Electronic communication between family physicians and patients

Findings from a multisite survey of academic family physicians in Ontario

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Abstract

Objective To assess the proportion of academic family physicians using e-mail with patients and to explore related attitudes, barriers, and facilitators.

Design A 47-item questionnaire was created after a literature review, discussions with study team members, pretesting, and pilot testing. The questionnaire was disseminated electronically from June to August 2017.

Setting Ontario.

Participants All family physicians affiliated with the Department of Family and Community Medicine at the University of Toronto.

Main outcome measures Physician practices using e-mail (including barriers to and facilitators of e-mail use with patients), use of e-mail with other health care providers, use of communication technologies other than e-mail, and demographic and practice information.

Results A total of 1553 surveys were disseminated and 865 responses received (56% response rate). Overall, 610 respondents met inclusion criteria. Of these respondents, 43% (265 of 610) personally sent e-mails to patients in a typical week. An additional 21% (126 of 610) reported that they did not personally e-mail patients, but their clinic staff did. Patient convenience and a decrease in the need for telephone communication were the most commonly noted reasons for e-mail use. Facilitators of e-mail use included integration with the electronic medical record, enhanced e-mail access control, security features, and financial compensation. Barriers to e-mail use included privacy and security concerns, concerns about inappropriate e-mail use by patients, and the creation of unrealistic expectations about physician availability.

Conclusion E-mail use between academic family physicians and patients was found to be much higher than shown in previous studies of Canadian physicians. This finding might have been owing to unique aspects of academic medicine, remuneration via capitation, or other factors. Efforts to increase physician use of e-mail with patients should address concerns related to privacy and security, electronic medical record integration, and financial compensation.

Editor's key points

- E-mail use with patients in primary care has been shown to improve access to care; however, Canadian physicians use e-mail less frequently to communicate with patients than their international colleagues do. This survey of primary care physicians affiliated with a large academic family medicine department found that e-mail use with patients is more common than previously found in national surveys. Forty-three percent of physicians reported personally using e-mail with patients, while an additional 21% reported that e-mailing with patients is done by other staff in their practice.
- E-mail use with patients was positively associated with remuneration via capitation, spending 50% or less of the work week doing office-based primary care, having a smaller roster size, having a larger group size, and working at a core teaching site; it was not associated with physician age or years in practice.
- Integration with existing electronic medical record technology was the most commonly noted facilitator of e-mail use with patients, while privacy and security concerns were the most common barrier. Respondents were also concerned about inappropriate use of e-mail by patients and creation of unrealistic expectations regarding physician availability.

Points de repère du rédacteur

- Il a été démontré que l'utilisation des courriels avec les patients en soins primaires améliore l'accès aux soins; par ailleurs, les médecins de famille canadiens se servent moins souvent des courriels pour communiquer avec les patients que le font leurs collègues internationaux. Ce sondage auprès de médecins de soins primaires affiliés à un grand département universitaire de médecine familiale a révélé que le recours aux courriels avec les patients est plus courant que le démontraient des sondages nationaux antérieurs. Dans une proportion de 43 %, les médecins ont signalé qu'ils utilisaient personnellement les courriels avec des patients, et 21 % de plus ont rapporté que les courriels avec les patients étaient effectués par d'autres membres du personnel de leur clinique.
- L'utilisation des courriels était positivement associée à la rémunération par patient, au fait de consacrer 50 % ou moins de la semaine de travail à fournir des soins primaires en clinique, à une liste de patients réduite, à une équipe plus nombreuse et au fait de travailler dans une unité d'enseignement principale; elle n'était pas associée à l'âge des médecins ou à leurs années de pratique.
- L'intégration avec la technologie existante des dossiers médicaux électroniques était le plus souvent mentionnée comme le facteur qui facilitait le plus l'utilisation des courriels avec les patients, tandis que les préoccupations en matière de confidentialité et de sécurité étaient les obstacles les plus fréquents. Les répondants s'inquiétaient aussi d'un usage inapproprié des courriels par des patients et de la création d'attentes irréalistes concernant la disponibilité des médecins.

