Original Article

Internet use for patient care and health research: A cross-sectional study among physicians in a teaching hospital of Eastern India

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Abstract

Background: Internet is the world's largest network of information and communication services. The internet is widely used in medicine and had a significant impact on research, training, and patient care. **Objectives:** (1) To assess internet use to obtain health information for patient care among physicians of a medical college hospital. (2) To investigate the utilization of the internet during their daily practice and to know the reasons for its use and nonuse. **Materials and Methods:** A hospital-based cross-sectional study was conducted for a period of 2 months of May and June 2015 in a Medical College Hospital of Eastern India. A convenient sample of 200 physicians was included in the study. Data regarding access of internet in workplace, time spent on the internet for medical and nonmedical purposes, opinions regarding use of the internet to update medical knowledge, obstacles that affect its use, etc., were collected. The data were analyzed using SPSS software version 20. **Results:** It was seen that 47% doctors use laptop for accessing internet, followed by mobiles (34%). E-mail was the main purpose (41%) of internet use, followed by research (32.5%). Majority told that e-mail was the main purpose of last internet use (46.5%), followed by browsing medical resources (23%), research (15.5%), and patient care (12.5%). 97.5% agreed that they had ever browsed internet for patient care and 85.5% doctors agreed that they had obtained relevant information. 26.5% told that they need training for accessing free full-text electronic journals and 25% need training to access the sources for best clinical evidence for patient care. Other training needs were literature search (18%), downloading textbooks and other resources (15.5%), and searching internet sites for medical information (10%). **Conclusion:** Providing training for improvement of searching skills for obtaining up-to-date medical information, and evidence-based medicine from internet will improve their practice of medicine.

Keywords: Doctors, healthcare, online resources

Introduction

Internet is the world's largest network of information and communication services. Physicians seek health information for various reasons: the need to obtain answers to patient-specific question,[1] to keep abreast of developments in clinical medicine,[1,2] and, most importantly, for physicians to seek information about patient care.

The availability of computers, especially the internet, has provided the possibility of immediate access to the most recent and reliable results of clinical research in everyday medical practice in developed countries.[3] In developing countries, on the other hand, the internet is still only available to a minority of health professionals, and often it is not available at the point of care. Internet use has also facilitated communication by

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electronic mail (e-mail) between doctors and patients.[4] Internet helps in making the practice of evidence-based medicine, a reality by providing up-to-date information to healthcare professionals. With the help of internet, managing patients in remote areas has become possible as it allows interaction with colleagues for references and suggestions. Worldwide explosive growth of internet has led to the patients being better informed of their medical conditions, which had led to an increasing demand for improved clinical services based on the information available on the internet. This development in turn is placing an increasing demand on doctors to keep abreast of developments in medicine.[5] Most of the developed countries around the globe have reached advanced stages in professional medical update and continued medical education by utilizing the benefits of internet but many developing countries are left far behind. In a developing country like India, internet is a particularly useful tool for keeping up with the ever-expanding knowledge.

The internet although widely used in medicine and even after making a significant impact in research, training, and patient care, no studies have explored the extent to which Indian physicians use internet resources for patient care and health research in Eastern India. So, the study was proposed with the following objectives:

1. To assess internet use to obtain health information for patient care among physicians of a medical college hospital
2. To investigate the utilization of the internet during their daily practice and to know the reasons for its use and nonuse
3. To explore the reasons of nonuse of internet for health information and to identify alternative sources of information for problem-solving during patient care.

Materials and Methods

Place and period of the study

The study was carried out in a Medical College Hospital during May and June 2015.

Study design

It is a hospital-based cross-sectional study.

Sample size

Considering the time and feasibility of the study, about 200 subjects were planned to be included in the study (calculated through convenience sampling, i.e., 6 weeks × 5 days × 7− 8 subjects per day = 200). The physicians who were on duty in the clinical departments were included in the study with due informed consent. Physicians in the nonclinical departments were excluded as they had no interaction with patients.

Data collection and data analysis

A detailed self-administered questionnaire was distributed to all participating physicians. The purpose of the study was explained to the participants and they were requested to complete and return the questionnaire immediately. The participants were informed that the data being collected were confidential, anonymous, and will be used for research purposes only, and also that their participation was voluntary. The returned questionnaires were verified for their completeness. The questionnaire explored the following questions: access to the internet in the workplace and at home, time spent on the internet for medical and nonmedical purposes, opinions regarding use of the internet to update medical knowledge, other sources to update medical knowledge, the use of the internet in the consultation room and what obstacles affect its use, information sources used to solve the medical problems during daily practice, and the criteria used for quality assessment of the information retrieved from the internet. Finally, they were asked about their expectations regarding the future role the internet might play in their practice. All relevant personal information of the physicians, such as gender, age, professional status, etc., were collected. The data were analyzed using SPSS software version 20 (IBM Corp., Armonk, NY).

