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Email communication in a developing country: different family physician and patient perspectives

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Background: Email communication between physicians and patients could improve access to and delivery of health care. Most of the literature studies about email communication between physicians and patients have been conducted in developing countries. Therefore, this study aims to analyze the practices, attitudes, and barriers of both physicians' and patients' use of email within the same health care setting of a developing country.

Methods: A cross-sectional paper-based survey was conducted among 39 physicians and 500 patients at the Family Medicine clinics of the American University of Beirut, a tertiary academic medical center.

Results: Most of the surveyed patients and physicians reported that they would like to communicate through email and agreed that it is useful. However, only 19% of the patients have ever communicated with their physicians via email, and only 5.1% of physicians have often communicated with their patients via email. Almost half of the patients surveyed were unaware of the possibility of this form of communication, and only 17% reported that their physician offered them his or her email address. In addition, physicians and patients did not agree on the services to be provided by email communication. For instance, almost half of the patients indicated consultation for an urgent medical matter as suitable for email communication.

Conclusion: The use of email communication in health care is still scarce. Patients and physicians have different perspectives of its use and importance. Further rigorous research is needed to clarify the advantages and disadvantages of this form of communication, especially in the developing world. Interested physicians are encouraged to establish appropriate personal policies for email communication with adequate announcement and patient education plans.

Keywords: *email*; *internet*; *patient–physician communication*; *health care*; *family medicine*

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With the tremendous increase in the number of Internet users worldwide (1, 2), emails can facilitate communication between physicians and patients beyond the clinic walls. Potential uses of emails in health care include appointment confirmation and reminders to decrease non-attendance rates (3), communication about diagnostic medical investigation results (4), and patient education about preventive health care services such as pap smears and flu shots (5).

Using email as a method of communication between patients and physicians still lags behind the general public email use (5–8). This trend of infrequent use of email communication has been stable in the literature over the years. For example, a comparison of the use of physician–patient email communication among physicians throughout the years has shown only a minimal increase, from 16.6 to 20.4% between 2005 and 2008. Furthermore, physicians' interest in the future use of email was lower in 2008 (9). The major concerns of physicians are lack of time, increase in non-reimbursable workload, security, and confidentiality (3, 4, 7, 10, 11). The barriers faced by patients included not knowing their physician's email address (5), worrying about logistic issues such as the time to get a response (12), privacy, and confidentiality (11).

Despite much research into the use of email in health care since the early 1990s, five recent Cochrane systematic reviews (13–17) have shown that there is weak evidence on the effect of email use on health promotion and disease prevention. Moreover, there is a lack of evidence on the use of email on test results management, appointment and attendance reminders. However, many initiatives have been undertaken in the past few years to encourage email communications, such as increased use of electronic medical records (EMR) and technology in health care as mandated by the American Recovery and Reinvestment Act of 2009. Furthermore, there has been a movement

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toward patient portals as a way of consumer engagement under meaningful use. Therefore, it is worth revisiting the question of the prevalence of email communication between physicians and patients. Moreover, very few studies have simultaneously assessed the opinions of both physicians and patients in the same clinical setting, and no studies have been conducted on the use of email communication in the Arab region. Therefore, this study aimed to analyze patients' and physicians' practices, attitudes, and barriers regarding the use of email in the same health care setting.

Methods

Setting

The study was conducted at the Family Medicine clinics of the American University of Beirut in Lebanon, a tertiary academic medical center. The clinics serve a large population that includes the hospital employees and their dependents as well as community members. The population served is diverse in sex, socioeconomic status, and educational level. There are 43 physicians: 22 faculty members and 21 residents. On average, the faculty physician has three half-day clinics per week, and the resident has one half-day clinic per week. The clinics use a home-grown EMR and are almost paperless; yet, there is neither a patient portal nor a structured secure messaging system between patients and physicians. Moreover, the institution lacks a clear policy about email communication with patients. Any email use between physicians and patients has been done through their own personal emails and was based on voluntary and individual motivation without any guidance or training.

