Research Article

Attitude and practice of primary care physician towards online consultation

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Abstract

Background: Internet technology is affecting many industries, including health care, and physicians are increasingly using e-mail as a part of their workday.

Objective: To determine the attitudes towards e-mail consultation among general practitioners and family physician in primary healthcare (PHC), Jeddah city, Saudi Arabia who reported practice of e-mail consultations in general practice and to identify the factors or barrier influencing e-mail communication in different sector of primary health care in Jeddah.

Materials and Methods: This cross-sectional study was conducted during April 2014 to April 2015. All general practitioners and family physicians of both gender and different nationality working at PHC centers, Jeddah city throughout the study period were included. Different attitudes of PHC physicians towards e-mail consultation with their patients were assessed through a self-administered questionnaire.

Result: The total number of selected physicians for the study was 150, about 127 of them responded to the study with respondent rate of 84%. Most of the respondents in this study were females (66.1%) versus males (33.9%). General practitioners (GP) were 27.6% and 24.4% were consultants. Most of the physicians (62%) were not currently using computers at work site and only 38% exclusively use computers in the practice. Only 25% had internet access and 45% had intranet. Physicians' attitude toward e-mailing patients was generally positive. About 47 of respondents use e-mail to communicate with other GPs within the practice, 55% with GPs outside the work place and 15% with administrative staff. In this study, usage of e-mail with international organization was highest (60%). About 31.5% of respondent physicians received e-mails from their patients. Seventy percent of received e-mails were about medical consultation, 11% for repeated prescription, 11% for making an appointment, 32% for general medical consultation, and 46% for information about medical condition. Risk of confidentiality with e-mail did not emphasis worries in 18% of physicians. The majority of physicians expressed the view that there was sufficient time to respond to most of the patients through e-mail 52 (43.7%). Moreover, about 17% of respondent considered e-mail use in clinical practice is an additional burden in an already onerous job.

Conclusion: The general attitude of physicians towards computer and internet use in work place was positive although the usage of e-mail in medical consultations of patients was very limited.

KEYWORDS: E-mail, consultation, primary health care, physicians

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Introduction

e-Health emerged early in the 21st century and is an all-encompassing term for the combined use of electronic information and communication technology in the health sector. This term refers to the technology used for clinical, educational, research, and administrative purposes, both at the local site and across wide geographic regions. The use

of e-health has enhanced networking, facilitated global thinking, and improved health care on local, regional, and national levels.[1]

e-Health, strictly with the internet, broadly refers to any electronic exchange of health related data collected or analyzed through an electronic connectivity for improving efficiency and effectiveness of health care delivery. Therefore, it is often used to describe virtually everything related to computers and medicine.[2]

Traditionally, patients and health providers have interacted face to face. The arrival of the telephone revolutionized communication, yet it did not significantly alter the way health providers and patients interact. The introduction of the internet into the public arena throughout the 1990s has paved the way for significant advances in communication and information exchange in the health industry. The facility of e-mail, via the internet, allows for the quick and efficient transmission of a written message to a targeted receiver. Internet technology is affecting many industries, including health care, and physicians are increasingly using e-mail as a part of their work. Ninety-three percent of physicians in USA have internet access at their office, in their clinical work area or at home, and at least 64% now use e-mail to communicate with staff, colleagues, patients, and third-party payers. Physicians have generally been slow to adopt the use of e-mail with patients.[3]

E-mail communication is well established in science, business, social interaction, and education. While e-mail dialogue between health care professionals is common practice, use of e-mail to facilitate dialogue between patients and health care professionals is a new area. Increasing public internet access is likely to generate pressure on general practices to respond to patient demand for e-mail communication.[4, 5] This may create opportunities to save unnecessary face-to-face contacts and potentially facilitate equity of decision-making between client and health care advisor.[6] Arguments against e-mail include concerns about the 'dangers of the internet', confidentiality, social exclusion of the technically illiterate, lack of access to information technology (IT), intrusion into the lives and work patterns of busy general practitioners (GPs), and fears about security.[7]

