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## Provider and Recipient Perceptions and Utilization of Email in Healthcare

Susan Glinka  
*Pacific University*

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## Provider and Recipient Perceptions and Utilization of Email in Healthcare

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# Provider and Recipient Perceptions and Utilization of Email in Healthcare



by Susan Glinka, M.A.

PhD Candidate at Pacific University

*Abstract-This study examines patient-provider email communication. Digital communication has changed the way people communicate but there is slow implementation of electronic communication in healthcare. A sample of 110 individuals was surveyed regarding their perceptions and utilization of electronic communication in healthcare. The current study found that 5.6% of healthcare providers contact recipients via email. The results show that 76% recipient participants feel positively toward email communication in healthcare; but only 44% of the healthcare providers feel positively toward provider-patient email communication. Finally the primary concerns surrounding electronic communication in healthcare are legal and privacy issues.*

## Introduction

The impact of technology on our everyday lives is staggering. According to Internet World Statistics, as of 2012 there are over 2.4 billion people using the Internet. [1] Given the widespread use of the Internet and the proliferation of email accounts, it is evident that electronic communication has revolutionized the way that people interact on a daily basis in business, personal, and commercial communication.

Even though digital communication through email has changed the way people communicate with each other, there is slow implementation of electronic communication in healthcare systems. Specifically, there has been limited implementation of electronic communication between providers and their patients. Although researchers have examined the use of email communication in healthcare settings, their results have been largely inconsistent and the current utilization of patient-provider email communication remains unclear. The present study seeks to examine the prevalence of electronic communication between patients and their providers, as well as explore patient and provider attitudes regarding the use and benefits of such communication.

## Literature Review

### *Email Prevalence in Healthcare Settings*

Despite email prevalence in personal and business communications, it has not had the same impact in the medical and health fields. Moyer, Stern, Katz and Fredrick explored the potential of implementing electronic communication in healthcare. The authors noted that increasing the accessibility of managed care could improve patient outcomes, intensify disease management strategies, and increase patient involvement with and understanding of their health care. This untapped resource for doctor-patient communication could aid in the development of the relationship between doctors and their patients. However, electronic communications are often met with concerns over equitable access, confidentiality, and privacy. [2]

Healthcare systems housed within university settings are quicker to integrate new technology into their existing systems. Neill, Mainous, Clark, and Hagen conducted a survey regarding electronic mail as a medium of communication at a university-based family medicine clinic. The results of this exploratory survey indicated that patients believed that email use could increase the speed, convenience, and access to medical care for refilling prescriptions, communicating laboratory results, and making appointments. However, the study results indicated that the handling of urgent matters would not be successful via email communication and should be left to the traditional communication methods such as office visits and personal phone calls. [3]

Fridsma, Ford, and Altman compared email use to other mediums of communication. They surveyed 444 internal medicine patients. Although half of the patients reported that they used email on a regular basis, patients reported that they used email less than the postal service, telephone, or fax for communicating with the clinic. [4] Similarly, Moyer, Stern, Dobias, Cox, and Kats examined email use patterns and attitudes among patients and primary care physicians. More than half (52.1%) of patients disclosed email usage for personal use, however, only 10.5% of the respondents reported having communicated with their doctor via email. The authors reported that patient-provider email is diffusing slowly because of patient concerns about efficiency and effectiveness. [5] To resolve this issue, managed care providers wanting to implement electronic communication systems should work to educate providers and recipients about the strengths and weaknesses that are involved with electronic communication.

## ***Guidelines for Electronic Mail with Patients***

Overall, electronic communication does not appear to be widely implemented in the healthcare setting. When electronic communication is utilized, the guidelines for patient privacy can be ambiguous. To best expand the use of electronic communications in healthcare, concerns about access, confidentiality, and privacy needed to be addressed. The American Medical Informatics Association (AMIA) Internet Working Group, Task Force on Guidelines for the Use of Clinic-Patient Electronic Mail [6] was developed to address the issues concerning effective communication between clinicians and patients. The communication guidelines are as follows: establish a turnaround for messages and do not use email for urgent matters; inform patients about privacy issues; establish types of transaction and sensitivity of subject matter permitted over email; instruct patients to address the reason for the message in the subject line of the email; request patients to put their name and identification number in the body of the email; configure automatic reply messages to confirm receipt; print all messages, replies, and confirmations for the patient's chart; send new messages to inform patient that requests have been processed; ask patients to acknowledge reading providers messages; maintain an email distribution list of patients, but do not send group mailings where recipients are visible to each other; and avoid using anger, sarcasm, harsh criticism, and libelous references to third party messages.