Les communications électroniques entre les médecins de famille et les patients

Constatations d'un sondage multisite auprès de médecins de famille universitaires en Ontario

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Résumé

Objectif Évaluer la proportion de médecins de famille universitaires qui utilisent les courriels avec les patients, et explorer les attitudes, les obstacles et les facilitateurs afférents.

Type d'étude Un questionnaire en 47 points a été élaboré à la suite d'une recherche documentaire, de discussions avec les membres de l'équipe de l'étude, d'une mise à l'essai préalable et d'un projet pilote. Le questionnaire a été distribué électroniquement de juin à août 2017.

Contexte Ontario.

Participants Tous les médecins de famille affiliés au Département de médecine familiale et communautaire de l'Université de Toronto.

Principaux paramètres à l'étude Les habitudes des médecins quant à l'utilisation des courriels (y compris les obstacles à l'utilisation des courriels avec les patients et les éléments qui la facilitent), l'utilisation des courriels avec d'autres professionnels de la santé, le recours à des technologies de communication autres que les courriels, des renseignements démographiques et sur la pratique.

Résultats Au total, 1553 sondages ont été distribués, et 865 réponses ont été reçues (taux de réponse de 56 %). Dans l'ensemble, 610 répondants se conformaient aux critères d'inclusion. Parmi ces répondants, 43 % (265 sur 610) envoyaient personnellement des courriels à des patients durant une semaine normale. De plus, 21 % (126 sur 610) ont répondu ne pas envoyer personnellement des courriels aux patients, alors que le personnel de leur clinique le faisait. Les aspects pratiques pour les patients et une diminution du nombre d'appels téléphoniques à faire étaient les raisons les plus souvent mentionnées d'utiliser les courriels. Les facteurs qui facilitaient l'utilisation des courriels incluaient l'intégration des dossiers médicaux électroniques, un meilleur contrôle de l'accès aux courriels, les paramètres de sécurité et les compensations financières. Parmi les obstacles à l'utilisation des courriels figuraient des préoccupations entourant la confidentialité et la sécurité, des inquiétudes quant à une utilisation inappropriée des courriels par les patients et la création d'attentes irréalistes de la part des patients au sujet de la disponibilité des médecins.

Conclusion Il a été constaté que l'utilisation des courriels entre les médecins de famille universitaires et les patients était plus élevée que dans des études antérieures auprès des médecins canadiens. Ces constatations s'expliquent peut-être par les aspects particuliers de la médecine universitaire, la rémunération par patient et d'autres facteurs. Les efforts visant une plus grande utilisation par les médecins des courriels avec les patients devraient se pencher sur les inquiétudes relatives à la confidentialité et à la sécurité, à l'intégration des dossiers médicaux électroniques et aux compensations financières.

The use of electronic communication between physicians and patients is highly variable.[1] In international comparisons, the use of e-mail communication by Canadian family physicians is particularly low. The 2015 Commonwealth Fund International Health Policy Survey of Primary Care Physicians found that only 15% of Canadian primary care physicians offered e-mail communication with patients about medical questions or concerns, the lowest reported percentage among 11 countries surveyed.[1] Previous studies, performed primarily among physicians in the United States, have suggested that physician e-mail use with patients might be low for various reasons including workload and time demands, confidentiality and security, lack of reimbursement, and concerns about inappropriate use of e-mail by patients.[2] There is little information on the barriers to use of e-mail with patients in Canada.

Overall, there is a paucity of evidence on how e-mail use affects physicians and patients.[3] However, the limited studies available suggest several benefits. For example, studies of primary care practices in the United States suggest that electronic communication with patients might improve access to care.[4,5] Practices using e-mail communication have also noted improvements in chronic disease management, including better risk factor management for people with diabetes.[6,7] Improvements might relate to e-mail enhancing continuity of care and patient self-management.[6] Regardless of its effect on outcomes, it is clear that patients want to communicate electronically with their physicians.[8,9]

We undertook this study to explore the use of e-mail by family physicians associated with our academic family medicine department in Ontario. This article summarizes our findings about physician characteristics associated with e-mail use, reasons for e-mail use, and potential barriers to and facilitators of e-mailing with patients.