Healthcare professional's use of e-mail to communicate with patients is useful to improve patient, doctor, and staff understanding and satisfaction; strengthen patient relationships; and encourage more patient participation. It also provides immediacy of communication; no need to wait for the mail or connect for a telephone call, increases opportunities for information sharing; allows easy attachment of other electronic documents, reduces number of telephone calls and pages sent and received, saves time; e-mail can be quicker than an in-person conversation or a telephone call; some doctors say "you can expect to receive about one e-mail a day from every100 patients who are using internet"; allows for communication at more convenient and calm times for both sender and recipient and frees up schedules and improves access for patients who really need to see the doctor by reducing non-essential office visits of other patients.[8]

E-mail is used as an adjunct to direct patient encounters. Using patients' test results from reliable home monitoring equipment, physicians will adjust doses of drugs.[9]

The present study was carried out to explore the attitude and experience of e-mail consultation of general practitioners and family physician in PHC Jeddah city, Saudi Arabia.

Materials and Methods

A cross sectional study among all general practitioners and family physicians (both genders and all nationalities) in different primary health care sectors in Jeddah city was implemented. Jeddah is the second largest city after Riyadh inhabiting more than 1,500 km and population is more than 3 million. It is an industrial and active commercial center. It also comprises of large number of primary health care centers (PHCCs), ministry of health (MOH) sectors divided into 6 main sectors and include 40 PHCCs. Non-MOH sector include National Guard hospital, King Faisal specialist hospital, and King Abdul-Aziz university hospital. The study was conducted during April 2014 to April 2015.

Written permission from authority to conduct the research and ethical considerations were taken though all research steps and verbal consent were taken from those physicians involved in the research.

A self-administered questionnaire was used for collection of data. It consisted of three section; demographic data, the physicians who are using e-mail, and the physicians who are not using e-mail. The response varied vastly. Data were entered to personal computer by the researcher and analyzed by the statistical package of the social sciences (SPSS) Version 22. Continuous variables were presented as mean and standard deviation while categorical variables as frequency and percent. Chi-square, t-test, and logistic regression were used and p value <0.05 was considered significant.

Result

About 150 physicians of different qualifications working in different primary health care settings were recruited for the study. Out of them, 127 physicians responded. The response rate was 84.7%. However, some of the respondent participants missed reporting some data. The data was analyzed according to the valid number of the participants.

According to work place, 109 participants (85.8%) were from primary health care center and 18 (14.2%) from general clinics in hospitals. About 84 participants (66.1%) were females whereas 43 (33.9%) were males. The age ranged between 25 and 70 years with mean age of 36.7 years and SD ±8.9 years. Among the participants, there were 61 specialists (48 %), followed by 35 residents (27.6%), and 31 consultants (24.4%). The qualification of respondents ranged from basic medical qualification to postgraduate studies. Among the participants, 80 (64.5%) had basic medical qualification

MBBS, 35 had Arabic board fellowship (27.8%), 8 had masters (6.3%) and 3 had PhD (2.4%) (Table 1).

About 48 (37.8%) participants used computer technology in their practices. General internet connection availability rate at work place was 25.2%, while local intranet connection rate was 35.4%. E-mail use was considerably varied among physicians at work site, only 55 (43%) used e-mail. However, more than half of the participants (61.4%) had no training in e-mail use. In addition, only 35.4% of the respondents expressed their interest in e-mail training.

Table 1: Illustration of the characteristics of the study sample

Characteristics	Frequency	Percentage
Gender		
Male	43	34
Female	84	66
Job title		
Specialist	61	48
Consultant	31	24.4
Resident	35	27.6
Qualification		
MBBS	80	63.4
Board	35	27.8
Master	8	6.3
PhD	3	2.4
Work setting		
PHC Center	109	86.1
Hospital	18	14

Table 2: Information technology use by physician at work site

Characteristics	Frequency	Percentage
Computer technology use (*n* = 127)		
Yes	48	37.8
No	79	62.2
General Network connection (*n*=127)		
Yes	32	25.2
No	95	74.8
Local Network connection (*n* = 127)		
Yes	45	35.4
No	82	64.6
E-mail use (*n* = 127)		
Yes	55	43.3
No	72	56.7
Trained in e-mail use (*n* = 127)		
Yes	49	38.6
No	78	61.4
Want training in e-mail (*n* = 126)		
Yes	45	35.4
No	81	64.6

The result revealed that the rate of average number of patients seen per physician per day were 83% for less than 50, 17% for more than 50 patients per day.