Study design

This is a cross-sectional paper-based survey of all the physicians at the Family Medicine clinics and 500 adult patients (>18 years) who attended the clinic between March and May 2012. Estimating that 50% of the patients visiting the clinic use email communication with their physicians with a margin of error of 5% and a confidence interval of 85%, the minimum number of patients required is 400. Assuming that a quarter of respondents would submit incomplete questionnaires, the sample size was set at 500. Patients are expected to pass by the triage nurse for assessment before meeting the physician. In the nursing triage station, there is one patient at a time. The researcher approached every patient at the triage station. Patients were selected by systemic sampling on alternate morning and afternoon sessions weekly to ensure the recruitment of patients of all the physicians. Patients who were illiterate or unable to read or write due to a medical condition were excluded from the study, as these patients could not personally use email. Verbal informed consent was obtained and patients were handed a questionnaire to fill out on their own. The physicians' questionnaires were distributed at their offices in the clinic to be filled anonymously. The American University of Beirut Institutional Review Board approved the study.

Different questionnaires were developed for the patients and the physicians based on the literature review. Early versions of both questionnaires were piloted and the patients' versions were translated into Arabic. For patients, collected data included demographics, health status, frequency of visits to the clinic, access and use of the Internet, and willingness to pay for email communication. For physicians, collected data included demographics and email access. Both patients and physicians were asked whether they had ever communicated with each other, whether they thought email is useful for communication and for what reasons, and whether there were any barriers to or concerns about email communication. Most of the questions had dichotomous answers (yes or no).

Patients and physicians were asked to list the barriers to email communication. Responses were analyzed and categorized by each author separately. Then, both authors met and agreed on the final categories. Percentages were used to measure the various demographics, practices, attitudes, and barriers toward the use of email communication between patients and physicians. Chi-square test (or Fisher's exact test if appropriate) was used to compare groups based on the independent variables. Binary logistic regression was used to compute odds ratio. The dependent variable included willingness to use email to communicate with the physician, and the independent variables included sex, age, level of education, frequency of annual visits, accessibility to Internet sites, hours spent on the Internet daily, and use of email. Analysis was done using SPSS Version 19 and statistical significance was set at $p<0.05$.

Results

Patients

Patients were approached until the criterion of the total number of participants (500) was met. Many non-respondents were elderly male patients. The main reasons given for the non-response were lack of time, lack of interest, or not feeling well.

The vast majority of patients surveyed were email users, highly educated, and healthy (as reflected by the absence of chronic illness and less frequent doctor visits). Most of the patients (87%) had Internet access and two-thirds had access to Internet at home. Table 1 shows the demographic characteristics of the patients.

Of the surveyed patients, 67.4% told that they would like to communicate with their physicians through email and 71.6% agreed that it would be useful. Two-thirds and half of the patients considered email communication between physicians and patients safe and confidential, respectively.

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Table 1. Patients' demographics by email use status

Characteristic	All participants ($n=500$)	Communicate with physicians ($n=96$, 19.2%)	Do not communicate or do not have email ($n=372$, 79.5%)	p (users vs. non-users)
Age (mean ± SD)	37.8 (14.6)	37.8 (13.6)	37.43 (14.5)	**0.000**
	Number[a] (%)	**Number[a] (%)**	**Number[a] (%)**	
Email user	365 (75.9)	**93 (100)**	**267 (73.6)**	**0.001[b]**
Sex				0.511[b]
Female	288 (58.2)	56 (58.3)	217 (58.8)	
Male	207 (41.8)	40 (41.7)	152 (41.2)	
Educational level				0.468[c]
Primary	27 (5.7)	7 (7.5)	17 (14.8)	
Secondary	103 (21.8)	16 (17.2)	79 (22.3)	
University	253 (53.6)	49 (52.7)	192 (54.2)	
Postgraduate	89 (18.9)	21 (22.6)	66 (18.6)	
Chronic illness				
Yes	108 (23.5)	23 (25.6)	77 (22.3)	0.573[b]
No	351 (76.5)	67 (74.4)	269 (77.7)	
Frequency of annual visits				
0–1 visit	118 (28.2)	27 (31.0)	91 (27.4)	0.703[c]
2–4 visits	192 (45.8)	41 (47.1)	151 (45.5)	
5–6 visits	68 (16.2)	13 (14.9)	55 (16.6)	
> 6 visits	41 (9.8)	6 (6.9)	35 (10.5)	
Internet access				
No access	53 (11.7)	5 (5.3)	47 (13.7)	**0.036[c]**
1 site	150 (33.2)	37 (38.9)	112(32.7)	
2 sites	137 (30.3)	23 (24.2)	105 (30.6)	
3 sites	112 (24.8)	30 (31.6)	79 (23.0)	
Work	257 (56.7)	65 (68.4)	182 (52.9)	**0.007[b]**
Home	309 (68.4)	66 (69.5)	233 (67.9)	0.805[b]
Phone	194 (42.9)	42 (44.2)	144 (42.0)	0.726[b]
< 0.5 h	64 (16.6)	12 (13.8)	52 (17.4)	0.123[c]
0.5–1 h	76 (19.7)	18 (20.7)	58 (19.4)	
> 1–2 h	96 (24.9)	15 (17.2)	81 (27.1)	
> 2 h	150 (38.9)	42 (48.3)	108 (36.1)	

[a]Numbers do not sum to 500 because of missing values. [b]Fisher's exact test. [c]Pearson's chi-square test.
Significants of P value <0.05.