The second portion of the Guidelines for Use of Clinic-Patient Electronic Mail [7] covers how medical staff should treat patient information when utilizing electronic communication. The medico-legal and administrative guidelines included are as follows: consider obtaining patient's informed consent for use of email; use password-protected screen savers for all desktop work-stations in the office, hospital, and home; never forward patient-identifiable information to a third party without expressed permission; do not share professional email with family members; use encryption for all messages; do not use unencrypted wireless connections with patient-identifiable information; perform at least weekly backups of email onto long-term storage; and commit policy decisions to writing and electronic form. Following these suggested guidelines would keep patient information confidential and in concordance with the Health Insurance Portability and Accountability Act (1996).

These guidelines were established to standardize the use of electronic communication in healthcare. In the following sections, email trends in healthcare, adaptation of The American Medical Informatics Association (AMIA) Internet Working Group, Task Force on Guidelines for the Use of Clinic-Patient Electronic Mail [8] guidelines, and attitudes of healthcare providers and recipients toward electronic communication are reviewed.

## *Email Communication Trends in Healthcare*

The prevalence of Internet use in healthcare settings and its impact on health care utilization are unclear. [9] Available estimates of Internet use and impact vary widely, making it difficult to focus policy discussions or design appropriate policy activities. Baker et al. sent surveys to over 60,000 US households. Analyzed responses included 4,764 individuals aged 21 years and older who were self-reported Internet users. The results indicated the following: 40% of the respondents with Internet access reported using the Internet to find information about health care; 6% reported using email to contact a physician or other healthcare professional; 33% of those using the Internet for health-related matters reported that the information found impacted their medical decision, although few reported that the information impacted health care utilization; 94% said that Internet use had no effect on the number of physician visits; 93% said Internet use had no effect on the number of telephone contacts with their provider; and less than 5% reported use of the Internet to obtain a prescription or purchase pharmaceutical products.

Given the general increase in Internet use and email communication, the opportunity to connect with healthcare providers through email would facilitate and enhance patient-provider communication. Despite the massive growth of Internet and email usage, provider adoption of this medium has been minimal. Brooks and Menachemi observed that only 16.6% of physicians surveyed have utilized electronic communication and only 2.9% use it frequently to communicate with their patients. The primary concerns they reported involved fiscal and legal vulnerabilities. The authors also found a difference in the type of physician adopting email communication, with community physicians being less likely than those who work at university or county hospitals to use email communication with their patients. Further, education of providers and recipients, in addition to improvement in the security and protocols surrounding electronic communication, is needed for the implementation and widespread use of email communication between patients and providers in healthcare settings. [10]

Menachemi, Prickeet, and Brooks reported that the number of attempts made by physicians using email to communicate with their patients increased from 2005 to 2008; however, the number of physicians who regularly use email to communicate did not increase significantly during this time. [11] Unfortunately, the authors reported a lack of adherence to best practices outlined by the AMIA Internet Working Group, Task Force on Guidelines for the Use of Clinic-Patient Electronic Mail. [12] This reported lack of adherence to best practices for electronic communication is unsettling because of the sensitive and confidential nature of health concerns. Although some healthcare providers

have implemented email communication, there is a lack of oversight regarding patient privacy.

### ***Healthcare Recipient Perspectives***

Investigating the attitudes of healthcare recipients is an important part in determining whether or not there is a demand for electronic communication in the healthcare setting. Sittig, King, and Hazlehurst investigated how subjects who use the Internet and email view the potential of contacting their healthcare provider via email. A total of 954 users of WebMD (webmd.com), an open access database for medical information available online, were surveyed. The results indicated that 6% of those surveyed had used email to communicate with their healthcare providers. The main concerns with emailing healthcare providers that were identified were lack of access, limited privacy, and the potential of the email message to be read or intercepted by someone other than their healthcare provider. [13]