The attitude of physicians toward the use of e-mail in consultation was not significantly different. Almost one-third (31.8%) were strongly agreed with the use of e-mail as a secure way of communication between physicians and patients. Regarding the use of e-mail as a convenient method of communication between physicians, about 22% of the participants were strongly agreed and 17% disagreed. In speculative question about the future use of e-mail in health care, the response was strikingly diverse about 6.8% were unsure, 40.7% agreed, 18.6% and .54% disagreed. However, majority of physicians 62% strongly agreed about patients having access to e-mail.

Nineteen percent of the participants agreed regarding the risk of confidentiality of patient's information with the use of e-mail. Moreover 8.5% of physicians preferred to see patients directly without use of e-mail in consultation. Regarding difficulty in diagnosis of diseases through e-mail, almost two-thirds of the participants agreed (64.7%). About 11% versus 68% of physicians agreed and disagreed respectively, that there was no enough time to respond to all e-mails. Use of e-mail as additional burden in an already onerous job was differently viewed by physicians (16.9%).

Most of the primary health care physicians did not use computer and e-mail (67.7% versus 32.7%). Only 40 physicians (2.3%) used it in their practice. Nineteen participants (47.5%) used e-mail with GP within the workplace, 22 (55%) used it with GP outside the practice, 20 (50%) physician used it with administrative staff within the work place, 21 (52.5%) used e-mail with other health care worker, 21(52.5%) used e-mail with colleagues in the secondary care, 15 (37%) used e-mail with colleagues in the secondary care, 14 (35%) used e-mail with secondary care administrative staff and 24 (60%) used e-mail with international organization (Table 3).

About 8 (21%) physicians received e-mails request from patients, 3 (7.5%) of them for repeat prescription, 3 (7.5%) to make an appointment, 9 (22.5%) for consultation and 13 (32.5%) for information on a medical condition. However, only 5(29.4%) of them always reply, 10 (59%) sometimes reply and 2 (12%) didn't reply. There were different types of physicians replying to patient's e-mails, 10 participants respond to questions (62.5%), 9 to provide information (60%), 4 to suggest an appointment (62%), 5 to suggest a phone call (33.3%), and 3 to decline (20%).

The point-view of physicians about e-mail use in medical consultation was varied, 27 (33.3%) of them expressed their will to use it, 40 (49.4%) of them expressed their will to not use it and 14 (17.3%) stated that they perhaps used it. However, more than half of physicians 42 (52 %) stated that they would use the e-mail in patients medical consultation if there were guidelines while 4 (4.9%) said that they would never use it in presence of guidelines and 36 (43.2%) mentioned that they might use it.

There was a difference in e-mail use between male and female participants (57.8% versus 51.2%). However, it was

Table 3: The Uses of e-mail and computer technology in physician practices

	Frequency	Valid Percent
Usage of computer and e-mail in the practice (*n* = 124)		
Yes	40	32.3
No	84	67.7
Usage of e-mail with GPs within the work place (*n* = 40)		
Yes	19	47.5
No	21	52.5
Usage of e-mail with GPs outside the work place (*n* = 40)		
Yes	2	55
No	18	45
Usage of e-mail with administrative staff within the work place (*n* = 40)		
Yes	20	50
No	20	50
Usage of e-mail with other health care worker (*n* = 40)		
Yes	21	52.5
No	19	47.5
Usage of e-mail with colleagues in the secondary care (*n* = 40)		
Yes	15	37.5
No	25	62.5
Usage of e-mail with secondary care administrative staff (*n* = 40)		
Yes	14	35
No	26	65
Usage of e-mail with international organization (*n* = 40)		
Yes	24	60
No	16	40

not statistically significant, $p = 0.4$. There was a difference in number of those who use e-mail in their practice for patient consultation and this difference was statistically significant ($P = 0.001$). Confidentiality was significantly associated with e-mail use ($P = 0.04$) (Table 4).