Yet, only 19.2% of patients communicate with their physicians through email. Almost half of the surveyed patients were not aware of the possibility of communicating with their physician using email. Of those who were aware, 38.1% knew their physician's email. The majority of patients (69.6%) obtained the physician's email address from the university directory; 15.7% had asked their physicians for their emails. Only 17.6% reported that their physician offered the email address to them.

The barriers to email use by patients included the delay to get a response (11 participants), the suboptimal quality of care offered through an email consultation (18 participants), and the lack of face-to-face interaction with their physicians (15 participants). One participant was concerned that patients would abuse this form of communication, whereas another participant thought that it was not part of Lebanese culture.

Only 39.0% of participants would pay for an email consultation. However, patients who communicated through email with their physicians were more likely than non-communicators to consider email communication as safe ($p=0.000$), confidential ($p=0.013$), and worth the cost of the consultation ($p=0.004$).

Using univariate analysis, it was found that males, younger patients, frequent clinic visitors, and those who spend less than half an hour daily on the Internet were less likely to use emails to communicate (Table 2). Using binary logistic regression, two variables were found to be statistically significant predictors of participants who would like to communicate with their physicians through

Table 2. Predictive variables of patients who like to communicate with physicians through email

	Patients who like to communicate via email: Number (*n*, %)	Patients who do not like to communicate via email: Number (*n*, %)	Odds ratio (95% confidence interval) (relative to control group designated by[a]
All	335 (71.0)	134 (29.0)	
***n*=472**			
Sex			
Female[a]	211 (63.0)	65 (48.5)	
Male	124 (37.0)	69 (51.5)	0.56 (0.30–1.10)
n*=469 *p*	**0.005**		
Age (years)			
18–25[a]	94 (30.0)	22 (18.5)	
26–50	168 (53.7)	62 (52.1)	1.61 (0.78–3.36)
51–65	51 (16.3)	35 (29.4)	2.40 (0.73–7.84)
n*=432 *p	**0.003**		
Educational level			
Primary[a]	15 (4.6)	9 (7.4)	
Secondary	51 (15.6)	42 (34.7)	1.50 (0.30–7.42)
University	185 (56.6)	58 (47.9)	1.25 (0.30–5.38)
Postgraduate	76 (23.2)	12 (9.9)	1.67 (0.34–8.13)
n*=448 *p	**0.000**		
Chronic illness			
No[a]	258 (79.5)	82 (70.7)	
Yes	66 (20.5)	34 (29.3)	1.06 (0.47–2.37)
n*=438 *p*	0.070		
Frequency of annual visits			
0–1 visit[a]	88 (28.9)	28 (23.5)	
2–4 visits	152 (49.8)	47 (39.5)	1.15 (0.54–2.43)
5–6 visits	47 (15.4)	19 (16.0)	0.90 (0.34–2.39)
> 6 visits	18 (5.9)	25 (21.0)	0.43 (0.12–1.52)
p	**0.000**		
Number of sites of internet access			
No access[a]	20 (6.1)	34 (30.1)	
1 site	105 (32.0)	37 (32.7)	0.82 (0.034–20.00)
2 sites	109 (33.2)	26 (23.0)	0.83 (0.03–20.82)
3 sites	94 (28.7)	16 (14.2)	1.02 (0.04–25.87)
n*=441 *p	**0.000**		
Hours spent on Internet daily			
Less than half an hour[a]	39 (12.7)	24 (29.6)	
Half an hour–1 h	61 (19.9)	17 (21.0)	2.85 (1.08–7.53)
> 1–2 h	77 (25.1)	18 (22.2)	2.86 (0.99–8.29)
> 2 h	130 (42.3)	22 (27.2)	3.42 (1.23–9.43)
n*=388 *p	**0.002**		
Email use			
No[a]			
Yes	293 (88.8)	63 (48.1)	3.82 (1.43–10.21)
N*=461 *p*	**0.000**	**0.000**	

*Fischer's exact test.
Significants of *P* value <0.05; [a]stands for missing values.

email: participant email use and daily hours of Internet use. Patients who use email as compared with non-users (odds ratio (OR) = 4.25; 95% confidence interval (CI) = 1.80–10.05, $p=0.001$) and those who used the Internet for 2 h or more daily as compared with those who used it less than half an hour (OR = 3.01;

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95% CI = 1.32–6.87, $p = 0.008$) were more likely to like to communicate through email with their physicians.