Methods

Study design, setting, and population

We performed a cross-sectional survey of family physicians affiliated with the Department of Family and Community Medicine (DFCM) at the University of Toronto in Ontario. The DFCM has more than 1600 family physician faculty; approximately 1200 faculty are affiliated with 1 of 14 core teaching sites associated with tertiary care hospitals in the greater Toronto area and surrounding suburbs, each with a physician-in-chief. The remainder are community-based clinicians working throughout Ontario.[10] Most Ontario family physicians work together in groups with formal patient enrolment; about 60% are paid primarily by capitation.[11]

The DFCM faculty are required to regularly update the DFCM with their preferred e-mail address. Faculty practise in a range of settings including clinics, emergency departments, inpatient wards, and long-term care facilities. Our interest was related to e-mail use with patients by physicians practising office-based primary care (this could include walk-in and locum medicine); family physicians not practising office-based primary care were excluded from our study.

This study was reviewed and approved by the Research Ethics Board of the University of Toronto.

Survey methods

The survey questions were created after a review of existing literature and discussions with study team members about what information would be useful to help understand the use of e-mail with patients by physicians in our department. The questionnaire underwent several iterations of pretesting with content experts, survey methodologists, biostatisticians, and potential respondents. The questionnaire was revised based on feedback and then formatted as an online survey using Qualtrics software.[12] The survey received additional minor edits after being pilot-tested by 10 respondents (who also were included in the final survey sample). The final questionnaire included 47 questions grouped into 5 sections to collect information on physician practices using e-mail (including barriers to and facilitators of e-mail use with patients), use of e-mail with other health care providers, use of communication technologies other than e-mail, demographic and practice information, and willingness to participate in future research. For the purpose of this survey, *e-mail* was defined for participants as an asynchronous electronic message sent between a physician and a patient without a real-time dialogue. Traditional text messages (SMS [short message service]) and messages sent with similar applications (eg, iMessage, WhatsApp) were not considered to be e-mail. Social media websites (eg, Facebook, LinkedIn) and related messaging applications (eg, Facebook Messenger, LinkedIn InMail) were also not considered to be e-mail. Consent was considered implied if participants chose to complete the survey after reading a description of the purpose and anticipated length of the survey. The first survey question asked whether the respondent practised office-based primary care and the survey ended if the response was no. Respondents who did not use e-mail completed a shortened version of the survey that excluded questions about the logistics of using e-mail with patients. Questions were not randomized or alternated.

Faculty were surveyed on a voluntary basis during 6 weeks between June and August 2017. Survey implementation followed a modified Dillman approach.[13] Faculty members received a personalized e-mail from the chair of the department that included personalized links to the online survey. As an incentive to promote participation in the survey, respondents were eligible for a draw for an Apple Watch. Participants were able

to return to previously answered questions, save their progress, and complete the survey in separate sittings. Responses could not be altered after participants had finalized and submitted their survey responses by clicking a "submit" button on the final page of the survey. Data from partially completed surveys were retained for analysis. Nonresponders received up to 4 additional reminders during a 6-week period. Physicians-in-chief were also encouraged to send general reminders to their respective faculty.

Analysis

Personal identifiers were removed before analysis and result reporting. We excluded respondents who reported that they did not practise any office-based primary care. For the remaining respondents, we calculated descriptive statistics for all survey questions. Survey items lacking responses were removed from the denominator for the relevant question. Physicians who personally used e-mail with patients were defined as those who reported sending e-mails to patients in a typical week. We then compared physicians who personally used e-mail with patients with physicians who did not personally use e-mail with patients on sociodemographic characteristics, practice characteristics, reported use of other health technologies, and personal views on benefits of e-mail use with patients. Finally, we reviewed descriptive statistics on the barriers to and facilitators of e-mail use that physicians considered influential. Results about office work flows related to using e-mail with patients will be presented in a separate article. We calculated *P* values using χ^2 tests or *t* tests. We used a significance threshold of $P<.05$. All data analysis was performed in R (version 3.5.0).