Ethical considerations

Ethical clearance from the Institutional Ethical Committee was obtained. The prospects of this study for understanding of purpose of internet use and expectations of participants regarding the future role of the internet in medical practice were explained before obtaining the consent.

Results

The age of physicians included in the study varied from 22 to 69 years, and the mean age was 36.73 ± 12.35. Out of 200 physicians, 62% were male and 38% were female. Majority (48.5%) were specialists followed by 33.5% were resident doctors and 18% were super-specialists. It was observed that 67.5% physicians were married and 32.5% were single. When the doctors were asked about the average number of patients seen per week, 37% doctors were seeing <50 patients per week, 25.5% were seeing 50–100 patients, 25% were seeing 100–200 patients per week. 12.5% doctors were seeing more than 200 patients per week.

It was observed that 68.5% physicians have access to internet in their consultancy room during the time of data collection and 98.5% physicians had access in their home. 25% doctors had no confidence to use computers and only 16% had taken formal training in computer use. It was seen that 1.5% doctors did not use internet in their lifetime and 4.5% took assistance during internet use. It was seen that 45.5% physicians access internet in office, 51% in home, and 2% in library.

When asked about the gadget used frequently to access internet, 47% doctors told they use laptop for accessing internet followed by mobiles (34%) and desktop (14.5%). Out of 200 physicians, 25 (12.5%) were not using computers, 23 doctors told that they had no time to use computers, and those who were not accessing internet told that they don't know to use internet (2 doctors) and had no time (1 doctor). 97.5% doctors told that they have

accessed internet in last week and 91% were accessing internet daily. Almost all of them (99.5%) were using Google as the search engine.

Table 1 shows the main purpose of internet use by physicians. Maximum number of doctors told that e-mail was the main purpose (41%), followed by research (32.5%) and patient care information (25%). When the physicians were asked about the purpose of last internet use, maximum number of doctors told that e-mail was the main purpose (46.5%) followed by browsing medical resources (23%) and research (15.5%). Only 12.5% doctors told that they accessed internet last time for their patient care.

When the physicians were asked whether they had ever browsed internet to obtain health information relating to patient care, 97.5% agreed that they had ever browsed internet for patient care. When asked about the specific information they browsed last time, 39.5% doctors told that they searched information relating to diagnosis, 31.5% told that they searched relating to treatment followed by etiology (13.5%) and prognosis (9.5%).

When it was asked to the physicians that whether they obtained relevant information regarding patient care, 85.5% doctors agreed and told that they had obtained relevant information regarding their patient care.

When the doctors were asked whether they face any problem during internet use, 52.5% doctors told that they face some problems. Most important problems enumerated were slow connection (32%) and lack of searching skills (10%).

As per Table 2, 43.5% doctors told that printed journals were the major alternate source of obtaining updated medical information, followed by colleagues (24.5%), conferences and update courses (20.5%), and books (11.5%).

The doctors who were using the internet (197) were assessed for their skills and confidence. It was observed that 56.5% doctors ever downloaded free medical books from the internet and 37.5% downloaded within last 6 months. 85.5% doctors ever searched the internet for a particular clinical procedure and 77% searched within last 6 months. 91% doctors ever searched the internet for the most current diagnostic test or therapy for a disease and 83% done this within last 6 months. 62% physicians ever retrieved and downloaded full-text articles from an online/electronic journal and 51% downloaded within last 6 months. 78.5% clinicians ever found most current available evidence to answer a clinical question relating to the patient's condition and 77% done this within last 6 months. 97% doctors told that they ever found information on diagnosis, prognosis, and treatment of an ailment and 92% found this within last 6 months [Table 3].

When the physicians were asked about the training need [Table 4], 26.5% told that they need training for accessing free full-text electronic journals and 25% need training to access the sources for best clinical evidence for patient care. Other training needs were literature search (18%), downloading textbooks and other resources (15.5%), and searching internet sites for medical information (10%).