Couchman, Forjuoh and Rascoe surveyed 950 patients from nine family practice clinics to investigate how many of the patients were email users, as well as patients' willingness to utilize email to contact their healthcare providers and their expectations regarding email response time and content. They found that 54.3% of the patients were email users. Additionally, patients endorsed that they would use email for refilling prescriptions, non-urgent consultations, and to obtain laboratory results. [14]

Caretakers and parents often contact providers on behalf of someone else or their children. Kleiner, Akers, Burke, and Werner examined the email readiness of families who utilized the services of general pediatricians and specialty pediatricians from an integrated healthcare system. The researchers also surveyed the families' knowledge base and attitudes of the potential liabilities involved in using electronic communication with their healthcare providers. The results of this survey showed that parents who were 31-40 years of age were significantly more likely to use email. Parents at the general pediatric clinics were more concerned about privacy than those who were associated with specialty pediatric clinics. However, 74% of all parents surveyed were interested in contacting their pediatrician through email for getting test results, scheduling, and discussing symptoms. [15]

Houston, Sands, Jenckes, and Ford surveyed the experience of patients and providers who were early users of patient-provider email communication. The authors found that those who used email were more likely to have a college education, were younger, and did belong to a minority group. The most common topics discussed through email with physicians were laboratory results and prescription renewals. The benefits of email communication identi-

fied by the participants were the ability to save the email messages, efficiency, and the ability to ask more questions. [16]

Anand, Feldman, Geller, Bisbee, and Baucher conducted a content analysis of emails between providers and parents of patients in pediatric primary care. They also examined parents' attitudes about email communication with their providers. A total of 54 parents of patients, surveyed from two primary care pediatric clinics, participated in the study. The results indicated that 98% of parents were satisfied with email communications with their pediatrician. Additionally, 80% of parents felt that all pediatricians should use electronic communication, 65% stated that they would be more likely to choose a pediatrician based on their email use, and 63% were unwilling to pay for this service. [17]

In a follow-up study to the Couchman, Forjuoh, and Rascoe investigation, [18] Couchman et al. explored patients' expectations and willingness regarding the use of email communication with their healthcare providers. The researchers surveyed 2,314 patients from 19 clinics and found that 58.3% of patients had email access but only 5.8% of them had used email to communicate directly with their providers. Patients stated that they were more willing to use email for non-urgent matters such as refilling prescriptions (83%), minor consultations (82%), asking for a follow-up for direct communication previously made with their physicians (82%), and obtaining test or laboratory results (82%). Patients, in general, had high expectations for a rapid response time. The results of this study also showed a large difference in willingness and expectations by age group, education level, and income. Participants that were younger, more educated, and had higher level of income were more willing to use patient-provider electronic communication than the participants that were older, less educated, and had lower level of income. [19]

Kagen, Clarke, and Happ explored patients' and family members' interest and use of email with their health care providers after head and neck cancer operations. This study included 74 patients and 35 family members that were attending clinic visits after their procedures. The results indicated that 9.5% of patients reported using email to contact their surgeon or nurse and about 30% of those who did not use email to contact their healthcare providers were planning on doing so in the future. Symptom management and prescription refills were the most common items addressed in the emails from patients to providers. [20]

Katzen, Solan, and Dicker found that patients also favored email for increased efficiency, convenience, and timeliness of communication with their healthcare providers about general health problems. Additionally, the authors reported that 80% of patients surveyed favored posing a health related question to their physicians over email. Only 51% of the respondents were con-

cerned about confidentiality or concerned that their email would not go directly to their physician. [21]

In a study investigating whether email communication enhanced patient care as well as examining some of the common barriers for implementing an email communication system, Leong, Gengrich, Lewis, Mauger, and George, surveyed 100 patients (67 patients using email and 33 patients not using email). The authors found that those in the email group reported higher levels of satisfaction with convenience of communication and the amount of time spent communicating with their healthcare providers. [22]

To explore electronic communication within the family medicine domain, Virji et al. surveyed 390 patients at a family medicine clinic to determine how many patients utilized email, how many patients were receptive to communicating with their physician via email, and the feasibility of providing medical education through email. The results indicate that 80% of the patients who used email were interested in emailing their healthcare provider and 42% were willing to pay out of pocket for the ability to email the clinic. [23]

