Use of information technology by practising clinicians in Pakistan: a questionnaire survey

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Abstract

COMSATS Institute of Technology in Islamabad carried out a questionnaire survey to explore the use of the Internet and e-mail by practising clinicians in twelve hospitals in Pakistan. Access, views and practices of clinicians were investigated. While access to Internet and email was high, the use of Internet and email by clinicians for their work was not very high. And while many clinicians agreed that the Internet and email has potential value for their work, the likelihood of its use in health care delivery in Pakistan emerged to be low.

Introduction

Pakistan, like other developing countries, has in recent years experienced a rapid rise in the spread of information and communication technology (ICT) and use of the Internet (Table 1). However, Internet and e-mail uptake in the healthcare sector has been slower than in the country as a whole. This could be due to a number of factors including, but not limited to, naive ignorance of the benefits of the Internet in healthcare, lack of connectivity, a shortage of financial resources, non-availability of good or appropriate technology, scarcity of qualified staff with health informatics computer literacy, or misconceptions among clinicians on the perceived harmfulness of the Internet and e-mail (or lack of benefit, at the very least), leading to active resistance on the part of clinicians.

There appears to have been very little research on this topic, especially with regard to developing countries. Two articles that stand out on this for developing countries (Asangansi et al, 2008 and Ajuwon, 2006) are both from Nigeria. Studies on this topic in developed countries include, among others, USA, Saudi Arabia, Australia and New Zealand.

To obtain a better understanding of the situation in Pakistan, the Health Informatics Unit at COMSATS Institute of Information Technology (CIIT)* in Islamabad carried out a survey to investigate the views and practices of clinicians on the use of the Internet and e-mail in their work.

Method

A survey in the form of a verbally administered questionnaire was carried out from 12 February to 28 March 2007. A four-page questionnaire (available on request), consisting of 44 questions, was developed in-house and used to collect the responses. Eight people trained to administer the questionnaire conducted the survey by visiting practising clinicians in hospitals in the twin cities of Islamabad and Rawalpindi. Clinicians selected for the survey included house officers, medical officers, registrars and consultants. In face-to-face meetings, the interviewers went through each question with the respondents.

Table 1
Internet usage
in Pakistan

Year	Users	Population	% Users	GDP per capita
2000	133,900	163,985,373	0.1%	N/A
2006	12,000,000	167,806,831	7.2%	US$690

Source: International Telecommunication Union (http://www.itu.int/net/home/index.aspx)
Cited in: Internet World Stats (http://www.internetworldstats.com/asia/pk.htm)

Results

Twelve hospitals were visited in the survey (Table 2). Fifteen percent of the returned questionnaires did not specify which hospital was visited.

Table 2
Hospitals where the questionnaire survey was carried out

	Hospital	Male	Female	Total
1	Not mentioned	46	43	89
2	Ali Medica	2	4	6
3	Al-Shifa Trust Hospital	1	0	1
4	CDA Hospital	2	0	2
5	Combined Military Hospital	95	71	166
6	District Headquarters Hospital	33	23	56
7	Federal Government Services Hospital	20	19	39
8	Islamic International Medical College	18	16	34
9	LMDC	12	11	23
10	Maryam Memorial	8	14	22
11	PIMS	47	21	68
12	RGH	14	5	19
13	Shifa International	6	6	12
	Total	304	233	537

Demographics

A total of 537 respondents were interviewed, 57% male and 43% female. They ranged in age from 25 to 65 years, but 86% were between 25 and 32 years of age. The clinical specialities of the respondents are given in Table 3.

As no major differences were observed in the responses of males and females, further reporting of the results is on the basis of the total responses undifferentiated by gender.

Table 3
Fields of specialisation of respondents

	Area of specialisation	Male	Female	Total
1	Medicine	99	87	186
2	Surgery	117	45	162
3	Radiology	14	10	24
4	Pathology	18	14	32
5	Others	58	75	133
	Total	306	231	537

Access

All the respondents had access to the Internet and e-mail either at home or at work. Respondents reported using the Internet or e-mail four times as much from their homes as from their offices. Only 16% (CI: 13.17% – 19.41%) connected to the Internet daily whereas 31% (CI: 27.90 – 35.78%) connected only rarely or never (Table 4).

Table 4
Frequency of logging on to the Internet or using e-mail

	Frequency	% Respondents
1	Daily	16.29
2	3 or 4 days a week	16.48
3	1 or 2 days a week	35.39
4	Rarely or never	31.81
	Total	**100**

Of those who spent time on the Internet, only 3% (CI: 1.51% – 4.37%) did so for 12 or more hours a week, whereas more than 54% (CI: 50% – 58.42%) connected for 2 hours or less (Table 5).