Results

Of 1553 individuals who were sent the survey link via e-mail, 865 submitted a response (response rate 56%). Of the 865 survey respondents, 616 (71%) reported being a family physician who provided office-based primary care. We analyzed data for 610 respondents who identified as practising office-based primary care and responded to the question about the number of e-mails they sent to patients in a typical week.

The average age of respondents was 48.5 years (range <25 to 75 years old), 59% were women, and 71% were born in Canada. Among respondents, 43% practised at a core academic teaching site; 78% spent more than half their work week doing office-based primary care; 83% were paid by salary, capitation, or stipend; 79% worked in an interdisciplinary team–based setting; and 96% worked with other physicians in a group practice.

Forty-three percent (265 of 610) of respondents personally sent e-mail to patients in a typical work week. An additional 21% (126 of 610) reported that only their staff used e-mail with patients, while 36% (219 of 610) reported that no one in their office used e-mail with patients. There were no significant differences in demographic characteristics between physicians who did and did not personally use e-mail, but there were significant differences related to practice characteristics (**Table 1**). Larger proportions of physicians who e-mailed with patients spent less than half their work week doing office-based primary care ($P=.037$), had the largest component of their professional income come from non–fee-for-service payment ($P=.002$), worked at a core teaching site ($P<.001$), had a smaller patient roster size ($P=.001$), worked with a larger number of physicians in their practice setting ($P<.001$), worked in the family health team practice model ($P=.001$), and used the Telus Practice Solutions Suite electronic medical record (EMR) ($P<.001$).

Overall, 78% (435 of 560) of respondents reported e-mailing with other health care providers, while 52% (287 of 556) texted with other health care providers and 21% (118 of 556) texted with patients. Five percent (30 of 556) and 6% (36 of 556) of respondents used social media and videoconferencing to communicate with patients, respectively. Six percent (36 of 556) and 10% (56 of 556) of respondents used social media or videoconferencing, respectively, to communicate with other health care providers. Physicians who used e-mail with patients were significantly more likely both to use e-mail with other health care providers ($P<.001$) and to text or videoconference with patients ($P=.008$ for both) (**Table 2**). There were no other statistically significant differences in communications technology use between physicians who personally did and did not use e-mail with patients.

Physicians most commonly cited the following 3 reasons as very or fairly important in their decision to use e-mail: e-mail is convenient for my patients (74%, 268 of 364), e-mail decreases the need for telephone communication with patients (65%, 238 of 364), and e-mail is requested by patients (63%, 231 of 364). In addition, physicians who used e-mail with patients were more likely to believe that e-mail use benefited their patients and to recommend using e-mail with patients to a colleague (**Table 3**).

The potential facilitators of e-mail use with patients most commonly noted to be fairly or very influential appeared to be work flow related and included automatic uploading of patient e-mails into patients' EMRs (82%), the ability to e-mail patients directly from the EMR (77%), and the ability to easily block certain patients from e-mailing the physician (77%) (**Table 4**). Financial compensation for e-mailing with patients was also noted to be an important facilitator (74%). The potential barriers to e-mail use with patients most commonly noted to be fairly or very influential were privacy and security concerns (88%), the potential for inappropriate use of e-mail by patients (88%), and the creation of

Table 1. Physician and practice characteristics of respondents practising office-based primary care, by whether they personally used e-mail with patients: *The total N value for any one cell varies depending on the question response rate.*