Rosen and Kwok conducted a survey to assess the pattern of email communication between patients and providers, measure the average amount of time providers spend on email communication with patients, and examine the satisfaction of families who had communicated electronically with their child's rheumatologist. Of the respondents, 86% endorsed that email increased access to their child's physician and 84% endorsed that more doctors should offer email systems. [24]

Regarding access to electronic communication in healthcare, older patient populations experience disparities such as lack of access to healthcare services and information. Electronic communication combined with face-to-face communication could improve quality of health care for older patients. The researchers polled a sample of 4,059 patients over 65 years of age. Although only 52 (1.3%) participants had used email to contact their physicians, almost half (49.3%) expressed interest in the possibility of using email to communicate with their doctor. [25]

Overall, healthcare recipients are excited about the possibility of communicating with their doctors through email. Some healthcare recipients are even willing to pay for this service. [26] [27] Despite the interest of patients to communicate with providers through email, only 5.8 to 10.5% of patients currently use email to communicate with their providers. [28] [29]

### ***Healthcare Provider Perspectives***

In addition to healthcare recipient attitudes regarding email in healthcare, it is also important to explore the thoughts of healthcare providers. The

implementation of email into their daily practice may have both positive and negative impacts. Kleiner, Akers, Burke, and Werner examined provider and patient access to and knowledge about email communication. A total of 37 physicians participated in their study. The results indicated that 74% of the general pediatric physicians and 100% of the subspecialty pediatric physicians had general access to email. However, 79% of these doctors did not want to use email to communicate with their patients, reporting concerns regarding confidentiality and time demands. [30]

Investigating outpatient clinics, Moyer et al. examined email utilization patterns and attitudes toward email use among primary care physicians. They found that 61% of physicians thought email was a good way for their patients to handle administrative concerns. Those who used email more frequently were more comfortable with the idea of using email in their clinic. Contrary to previous studies, Moyer et al. found that the physicians and front desk personnel were more optimistic than were patients about using email to improve the patient-provider relationship. [31]

In a survey of physicians associated with large academic medical center outpatient clinics, Gaster et al. found that nearly 72% of physicians surveyed used email to communicate with their patients. Those who utilized email in this study were highly satisfied with its use. The main concern identified by the physicians, however, was confidentiality. [32]

Anand et al. (discussed in more detail above) examined email communication between parents of patients and providers. The researchers asked the doctors to estimate how much time they spent answering emails. On average, the doctors reported spending 30 min per day emailing patients. [33]

Regarding best practices for email communication in healthcare settings as well as physicians' adoption of email communication in their practices, Brooks and Menachemi examined factors associated with physician-patient email and reported on the adherence of the physicians to the guidelines of patient communication developed by AMIA Internet Working Group, Task Force on Guidelines for the Use of Clinic-Patient Electronic Mail. Of those physicians surveyed, 16.6% reported using email to communicate with patients, with only 2.9% reporting they used email frequently. Factors that were likely to increase the usage of email were physicians' age (decreased use with advancing age), race (less frequent for Asian physicians), medical training (more frequent in family practice and surgery), practice size (increased use in larger groups), and geographic location (increased use in urban populations). Only 6.7% of the physicians surveyed complied with at least half of the guidelines for electronic communication with patients. [34] [35]

Houston, Sands, Nash, and Ford examined the qualitative experiences of physicians who used email frequently with their patients. A total of 204

physicians reported using email on a daily basis to communicate with patients participated in the study. Commonly reported topics for email communication were discussions of new but non-urgent symptoms and questions about lab results. According to the results, 75% of the physicians were satisfied with email communication because of efficiency and perceived delivery of better care. Some aspects with which physicians were not satisfied were concerns about excessive time demand, medico-legal risks, and patients' ability to use email appropriately. [36]

In conclusion, electronic communication is not widespread within the healthcare environment. Even though attempts have been made by The American Medical Informatics Association (AMIA) Internet Working Group, Task Force on Guidelines for the Use of Clinic-Patient Electronic Mail [37] to set standards for electronic communication, they are not often enforced. [38] Healthcare recipients are often in favor of electronic communication in healthcare; however, healthcare providers express privacy and legal concerns.