Table 5
Time spent on the Internet and using e-mail combined

	Number of hours a week	% Respondents
1	2 hours or less	54.21
2	3–5 hours	29.75
3	6–8 hours	10.37
4	9–11 hours	2.74
5	12+ hours	2.94
	Total	**100**

Views

While 69% (CI: 64.63% – 72.49%) strongly agreed or agreed that use of e-mail has the potential to reduce unnecessary visits to a doctor and 69% (CI: 64.63% – 72.49%) strongly agreed or agreed that e-mail can help increase patient compliance, 56% (CI: 51.38% – 59.78%) also strongly agreed or agreed that using e-mail with their patients would lessen their personal relationships with them. Furthermore, 54% (CI: 49.90 – 58.32%) strongly agreed or agreed that physicians would not use e-mail to communicate with their patients unless they were paid for their time (Table 6).

Regarding use of the Internet, 80% (CI: 76.58% – 83.36%) of the respondents strongly agreed or agreed that the Internet can be useful in providing patient education, but 56% (CI: 51.82% – 60.22%) also strongly agreed or agreed that there are few websites providing trustworthy health information (Table 6).

Table 6
Respondents' views
on use of the Internet
and e-mail

View	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
			%		
E-mail will lessen the personal relationships between physicians and patients	16.36	39.22	20.45	20.07	3.90
Physicians will not use e-mail to communicate with patients unless they get paid for their time	20.15	33.96	20.15	19.78	5.97
The Internet is useful in providing patient education	26.22	53.75	14.23	4.68	1.12
There are few trustworthy health- related websites on the Internet	13.91	42.11	29.51	11.65	2.82
The use of e-mail has the potential to reduce unnecessary office visits	12.50	56.06	22.73	7.58	1.14
E-mail can help remind patients to comply with their physician's orders	12.50	56.06	22.73	7.58	1.14
Patient confidentiality is the major reason why physicians do not use e-mail to communicate with patients	7.69	23.26	33.02	32.65	3.38

Usage	Very often	Often	Sometimes	Rarely	Never	Not sure
			%			
Frequency of use of the Internet or e-mail to communicate directly with patients regarding their medical issues	6.38	9.48	11.99	14.31	56.48	1.35
Frequency of use of the Internet or e-mail to communicate directly with patients regarding prevention, health education or disease management care	4.71	6.86	13.33	23.73	50.20	1.18
Frequency of use of the Internet or e-mail to communicate with office staff	5.93	8.70	23.91	20.36	39.53	1.58
Frequency of use of the Internet or e-mail to communicate with professional colleagues regarding medical issues	9.18	17.58	28.52	16.99	26.37	1.37
Frequency of use of the Internet or e-mail to conduct medically related research on the Internet	12.52	20.74	27.20	16.63	22.11	0.78
Frequency of use of the Internet to purchase medical supplies	3.89	8.75	12.45	18.09	54.86	1.95
Frequency of use of the Internet to purchase non-medical items (books, clothing, etc)	6.40	5.81	10.66	18.22	56.78	2.13

Table 7
Respondents'
practical use of the
Internet and e-mail

Practices

Despite the fact that all respondents had access to the Internet and e-mail, 70% (CI: 66.94% – 74.64%) said that they rarely or never used the Internet or e-mail to communicate with patients regarding their current medical issues, 74% (CI: 70.22% – 77.64%) said they rarely or never sent e-mails to patients regarding prevention, health education or disease management care, and 60% (CI: 55.74% – 64.04%) said they rarely or never sent e-mails to office staff (Table 7). When asked whether patient confidentiality was a reason for clinicians not using e-mail to communicate patient-related information, 31% (CI: 27.04% – 34.86%) of the respondents strongly agreed or agreed whereas 36% (CI: 31.97% – 40.09%) disagreed or strongly disagreed (Table 6).

Although the respondents did not commonly use the Internet or e-mail to contact their patients, 55% (CI: 51.07% – 59.49%) said they very often, often or sometimes sent and received e-mails to/ from professional colleagues regarding medical matters, and 60% (CI: 55.74% – 64.04%) said they very often, often or sometimes used the Internet or e-mail to conduct medically related research online. 25% (CI: 21.42% – 28.76%) also said they very often, often or sometimes purchased medical supplies online, which is similar to the percentage purchasing non-medically related items using the Internet (Table 7).