Discussion

The response rate of the present study was relatively low when compared with previous two studies which were conducted in USA and UK where the respondent rate was 90.8%, 88–89%, respectively.[10, 11]

Most of the respondents in this study were females compared to males (66.1% versus 33.9%). While in the study based on USA, 61% of the respondents were male.[10]

The majority of participants are younger (mean of age was 35.2 ± 11.2 years). Age distribution among the age group almost equally apart from the age group of 50 and above which was the least and represented the natural tip of the professional hierarchy among physicians. However, there was no significant differences in e-mail use by physician regardless of their age or gender in USA.[10]

Most of the participant were specialist 48% (include resident in joint program of family medicine and those who already graduated from it), general practitioners were 27.6% and consultants were 24.4%. This indicates, some physicians are postgraduate medical specialty but they work at job title of general practitioner.

The majority of physicians 86% who participated in the study were working at primary health care services at centers level, while 14% were working at primary health care services at hospitals level. However, there was no statistically significant difference in use of e-mail between physicians who were working at PHC and hospital. In USA significant differences was reported in the practice site between community primary care clinics and hospitals, 51% and 76%, respectively ($P = .001$).[10]

Most of the physicians (62%) were not currently using computers at work site and only 38% exclusively use computer in the practice. This result was lower compared with the study findings which was conducted in UK.[12] It may reflect the general medical practice movement towards computerization which is still under development. However, most of the physician (70.6%) who were working at PHC of the hospital used computer compared to 32.7% of physicians who were working at PHC Centers. This difference is statistically significant ($P = 0.0003$). This reflects that hospitals have resources to provide their centers with computers and network facilities, while the PHCC do not.

Most of the physicians (75%) were not currently having internet access only 25 % had internet and 45% had intranet. This finding was lower in comparison with UK which is 49%.[12]

Physicians appeared to be comfortable with e-mail usage, 43.3% of them used e-mail for communications; few of them had received formal training in the use of e-mail 38.5%

Table 4: The relation between e-mail use and other variables

	E-mail use				
	Yes no. (%)	**No no. (%)**	χ^2	**Vdf**	**P**
Gender *n* =126					
Male	22 (51.2)	21 (48.8)	0.28	1	0.4
Female	48 (57.8)	35 (42.2)			
Job *n* =126					
Resident	40 (54)	34 (46)	0.98	3	0.8
Specialist	12 (57)	9 (43)			
Consultant	18 (58)	13 (42)			
Qualification *n* = 126					
MBBS	44 (55.0)	36 (45.0)	1.6	3	0.6
Post graduate	96 (76)	76 (60.3)			
Working place *n* = 126					
PHC	59 (54.6)	49 (45.4)	0.06	1	0.6
Hospital	11 (61.1)	7 (38.9)			
Consultation *n* = 120					
Yes	7 (77.8)	25 (78.1)	12.4	1	0.001
No					
No enough time *n* = 118					
Yes	3 (2.6)	9 (7.8)	1.92	1	0.166
No	3 (2.6)	22 (19.0)			
Confidentiality *n* = 113					
Yes	3 (2.6)	9 (7.8)	0.1	2	0.04
No	19 (45.2)	2 (50.0)	7.8	3	
Guideline *n* = 124					
Yes	19 (15.2)	23 (18.8)	7.8	3	0.05
No	2 (1.6)	2 (1.6)	7.8	3	