Physicians

A total of 39 physicians returned completed questionnaires with a total response rate of 91%: 86% (18/21) for residents and 95% (21/22) for the faculty. Table 3 shows the demographics of physicians. The mean age was 37.0 years ($\pm$11.0). Of the physicians, 59% were younger than 35 years and 20.5% were aged between 51 and 65. The most frequent duration of hours spent on email use daily was between 15 and 30 min, and one quarter of participants had Internet access mainly at home, at work, and in cell phone.

Using a Likert scale with grading from 'often' to 'never', only 5.1% of physicians reported that they often send or receive emails to or from their patients, and a quarter reported that they never communicated with their patients through email. There was only a statistically significant relationship between physicians who send or receive emails to or from their patients and increasing age ($p = 0.003$). Almost 80% of physicians aged 25–35 had never or rarely communicated with patients. Also, 87.5% of physicians aged 36–50, 62.5% of those aged 51–65, and 17.4% of those aged 25–35 reported some use of email with patients.

The vast majority of physicians surveyed thought that email would be useful for communication with patients for health-related issues. Physicians were more likely than patients to find email useful for communication with patients (87.2% vs. 78.3%, $p = 0.039$). However, physicians and patients did not agree on the categories of services to be communicated through email (see Table 4). In descending order, the preference of physicians regarding the usefulness of email communication with patients in certain categories of services was as follows: laboratory results (88.2%), medical questions/advice (70.6%), follow-up on certain medical conditions (64.7%), clarification of treatment plans (64.7%), providing health educational materials (52.9%), and requesting prescription refills (29.4%).

Table 3. Demographics of the family physicians ($n = 39$)

Characteristics	Number (%)
Sex	
Female	20 (51.3)
Male	19 (48.7)
Age (years)	
25–35	23 (59.0)
36–50	8 (20.5)
51–65	8 (20.5)
Mean age (SD)	37.0 $\pm$ 11.0
Daily email use	
$<$15 min	8 (20.5)
$>$15–30 min	16 (41.0)
$>$0.5–1 h	9 (23.1)
$>$1 h	6 (15.4)
Location of Internet access	
Home	36 (92.3)
Work	31 (79.5)
Phone	16 (41.0)
1 site	8 (20.5)
2 sites	18 (46.2)
3 sites	13 (33.3)

However, 82.1% of physician surveyed had concerns about using email for medical consultation. Almost half of the physicians reported lack of security, lack of time, lack of reimbursement, and medicolegal issues concerning the use of email for medical consultation. Further concerns listed by physicians included suboptimal quality of care (11 physicians), patients' abuse of this form of communication (3 physicians), and administrative concerns such as lack of documentation of the email (1 physician).

Discussion

Main findings

This study shows that email communication between patients and physicians using their personal emails exists in developing countries, although it is currently infrequent. Both physicians and patients showed interest in this mode of communication and considered it beneficial. Yet, physicians are still reluctant to initiate email communication and offer their emails to the patients. Moreover, patients and physicians expressed non-aligned preferences for the categories of services suitable for email communication.

Similarities with developed countries

Despite expressing their willingness, a small percentage of physicians (5.1%) frequently used email communication with patients, and only 19.2% of patients have ever communicated with their physicians through email. These findings support previous research in developed countries showing similarly infrequent email communication between patients and physicians, such as the USA, European Union, Australia and UK (5, 12, 18, 19). The barriers stated by physicians in this study were similar to that found by previous studies (20–24): the lack of security, increased workload, lack of time, lack of reimbursement, and medicolegal issues.

