurisdictions, in fine-tuning its strategies to enhance primary care access and reduce unnecessary ED visits.

Ms Mian is Research Associate and **Dr Pong** is Senior Research Fellow and Professor, both at the Centre for Rural and Northern Health Research at Laurentian University in Sudbury, Ont.

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Contributors

Ms Mian contributed to design of the study, acquisition of data, analysis and interpretation of results, drafting and revising the article, and final approval of the manuscript. **Dr Pong** contributed to conceptualization of the study, acquisition of data, and revising and final approval of the manuscript.

Competing interests

None declared

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