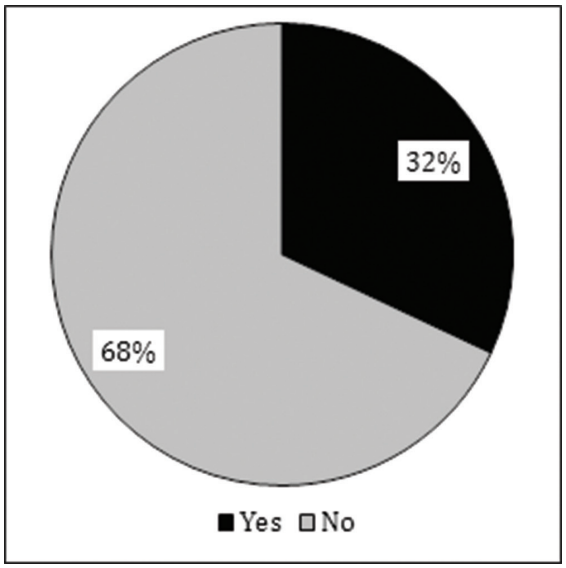

Figure 1: Uses of e-mail and computer technology in physician practicese.

and 35.4% reported a desire for such training. These finding was similar to that in UK.[12]

Physician's attitudes toward e-mailing patients were generally positive. The majority of respondents did not express any concern about security of e-mail as a means of communication with the patients (32%). About 41% of the participants agreed that e-mail is a convenient method of communication with patients and colleagues at work site. Opinion was divided on whether the e-mail would be used much more in the future, 22.1% agreed and 61% disagreed and 16.9% were unsure. Moreover, the response of physicians to patient's e-mail was extremely positive about 88% of them replied to their patient's e-mail compared with 12% who didn't reply. However some physicians had potentiality to communicate with patients through e-mail. About 32.2% of them sent an e-mail to their patients questioning them about their medical condition, 28.1% to provide medical information, 12.5% to suggest an appointment, 15.6%) to suggest phone call and 9.3% to declined to respond to e-mail.

Physicians' information about patients access to e-mail was considerably differed, 77.8% stated that their patients have access to e-mail, 14% stated that their patients do

not have access while 8% were unsure. All of these finding are similar to that reported in UK except opinion that e-mail will be used much more in the future. American physicians were more optimistic.[12]

In USA, few physicians discussed confidentiality of e-mail with patients but most of the physicians were satisfied with their e-mail communication with patients most of the time.[11]

Forty three percent of the physicians reported using e-mail to communicate with patients which is proportionally lower than in USA which is 72%.[11]

About 47% of the respondents use e-mail to communicate with other GPs within the practice, 55% with GPs outside the work place and 15% with administrative staff.

In this study, usage of e-mail with international organization was highest (60%), while the majority in UK used e-mail for personal correspondence (84%).[12]

About 31.5% of respondent physicians received an e-mail from their patients. Seventy percents of received e-mails were about medical consultation. About 11% for repeated prescription, 11% for making an appointment, 32% for general medical consultation, and 46 % for information about medical condition.

For those who do not communicate with patients through e-mail were willing to use it for patient consultations (27, 33.3%), while few still refused to use it (14, 17.3%). But the result shifted from 33.3 to 51.9% when the guidelines were said to provide for those who were willing to use e-mail for consultations and the result sifted from 17.3 to 4.9% for those who refused. This indicates the importance of clinical guideline on e-mail consultations.

About risk of confidentiality with e-mail did not emphasis worries in most of the physicians. About 18% were concerned about the risk of confidentiality which was lower than the UK study where about 65% of physicians were concerned where as in USA it is 23%.[11]

Emerging of high technology and internet facilitate the diagnosis by e-mail and make face to face meeting between physicians and patients unnecessary. In previous studies, majority of the physicians felt that e-mail was inappropriate for evaluating a new symptom.[11] In this study, the physicians were asked about the visibility of diagnosis by e-mail. The majority of them express the view that there was sufficient time to respond to most of the patient's e-mail 52 (43.7%) which is nearly similar to that in UK (55%). In the USA study 55% agreed that it saves time[11] where as in the present study, it is opposite. Moreover, about 17% of the respondents considered that e-mail use in clinical practice is an additional burden in an already onerous job where as in UK study it was 38.5 %.[12]

Conclusion

In conclusion, the use of e-mail in medical consultations of patients was very limited, in addition, response of primary health care physicians to e-mail of patients was low. Lack of computer and internet infrastructure in health setting was the major obstacle to e-mail use by physicians.

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