Table 1: Main purpose of internet use

	Percentage
Main purpose of internet use (n=200)	
E-mail	41
Research	32.5
Patient care information	25
Not using internet	1.5%
Purpose of last internet use	
E-mail	46.5
Research	15.5
Browsing medical resources	23
Patient care information	12.5

Table 2: Major alternate source of obtaining up-to-date medical information

	Percentage
Major alternate source (n=200)	
Printed journals	43.5
Colleagues	24.5
Conferences and update courses	20.5
Books	11.5

Table 3: Skills and confidence in using internet services

Have you ever performed any of the following tasks? (Total - 197)	Yes	No	Have you done so during the last 6 months?
			Yes
Downloaded free medical books from the internet?	56.5%	42%	37.5%
Search the internet to find how a particular clinical procedure is carried out?	85.5%	13%	77%
Searched the internet for the most current diagnostic test or therapy for a disease condition?	91%	7.5%	83%
Retrieve and download full-text articles from an online/electronic journal, e.g., (BMJ)?	62%	36.5%	51%
Did you find the most current available evidence to answer a clinical question relating to your patient's condition?	78.5%	20%	77%
Did you find information on the diagnosis, prognosis, and treatment of an ailment?	97%	1.5%	92%

Discussion

The age of physicians included in the study varied from 22 to 69 years. The mean age was 36.73 ± 12.35. 62% of the physicians were males and 38% were females. Out of

Table 4: Training need of physicians

	Percentage
Training need	
Accessing free full-text electronic journals	26.5
Sources for best clinical evidence for patient care	25
Literature searching: PubMed, Cochran	18
Downloading text books and other resources	15.5
Searching internet sites for medical information	10

200 physicians, 66.5% were of <40 years, 23.5% were in 40–60 years age group, and 10% were of 60 years or above. Majority (48.5%) were specialists followed by 33.5% were resident doctors and 18% were super-specialists. In a study by Shabi *et al.*[6] in Nigeria, majority of the respondents, 70.3% were men and 56.8% were junior registrars and 32.4% were consultants.

When the doctors were enquired about the average number of patients seen per week, 37% doctors were seeing <50 patients per week, 25.5% were seeing 50–100 patients, 25% were seeing 100–200 patients per week, and 12.5% doctors were seeing more than 200 patients per week.

It was observed that 68.5% physicians have access to internet in their consultancy room and 98.5% physicians had access in their home. In a study by Shabi *et al.*,[6] 73.0% respondents told that they have access to the internet in their offices, whereas 69 (15.5%) respondents access the internet at home. 25% doctors had no confidence to use computers and only 16% had taken formal training in computer use. 1.5% doctors did not use internet in their lifetime and 4.5% took assistance during internet use. When grouped as per the site of internet usage 45.5% physicians had access to internet in office, 51% in home, and 2% in the library. Out of 25 doctors not using computers, 23 doctors told that they had no time to use computers and those who were not accessing internet told that they don't know to use internet (2 doctors) and had no time (1 doctor). In the study by Priyadarshini *et al.*,[7] lack of time was the common reason, while using the Internet in all the staff except professors.

97.5% doctors told that they have accessed internet in last week and 91% were accessing internet daily. In our study, the main purpose of internet use was e-mail (41%), followed by research (32.5%) and patient care information (25%). It was seen that e-mail also was the main purpose of last internet use (46.5%), followed by browsing online medical resources (23%) and research (15.5%). Only 12.5% doctors told that they accessed internet last time for their patient care. In the study by Shabi *et al.*,[6] all the respondents, 100% have used the internet within the last 4 weeks of the survey. E-mail was the most frequent reason for using the internet. Ajuwon also reported that e-mail was the most commonly used internet service by physicians (64%).[8]

When asked about the gadget used frequently to access internet, 47% doctors told they use laptop for accessing internet followed by mobiles (34%) and desktop (14.5%). Amongst the doctors who were using internet, almost all of them (99.5%) were using Google as search engine. Google was rated as the most frequently used search engine and also in Shabi *et al.* study.[6]