CHARACTERISTICS	PHYSICIANS WHO USED E-MAIL WITH PATIENTS	PHYSICIANS WHO DID NOT USE E-MAIL WITH PATIENTS	*P* VALUE*
Demographic characteristics			
Age in years, n/N (%)			.416[†]
• < 40	71/243 (29)	84/306 (27)	
• 40-49	68/243 (28)	77/306 (25)	
• 50-59	48/243 (20)	79/306 (26)	
• ≥ 60	56/243 (23)	66/306 (22)	
Mean (SD) age in years	48.3 (11.7)	48.6 (11.4)	.68
Years since graduating medical school, n/N (%)			.286[†]
• 0-10	65/243 (27)	68/306 (22)	
• 11-20	65/243 (27)	80/306 (26)	
• 21-30	49/243 (20)	82/306 (27)	
• ≥ 31	64/243 (26)	76/306 (25)	
Female sex, n/N (%)	139/243 (57)	183/303 (60)	.505
Born in Canada, n/N (%)	180/241 (75)	206/304 (68)	.0946
Practice characteristics			
Estimated proportion of work week spent providing office-based primary care, n/N (%)			.037[†‡]
• 0% to 49%	63/243 (26)	56/308 (18)	
• 50% to 100%	180/243 (74)	252/308 (82)	
Group practice, n/N (%)	236/243 (97)	293/308 (95)	.335
Interdisciplinary team–based practice, n/N (%)	214/265 (81)	266/345 (77)	.321
Mean (SD) roster size[§]	989 (590)	1208 (1039)	.001[‡]
Mean (SD) no. of physicians in main office setting	10.7 (9.6)	7.9 (8.4)	< .001[‡]
Largest component of professional income, n/N (%)			.002[†‡]
• Capitation, salary, or stipend or research award	214/241 (89)	235/299 (79)	
• Fee for service	27/241 (11)	64/299 (21)	
Practice remuneration model,[‖] n/N (%)			.001[†‡]
• Enhanced fee-for-service	17/230 (7)	48/302 (16)	
• Blended capitation	161/230 (70)	163/302 (54)	
• Salaried	46/230 (20)	73/302 (24)	
• Traditional fee-for-service	6/230 (3)	18/302 (6)	
Practice is at a core teaching site, n/N (%)			< .001[†‡]
• Yes	144/243 (59)	118/310 (38)	
• No	99/243 (41)	192/310 (62)	
Electronic medical record type, n/N (%)			< .001[†‡]
• Telus Practice Solutions Suite	145/240 (60)	114/297 (38)	
• QHR Accuro	26/240 (11)	69/297 (23)	
• OSCAR	25/240 (10)	49/297 (16)	
• Other	44/240 (18)	65/297 (22)	

*Calculated using χ^2 tests or *t* tests as appropriate.
[†]A *t* test was used to calculate the comparison statistic.
[‡]Statistically significant result ($P < .05$).
[§]Median practice size was 1000 patients.
[‖]*Enhanced fee-for-service* includes physicians practising in a family health group or comprehensive care model; *blended capitation* includes physicians practising in family health teams or family health networks; and *salaried* includes physicians practising in community health centres or other salaried positions.

Table 2. Physicians who reported other health technology use, by physicians who did and did not personally use e-mail with patients: ***Unless otherwise noted, analysis included information from all respondents who reported practising office-based primary care, answered the question related to e-mailing with patients, and answered the questions on health care technology use; N = 556.***

OTHER HEALTH TECHNOLOGY USE	PHYSICIANS WHO USED E-MAIL WITH PATIENTS, n/N (%)	PHYSICIANS WHO DID NOT USE E-MAIL WITH PATIENTS, n/N (%)	*P* VALUE*
E-mails with other health care providers†	220/244 (90)	215/316 (68)	<.001‡
Texts with other health care providers§	127/244 (52)	160/312 (51)	.925
Uses social media to communicate with other health care providers‖	18/244 (7)	18/312 (6)	.555
Videoconferences with other health care providers	29/244 (12)	27/312 (9)	.265
Texts with patients§	65/244 (27)	53/312 (17)	.008‡
Uses social media to communicate with patients‖	18/244 (7)	12/312 (4)	.101
Videoconferences with patients	24/244 (10)	12/312 (4)	.008‡

*Calculated using χ^2 tests.
†N = 560.
‡Statistically significant result ($P < .05$).
§*Text messages* were defined as messages sent using traditional short message services and similar applications (eg, iMessage, WhatsApp).
‖*Social media* was defined as Facebook, LinkedIn, and related applications (eg, Facebook Messenger, LinkedIn InMail).