In this study, patients who found email useful for communication were females, highly educated, younger, healthier, and had fewer annual visits. These are similar to the characteristics of patients who used email communication with their physicians in previous studies (12, 18). Thus, email communication between physicians and patients is limited to a small percentage of patients who most probably benefit the least from such communication. Frequent visitors and sicker patients do not communicate through emails with their physicians. This could contribute

Table 4. Physicians' and patients' attitudes toward usefulness of email communication among themselves and preferences for specific uses for the email communication

	Patients *n* (%)	Physicians *n* (%)	*p*
Finds email useful for communication	358 (78.3)	34 (87.2)	**0.039**
Topic preference			
Laboratory results	219 (65.6)	30 (88.2)	**0.000**
For a medical question/advice	234 (70.1)	24 (70.6)	0.608
Follow up on a certain medical condition	182 (54.5)	22 (64.7)	0.171
Clarification of treatment plans	144 (43.1)	22 (64.7)	**0.004**
Providing educational health material	165 (49.4)	18 (52.9)	0.608
Requesting prescription refills	150 (44.9)	10 (29.4)	**0.036**
Urgent medical condition	155 (46.4)	NA	

[c]Pearson's chi-square test.
Significants of *P* value <0.05.

to the lack of scientific evidence found by five recent Cochrane systematic reviews on the effect of email use on health promotion and disease prevention, appointments, and test result management (13–17).

Individuality of the developing countries context

In this study, physicians and patients used their personal email for communication. This is common and accepted in developing countries, where EMRs are scarce and there are no bounding legal laws for confidentiality and privacy similar to Health Insurance Portability and Accountability Act of 1996 (HIPAA) in the USA (25–27). Abiding by HIPAA, it is expected that proper encryption of email content is assured or secure structured messaging is used to avoid breach of confidentiality. Interestingly, patients considered email use as safe and confidential, especially those who use email communication with their physicians. Physicians should be careful about the topics discussed in email communication, for example, sensitive issues such as sexuality, psychiatric illnesses, and sexually transmitted diseases.

Almost half of our patients reported that email was useful for urgent medical conditions. Similarly, Houston et al. have shown that 21% of the users used email for urgent matters such as chest pain and suicidality (11). However, this is in contrast to the large body of published literature, showing that most email inquiries from patients were for non-acute issues, such as health-related questions, medical update, administrative issues, and lab test results (5, 28–31). One plausible explanation could be related to cultural and contextual factors.

Strengths and limitations

One of the strengths of this study is the simultaneous survey of both physicians and patients in the same health care setting, where cultural and clinical processes are common to both patients and physicians. The study is unique in exploring the use of email in countries that lack the legislation and clear standards for email communication between physicians and patients. Hence, the results cannot be generalized to the developed world. Another limitation of the study is the inability to generalize the findings to solo practitioners because our setting was that of a managed care or disciplines other than Family Medicine.

Practice implications

Although the general use of email communication was infrequent, a proportion of patients and physicians were still interested in this form of communication despite all the barriers. Studies have shown that patients are more motivated to use online communication when their physicians are motivated (32). Yet, physicians provided their email to only 18% of patients who were aware of the possibility of email communication. Therefore, there is still room of improvement in the utilization of email communication among this subgroup of interested patients and physicians through better advertisement. For example, motivated physicians should be encouraged to advertise email communication and provide their email addresses on business cards, prescription forms, and brochures in the waiting room. To ensure that email communication is used effectively, physicians should establish their own policies and educate their patients about proper use, especially in the context of urgent medical matters. The American Medical Informatics Association and the American Medical Association have published guidelines for physician–patient email communication (33) that can be very helpful.

Patients and physicians have different perspectives on the value of different services suitable for email communication. Physicians were more interested in sending information about laboratory results and clarification of treatment plans, whereas patients appreciated administrative requests such as prescription refills. In fact, this is also found in developed countries. Hassol et al. have shown

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that while patients preferred email communication for medication refills (34), they appreciated a two-way communication on specific issues. For example, patients preferred using the telephone or direct personal communication when discussing a health issue (35) or getting treatment instructions (34), and they expressed their concerns about understanding the laboratory results communicated through email (36). This poses the question of whether email communication should be restricted to administrative requests and exclude medical care. As such, email communication for administrative issues would be more beneficial in managed care and large institutional settings. This might not be generalizable to solo practitioners.

Conclusion

In an era of widespread use of the Internet in health care, email communication between physicians and their patients is foreseeable, though patients and physicians have different perspectives of its use and importance. Physicians are encouraged to establish appropriate personal policies for email communication with adequate announcement and a patient education plan. Further rigorous research is needed to clarify the advantages and disadvantages of this form of communication, especially in developing countries.

Authors' contributions

Both authors contributed to the design of the study, collection of data and writing of the article. Both authors have read and approved the final version of the article.

Conflict of interest and funding

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