## **Present Study**

The present study is an investigation of the current prevalence of email communication between patient and healthcare provider. The existing literature indicates that email is only prevalent in 5.8 to 10.5% of patient populations [39] [40] even though both providers and patients often report being satisfied with the use of email communication. [41] [42] [43] An exploratory analysis will be conducted to determine if email use has increased in healthcare settings from the time of the aforementioned studies. It is hypothesized that there will be an increase in electronic communication in healthcare from the previously reported 5.8 to 10.5% of patient populations. [44]

Additional questions, including assessment of attitudes regarding email communication in healthcare settings as well as determination if providers and patients think email could enhance the patient-provider relationship will also be explored. It is hypothesized that both healthcare providers and recipients will respond positively to the idea of electronic communication in healthcare. Finally, it is hypothesized that concerns regarding electronic communication in healthcare will be predominantly related to privacy concerns over legal concerns as was found in previous investigations.

## **Method**

### ***Participants***

One hundred and ten participants were recruited using a convenience sampling method (18 were healthcare providers (e.g., doctor, nurse, psychologist, etc.) and were 92 recipients). All participants were recruited either via email message or through a social networking site (e.g. Facebook). Requirements for participation were being over the age of 18 and having access to a computer.

Participants ranged in age from 18 to 69 years ( $M=26.8$ ;  $SD=10.9$ ). Of the 110 participants, 40 (36.4%) were male, 69 (62.7%) were female and one who self-identified as other (.9%). Self-identified racial ethnicity within the sample was as follows: 101 (92.7%) Caucasian, 4 (3.7%) Asian/Pacific Islander, 1 (.9%) Black, 3 (2.8%) Hispanic, and 5 (4.6%) other.

### ***Materials and Procedures***

Participants were asked to partake in a survey regarding the frequency, purpose, and location of patient-provider email communication; whether or not they have engaged in such communication; and their attitudes regarding email communication and health care. Providers and recipients completed a similar survey with minor differences in wording.

Upon entering the study website, participants were presented with and asked to read the document of informed consent. After agreeing to the conditions presented in the statement of informed consent, each participant was presented with a demographics questionnaire. Based on participant indication that they are either a healthcare provider or a recipient of healthcare services, individuals were directed to two additional survey measures, one regarding their attitudes and a measure of email and healthcare communication. All participants were presented with these two measures; however, the language differed slightly depending upon the participant indication of status (i.e., patient or provider). Once the participant completed these measures, they were thanked for their time and participation. The total participation time was approximately 20 minutes. The Pacific University Institutional Review board approved the study protocol and all participants were free to discontinue their participation at any time without penalty.

*Table 1. Demographics of Sample (n = 110)*

	Recipients n (%)	Providers n (%)
Total:	92 (83.6)	18 (16.4)
<b>Gender</b>		
Male	36 (39.1)	4 (22.2)
Female	55 (59.8)	14 (77.8)
Other	1 (.9)	-
<b>Education</b>		
High school	9 (9.8)	1 (5.6)
Some college/trade	31 (33.7)	1 (5.6)
2-year degree	6 (6.5)	2 (11.1)
Bachelors	32 (34.8)	8 (44.4)
Masters	8 (8.7)	5 (27.8)
Doctorate	6 (6.5)	1 (5.6)
<b>Ethnicity</b>		
Caucasian	80 (87.0)	18 (100)
Black/African American	1 (1.1)	-
Hispanic	1 (1.1)	-
Asian/Pacific Islander	3 (3.3)	-
Middle Eastern	2 (2.2)	-
Bi-racial	4 (4.3)	-
Other	1 (1.1)	-

**Table 2. Email usage (n=110)**

	Recipients n (%)	Providers n (%)
Email Use (yes)	92 (100)	18 (100)
<b>How often do you check email?</b>		
Once a week or less	1 (1.1)	1 (5.6)
A few times a week	9 (9.8)	1 (5.6)
Every day	8 (8.7)	3 (16.7)
More than once a day	74 (80.4)	13 (72.2)
<b>What do you use email for most?</b>		
Work	35 (38)	9 (50)
School	8 (8.7)	1 (5.6)
Personal	49 (53.3)	8 (44.4)

**Table 3. Details of Email Usage (n = 110)**

	Recipients n (%)	Providers n (%)
<b>Where do you use email?</b>		
Work	69 (75)	15 (83.3)
Home	90 (97.8)	18 (100)
Other	26 (28.3)	3 (16.7)
<b>Who do you email?</b>		
Coworkers	58 (63)	13 (72.2)
Boss	56 (60.9)	13 (72.2)
Friends	70 (76.1)	14 (77.8)
Family	74 (80.4)	12 (66.7)
Companies	36 (39.1)	3 (16.7)
Professionals	35 (38)	9 (50)
Other	9 (9.8)	18 (100)

## Results

### *Demographic Information*

Participant demographic information, including gender, education, and ethnicity, are presented in Table 1.