Table 3. Physicians who agreed or strongly agreed with the benefits of e-mail, by physicians who did and did not personally use e-mail with patients: ***Unless otherwise noted, analysis included all respondents who reported practising office-based primary care, answered the question related to e-mailing with patients, and answered the questions on the benefits of e-mailing with patients; N = 561.***

BENEFITS OF E-MAIL	PHYSICIANS WHO USED E-MAIL WITH PATIENTS, n/N (%)	PHYSICIANS WHO DID NOT USE E-MAIL WITH PATIENTS, n/N (%)	*P* VALUE*
E-mail helps provide more efficient care	186/245 (76)	120/316 (38)	<.001
E-mail helps provide timely access to care	187/245 (76)	148/316 (47)	<.001
E-mail improves patient experience of care	197/245 (80)	162/316 (51)	<.001
E-mail improves physicians' ability to prevent or manage chronic disease	135/245 (55)	114/316 (36)	<.001
E-mail reduces visits to other health care providers	172/245 (70)	157/316 (50)	<.001
E-mail has a positive effect on patient care	195/245 (80)	141/316 (45)	<.001
Fairly or very likely to recommend e-mail use to a colleague†	128/265 (48)	28/345 (8)	<.001

*Calculated using χ^2 tests.
†Analysis included all respondents who answered the question regarding use of e-mail with patients; N = 610.

unrealistic expectations of physician availability (87%) (**Table 4**). All barriers were more commonly noted to be fairly or very influential by physicians who did not use e-mail with patients; however, the rank order of barriers was similar between groups (results not shown).

Discussion

Our survey of primary care physicians affiliated with a large academic family medicine department in Ontario found that e-mail use with patients is more common than previous estimates from national surveys. A total of 43% of physicians reported personally using e-mail with patients, while an additional 21% reported that e-mailing with patients is done by other staff in their practice. E-mail use with patients appears to be positively associated with remuneration via capitation, spending 50% or less of the work week doing office-based primary care, having a smaller roster size, and working at a core teaching site; it did not appear to be associated with physician age or years in practice.

This use of e-mail with patients by nearly two-thirds of physicians or their office staff in our study contrasts with the approximately 15% found in other Canadian surveys.[1,14,15] We suggest 2 important reasons. First, our survey focused on academic family physicians, who have been shown in previous research from the United States to be more likely to use e-mail with patients.[16] Second, practice remuneration model might have had a considerable influence on the use of e-mail with patients. E-mail communication with patients is not reimbursed in the fee schedule by the Ontario Health Insurance

Plan. However, physicians in a capitated payment model might find e-mailing with patients appealing, as it can theoretically reduce visits and enable them to care for a larger panel of patients. Most respondents to our survey (83%) received more than half of their income from non–fee-for-service payment schemes; however, only a minority (34%) of family physicians in Canada are remunerated primarily through such schemes.[17]

Facilitators of and barriers to e-mail use noted in our study were similar to those previously noted in the literature.[2,18] We found that integration with existing EMR technology was the most commonly noted facilitator of e-mail use with patients in our study, while privacy and security concerns were the most common barrier. Some EMRs currently available in Canada do provide users the ability to send and receive regular e-mails or secure e-messages directly from the EMR user interface—the latter are preferred for enhanced security and protection of patient privacy.[19-21] However, physicians typically have to pay extra for these services—an additional barrier to the use of e-mail with patients.