Perceived scope of health informatics

A considerable majority (88%, CI: 85.41% – 90.87%) of the respondents thought there is scope for health informatics in Pakistan, so much so that 57% (CI: 52.39% – 60.77%) of them expressed an interest in adopting health informatics as their career. 93% (CI: 91.09% – 95.35%) agreed there is a niche for formal training in the discipline (Table 8).

View	Yes	No
	%	
Scope for health informatics in Pakistan	88.14	11.86
Need of formal programs in health informatics in Pakistan	93.22	6.78
Interest in adopting health informatics as their career	56.58	43.42

Limitations of the Survey

The authors and researchers realize the survey has several limitations. Firstly, because terms like "often" or "rarely" used in the questionnaire were not quantified, answers to these questions would be somewhat subjective and prone to variation. Secondly, it cannot be ascertained whether using face-to-face interviews to complete the questionnaires influenced the answers given by respondents (which may not necessarily have been a drawback if the interviewer helped clarify a question so the respondent correctly understood exactly what was being asked). On the other hand, if a self-completion written questionnaire had been employed there would have been other concerns, such as respondents' familiarity with the language used, how well the questionnaire was worded, and the possibility of a low response rate. Thirdly, with hindsight it might have been beneficial to distinguish which hospitals had an existing information system from those that did not have one and adjusted the questions and analysis accordingly.

Discussion and Conclusion

As one of the few studies in the field of health informatics in a developing country and, as far as is known, the only one of its kind in Pakistan, the results of the survey provide valuable information towards building knowledge on the use of the Internet in the healthcare sector in the country.

All the respondents reported having Internet access, but their usage was not very high. While 68% (CI: 64.22% – 72.10%) said they connected at least 1 or 2 days per week, the majority (54%, CI: 50% – 58.42%) spent a mere 2 hours or less per week on line, which is low by international standards. A study carried out by Stanford University in 2005 reported that, on average, Internet users in the United States spent 3 hours on line every day (Dixon, 2005) — i.e. 21 hours per week. By contrast, only 3% (CI: 1.51% – 4.37%) of the respondents in the survey spent 12 hours or more per week on the Internet. In addition, respondents did not use the Internet and e-mail at their workplace as much as they did at their home. One reason might be that an 'Internet culture' is still developing among clinicians in Pakistan,

especially with regard to using it at their workplace. Another explanation might be the perception clinicians have of the reliability of health information available on the Web, since 86% (CI: 82.55% – 88.51%) of the respondents did not express their confidence in the quality of health websites. This is an important point that merits further discussion because such a widely held perception on the part of clinicians could significantly and adversely affect the use of the Internet by both patients and health professionals. As the Internet is now a key resource for evidence-based practice, this would also impact on the quality of care.

What requires clarification is whether the respondents doubted the quality of health information browsed informally through search-engines like Google or whether they were unaware of the reputable professional websites that exist. In developing countries, where training of doctors in health informatics and evidence-based research is generally lacking, clinicians' inability to use the Internet effectively is probably the main drawback for accessing reliable health information. A study by Ajuwon confirmed this to be the case in Nigeria by showing that although physicians were using the Internet to access health information, the "use of evidenced-based resources such as Cochrane Library, Up-to-date and Clinical Evidence was minimal" (2006).

It is of course a fact that there are numerous non-professional websites providing health information, but whether they are accurate and up to date cannot always be guaranteed and it is difficult, if not impossible, to ensure that the lay public accesses the best websites available. The challenge of quality on the web is real, enormous and complex. Tessa Edejer of the World Health Organisation's (WHO's) Global Programme on Evidence for Health Policy acknowledges that there are issues of quality with health information websites, and further points out that "efforts are being made to devise a system for grading the quality of information provided by websites but, realistically, only a few sites can be graded" (2000). Risk and Dzenowagis, also of WHO, report on initiatives in place to address the quality of health information on the Internet but they too cast doubts on "the ability of the various quality initiatives to survive what is largely an unregulated and often anarchic medium" (2001). The reasons for their doubts relate to (1) the burden and botheration required, (2) funding issues, (3) acceptance issues, (4) market conditions, (5) user indifference, and (6) enforcement issues.

If the quality issues of health information can be addressed and medical doctors can be trained to use the Internet effectively, then is the provision of health information the best strategy? The 'Global Review on Access to Information for Health Professionals in Developing Countries' claims it is by stating that "providing access to reliable health information for health workers in developing countries is potentially the single most cost-effective and achievable strategy for sustainable improvement in health care" (INASP, n.d.). It would therefore seem worthwhile spending time and resources to make "health information just a few keystrokes away" for clinicians in developing countries too (Missen & Cook, 2007).

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