All participants in the study reported that they use email. Information about frequency of email use and for what purpose email is utilized the most is presented in Table 2.

Table 3 contains information pertaining details of email usage within the sample. Participants were asked to “check all that apply” to obtain this data. The percentages that are presented in the table are those who positively endorsed the use of email in that modality.

**Table 4. Health Information Online (n = 110)**

	Recipients n (%)	Providers n (%)
<b>Education regarding health concerns:</b>		
Very educated	15 (16.3)	6 (33.3)
Somewhat educated	60 (65.2)	12 (66.7)
Neither educated or not	14 (15.2)	-
Not really educated	3 (3.3)	-
Uninformed	-	-
<b>Research symptoms online?*</b>		
Yes	83 (90.2)	4 (22.2)
No	9 (9.8)	14 (77.8)
<b>Reliability of online information:</b>		
Very accurate	4 (4.3)	-
Accurate	45 (48.9)	9 (50)
Neither accurate or inaccurate	35 (38)	8 (44.4)
Inaccurate	7 (7.6)	1 (5.6)
Very inaccurate	-	-

*\*Recipients were asked if they research their symptoms online; providers were asked if they encourage patients researching symptoms online.*

## Email and Healthcare

Participants were asked a series of questions regarding how educated they perceived themselves to be concerning medical information presented online, whether or not they researched their health concerns or symptoms online (or in the case of physicians, whether they encouraged their patients to research health concerns online), and the accuracy of the information presented online. This information is presented in Table 4.

Table 5 presents the interest of recipients and providers in provider-patient email communication; if they have used email for such communication; and if so, what was the content of the email communication. The content portion of this question was restricted to common themes that were found to be popular for email communication between healthcare providers and recipients in the literature review.

**Table 5. Use of Email with Healthcare Providers and Patients (n = 110)**

	Recipients n (%)	Providers n (%)
<b>Interested in emailing doctor/patient:</b>		
Yes	79 (85.9)	3 (16.7)
No	13 (14.1)	15 (83.3)
<b>Frequency of communication with health care provider via email:</b>		
Never	54 (58.7)	17 (94.4)
Once	7 (7.6)	-
2-3 times	18 (19.6)	-
4-5 times	2 (2.2)	-
5 or more times	11 (12)	1 (5.6)
<b>Reason for email:</b>		
Scheduling	36 (39.1)	2 (11.1)
Billing	12 (13)	-
Health concerns	19 (20.7)	-
Question regarding symptoms	18 (19.6)	-
Refill prescriptions	23 (25)	1 (5.6)
Other	10 (10.9)	6 (33.33)

**Table 6. Perceptions of Email Utilization in Healthcare (n = 110)**

	Recipients n (%)	Providers n (%)
Feeling toward email in healthcare:		
Extremely positive	33 (35.9)	2 (11.1)
Positive	38 (41.3)	6 (33.33)
Ambivalent	18 (19.6)	8 (44.4)
Negative	3 (3.3)	2 (11.1)
Extremely Negative	-	-
Email good way to contact healthcare provider?		
Yes	55 (59.8)	3 (16.7)
Yes, but for administrative only	20 (21.7)	9 (50)
Yes, for admin and health concerns	12 (13)	-
No	5 (5.4)	6 (33.33)
Reasons you currently do not email healthcare professionals?*		
Lack of access	45 (48.9)	8 (44.4)
Response time is slow	13 (14.1)	4 (22.2)
Fear of being lost in the system	18 (19.6)	4 (22.2)
Other (Privacy)	-	15 (83.3)
Other (Legal)	-	12 (66.7)
Other	33 (35.9)	5 (27.8)
Could email improve patient-provider communication?		
Yes	88 (90.2)	13 (72.2)
No	4 (4.3)	5 (27.8)
Could email improve patient understanding of health and concerns?		
Yes	83 (90.2)	10 (55.6)
No	9 (9.8)	8 (44.4)

\*Check all that apply

### **Attitudes About Email in Healthcare**

The perceptions of email use in healthcare settings, and whether or not such communication would enhance understanding between healthcare providers and recipients, are presented in Table 6. The reasoning behind current

barriers to email use was a “Check all that apply” question, accounting for the larger reported percentages.