Table 4. Physicians who described potential facilitators of and barriers to using e-mail with patients as being fairly or very influential in their decision

FACILITATOR OR BARRIER	N (%)
Potential facilitators*	
• E-mails automatically uploaded into EMR	463 (82)
• E-mail sent directly from EMR	434 (77)
• Can easily block patients who use e-mail inappropriately	436 (77)
• Higher level of e-mail security	425 (75)
• Financial compensation for e-mail communication	420 (74)
• Appropriate use of e-mail guidelines	406 (72)
• Reserved time in schedule to e-mail patients	384 (68)
• Free secure e-mail service	381 (67)
• Triaging of incoming e-mails by other team members	375 (66)
• Training on e-mail privacy standards	318 (56)
• E-mail app on cell phone	161 (28)
Potential barriers†	
• Privacy and security concerns	503 (88)
• Inappropriate use by patients	503 (88)
• Creation of unrealistic expectations of physician availability	497 (87)
• Outside-hours contact from patients	448 (78)
• Potential for increased workload	426 (74)
• Privacy laws	415 (72)
• Lack of consistent guidance or advice about using e-mail with patients	386 (67)
• Fear of malpractice or of being sued	280 (49)
• Lack of specific remuneration	259 (45)
• Financial cost of e-mail or e-mail service	142 (25)

EMR—electronic medical record.
*Analysis included information from all respondents who reported practising office-based primary care, answered the question related to using e-mail with patients, and answered the questions on facilitators of e-mailing with patients (N = 567).
†Analysis included information from all respondents who reported practising office-based primary care, answered the question related to using e-mail with patients, and answered the questions on barriers to e-mailing with patients (N = 573).

We found that more than half of physicians e-mail and text with health care providers regardless of whether they e-mail with patients, which suggests that adoption of e-mail with patients likely does not relate to physician comfort with this technology.

Respondents were also concerned about inappropriate use of e-mail by patients and creation of unrealistic expectations regarding physician availability. Inappropriate use of e-mail by patients has been noted to be a common concern among physicians; however, a study in Massachusetts has previously shown that inappropriate e-mail use is less common than physicians perceive it to be.[22] Further study of this issue in a Canadian context might be useful.

Strengths and limitations

Our study has both strengths and limitations. Our response rate was better than those of previous similar studies done in Canada and the United States, which had response rates of around 30%.[1,23] The study sample size was large enough to permit comparisons between those who used and did not use e-mail with patients. The family physicians surveyed practised in a variety of settings; many practised in and around a large urban centre, but some practised in smaller towns across the province. The most notable limitations of our study were that respondents were from a single Canadian province, were affiliated with an academic institution, and mostly practised in an urban centre. Practice characteristics, particularly remuneration type, were different than the average Canadian family physician practice, which limits the generalizability of our findings. Our survey was disseminated via e-mail only, but our study population was required to regularly validate their preferred e-mail addresses as part of their ongoing credentialing with the university. We are also uncertain about how many survey nonresponders practised office-based primary care and so could not calculate a response rate for our specific group of interest. However, even if all nonrespondents practised office-based primary care and did not use e-mail with patients, our estimates of e-mail use would still be significantly higher than those reported by national surveys. Finally, we did not have complete information about how survey respondents are clustered within the various clinics that comprise the DFCM.

Conclusion

Our study shows that e-mail use by academic family physicians in Ontario was higher than in previous reports of physician e-mail use with patients in Canada. The higher rate of e-mail use appears to be driven largely by physicians' desires to better meet their patients' needs and improve quality of care. We also found that physicians e-mail and text with health care providers regardless of whether they e-mail with patients—another area requiring further research. Finally, our study provides some insights into how Canadian physicians might be supported to use e-mail with patients. Policy gaps, including the dissemination of e-mail best-practice guidelines and remuneration for e-mailing with patients, need to be addressed. Technological standards, including improved integration of electronic communication tools into EMRs and existing clinical work flow, user-friendly controls to support appropriate use by both physicians and patients, and functionality that enables physicians to easily meet privacy and security standards, need to be created and enforced. Practical support to fully integrate e-mail into clinical practice is critical to move communication with patients into the 21st century.

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Contributors

Drs Girdhari and **Kiran** conceived of the study. **Dr Girdhari, Dr Krueger, Mr Meaney, Dr Domb, Dr Larsen,** and **Dr Kiran** designed the study. **Dr Krueger, Mr Meaney,** and **Mr Wang** conducted statistical data analysis. All authors interpreted the data. **Dr Girdhari** drafted the manuscript and all authors critically reviewed it. All authors read and approved the final manuscript.

Competing interests

None declared

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