When the physicians were asked whether they had ever browsed internet to obtain health information relating to patient care, 97.5% agreed that they had ever browsed internet for patient care. When asked about the specific information they browsed last time, 39.5% doctors told that they searched information relating to diagnosis, 31.5% told that they searched relating to treatment, followed by etiology (13.5%) and prognosis (9.5%). When it was asked to the physicians that whether they obtained relevant information regarding patient care, 85.5% doctors agreed and told that they had obtained relevant information regarding their patient care. When the doctors were asked whether they face any problem during internet use, 52.5% doctors told that they face some problems. Most important problems enumerated were slow connection (32%) and lack of searching skills (10%). 43.5% doctors told that printed journals were the major alternate source of obtaining updated medical information, followed by colleagues (24.5%), conferences, and update courses (20.5%) but Shabi *et al.*[6] observed that medical colleagues were the major preferred source of medical information followed by medical textbooks and conferences and update courses. In a study by Ajuwon, 62% of the physicians encountered problems searching the internet, whereas 38.4% did not. Of all the problems listed, slow internet connection was a problem faced by 44% of the respondents, followed by lack of information searching skills (26%). Other challenges were information overload and lack of skills to efficiently obtain needed information.[8] In a study by Bennett, only 9% of all respondents searched for information during a patient encounter. When unsure about diagnostic and management issues for a complex case, 41.3% chose to consult with a colleague or read from a text (22.8%).[9] As per the study by Priyadarshini *et al.*, the most common barrier was lack of time for using internet among all the staff, followed by not reliable information.[7]

When the physicians were asked about the use of internet for online medical resources, 169 (84.5%) doctors were searching some databases such as PubMed (76.5%) followed by Cochrane, Scopus, and Embase. Cochrane (26%) was the frequently accessed online information source. In the study by Shabi *et al.*, PubMed (70.3%), Health Internetwork Access to Research Initiative (HINARIs) (69.0%), and Free medical journals (60.1%) were the commonly used medical databases in that order.[6] Majority (97.3%) of the respondents used the online medical database for research purpose; this is closely followed by routine patient care (78.3%), and to update medical knowledge 348 (78.3%).[6] In the study by Priyadarshini *et al.*,[7] the common searched website for medical information was PubMed followed by Google. In a study by Ajuwon, 90% of the respondents reported they had obtained information from the internet for patient care; among them, 76.2% had searched a database. The database most recently searched was MEDLINE/PubMed in 99% of cases. Only 7% of the respondents had ever searched the

Cochrane Library and 58.1% perceived they had no confidence to download full-text articles from online sources such as the HINARI.[8]

When the physicians were asked about the training need, 26.5% told that they need training for accessing free full-text electronic journals and 25% need training to access the sources for best clinical evidence for patient care. Other training needs were literature search (18%), downloading textbooks and other resources (15.5%), and searching internet sites for medical information (10%).

The doctors who were using internet (197) were assessed for their skills and confidence. It was observed that 56.5% doctors ever downloaded free medical books from the Internet and 37.5% downloaded within last 6 months. 85.5% doctors ever searched the internet for a particular clinical procedure and 77% searched within last 6 months. 91% doctors ever searched the internet for the most current diagnostic test or therapy for a disease and 83% done this within last 6 months. 62% physicians ever retrieved and downloaded full-text articles from an online/electronic journal and 51% done downloaded within last 6 months. 78.5% clinicians ever found the most current available evidence to answer a clinical question relating to the patient's condition and 77% have done this within last 6 months. 97% doctors told that they ever found information on diagnosis, prognosis, and treatment of an ailment and 92% found this within last 6 months. In the study by Shabi *et al.*, 87.8% have attended specific workshop or seminar on accessing online medical resources, and majority rated their competence/confidence in accessing the internet medical databases as either good (44.8%) or very good (24.4%).[6] In the same study by Shabi *et al.*, when asked about their personal experiences while using the online medical database, only 22.3% respondents spent too much time before obtaining needed information, 40.5% respondents observed that the information obtained are often conflicting or overloaded, whereas 18.2% respondents noted that the majority of the databases restrict needed information for financial subscribers only. However, as much as 80% of the respondents readily access well packaged, evidence-based information from the online databases in that study.[6]

Conclusion

About one-third of doctors did not have access to internet in the consultation room even after the rapid growth of the internet. Providing internet access in consultation rooms may be helpful. Though laptop was the major gadget used for accessing the internet but percentage of mobile users was also quite high. Majority of the doctors use internet for e-mail, which was followed by research and patient care information. The major problems faced by physicians while using internet were slow internet connection followed by lack of searching skills and availability of too much information. Providing training for improvement of searching skills for obtaining up-to-date medical information for research and patient care will change their purpose of internet use and help them to improve their practice of medicine. Promotion of evidence-based learning and introduction of short-term computer courses right from the undergraduate level as a long-term intervention would be immensely beneficial.

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Conflicts of interest

There are no conflicts of interest.

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