## Discussion

The results of the current study are consistent with what was previously found in the literature. The first hypothesis was that there would be a reported increase in adoption of email utilization in healthcare settings. According to prior research, email communication was only prevalent in 5.8 to 10.5% of patient populations. [45] [46] In the current study, the percentage of healthcare providers using electronic communication with recipients was 5.6%. In the sample surveyed, there was not an increase in electronic communication in healthcare.

Despite a lack of utilization, there are many examples within the literature of healthcare providers and patients being satisfied with the implementation of email communication. [47] [48] [49] The second hypothesis in the present study was that healthcare providers and recipients would respond positively to electronic communication. The results from the current study are that 76% of healthcare recipients surveyed feel positively toward email communication in healthcare; but only 44% of the healthcare providers sampled feel positively toward provider-patient email communication. All healthcare providers in this study endorsed email use for their personal lives. However, only half of the providers ( $n = 9$ ; 50%) endorsed email use with healthcare recipients. Further, 85.9% of recipients of healthcare are interested in such communication, but only 16.7% of providers are interested. This disparity in interest could partially be responsible for the lack of integration of electronic communication in healthcare practice. Although healthcare recipients view email as a convenience, a majority of healthcare providers reported privacy and legal concerns (as detailed below).

The final hypothesis was that legal and privacy issues would be the primary concerns regarding the implementation of electronic communication in healthcare settings. While this was true for healthcare providers, the results of the present study show that the primary concerns of healthcare recipients are lack of access or opportunity, fear of being lost in a complex system, and privacy. Prior research indicated the reasoning behind the lack of email communication in healthcare settings were lack of access, slow response time, legal, and privacy barriers. [50]

Included in this study were questions regarding provider and patient opinions on email potentially enhancing the patient-provider relationship and communication. Although providers did not endorse being interested in communicating with patients via email, 72% endorsed that email would be a good

way to improve patient-provider communication. This is consistent with the findings of Kleiner et. al. and Houston et. al.. [51] [52] Further research should investigate the barriers between the desires to improve patient-provider communication and relationships their relations to concerns regarding lack of access, legal and privacy.

In regard to the use of the Internet to search for information regarding symptoms online, the majority of healthcare recipients reported that they do search their symptoms online, while the majority of healthcare providers do not encourage their patients to do so. The information that is available on the Internet regarding health concerns is vast and often not regulated. [53] Researching types of medical information available online is a difficult subject. Improved communication between the healthcare provider and patient surrounding online health information can have a positive impact on healthcare understanding and treatment adherence.

## **Limitations**

There are a few limitations of the present study. This study utilized a small sample (n = 110) collected via a convenience sampling method through social networking sites (i.e., Facebook). The sample was homogenous in regards with racial ethnicity, with the great majority of the sample identifying as Caucasian and socioeconomic factors were not collected.

Further, the authors of the present study did not differentiate between healthcare provider settings. Higher rates of email communication have reported in urban areas and hospitals that are affiliated with universities. [54] Further examination of such geographic differences in the adoption of provider-patient electronic communication is called for. Also, exploring current models of electronic communication success in healthcare settings should be investigated. This could be used to create electronic communication systems between providers and recipients that better address common concerns.

## **Conclusions**

Digital communication has changed the way people communicate in their personal, professional, and social lives. However, there is slow implementation of electronic communication in healthcare. The current study found a small margin of healthcare providers contact recipients via email, despite the results indicating most recipient participants feel positively toward email communication in healthcare. Further research should be conducted into the barriers between the adaptation of patient-provider email communication to enhance access and quality of healthcare services.

## Notes

- [1] [internetworldstats.com/stats.htm](http://internetworldstats.com/stats.htm)
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