

Discussion and Debate**Problems and factors that influence use of internet by the Sudanese doctors****Awad Mohamed Ahmed¹ MD and Elsadig Yousif² MD**¹ Professor of Medicine, University of Bahr Elghazal, P.O.Box: 102, Khartoum, Sudan, Tel: +249912344936, e-mail: awad.sd@gmail.com² Assistant Professor of Community Medicine, National Ribat University, Khartoum, Sudan**Abstract**

The use of the Internet among the Sudanese doctors is a poorly studied research area. There is a feeling that the medical practice needs to undergo a major change due to the fast penetration of information technology in medicine and health care. This review discusses some problems facing our doctors such as lack of internet use skills, time and financial constraints, negative attitude and resistance to change working and information-seeking behavior, and difficulties facing rural doctors. Several actions are suggested to solve these problems and then to promote the use of Internet by the doctors.

Key Words: *Internet use, Sudanese doctors*

Introduction

Historically, the beginnings of the Internet were the networking projects developed by the American military in the 1960s and 1970s to ensure a workable communication in the event of a foreign strike ⁽¹⁾. The precursor of the Internet was the ARPANET, which was a long distance telecommunication network to link together computers at different military sites in the United States ⁽¹⁾. The Internet as a massive collection of networks connecting millions of computers, databases and software programs was introduced for public use in the early 1990s. By the year 2005 the users of the Internet has passed the one billion mark. The Internet is defined as a massive collection of network that connects millions of computers, software programs, databases and files ⁽¹⁾. The medical information in the Internet is stored in specific sites called databases, accessed through many search engines. One of the most important databases is the Medline which is a bibliographic database of the National Library of Medicine in the USA ^(2,3). The Internet was introduced for the public

use in the early 1990s, to be hailed as one of the great revolutions in the history of the humankind ⁽¹⁾. By now the computer and Internet literacy is no longer a nice add-on; rather it is a basic weapon in every health care professional's armamentarium. In addition to display words, sounds and pictures (multimedia) with great flexibility, the Internet has superseded other means of communication by overcoming the barriers of distance, time and personal schedules ⁽¹⁾. Thus, it could better serve the many roles of the doctors (clinician, educator, researcher, manager and lifelong learner). These roles mean that the information management and retrieval skills are really indispensable. Electronic mail, computer-based testing, computer-aided instruction, and digital textbooks and images, along with valuable resources on the Internet, are now essential learning and coping tools, even for first-year medical students. One study estimates that by the year 2010 more than 30% of a physician's time will be spent using an information technology tool ⁽⁴⁾. The information needs of doctors are complex and ever increasing in a world where medical

information increases with exponential rates. At the same time, doctors work in practice environment that require them to know and to do more with shrinking resources. The doctors in comparison to the other health professionals are more autonomous in structuring their work time so they are able to schedule time specifically for Internet use⁽⁵⁾. They also work in a number of settings (hospital ward, office, clinic, university) with more chances to find a computer connected to an Internet server. The situation is different for nurses and other paramedical staff⁽⁵⁾. In addition, the doctors find themselves in some instances, such as a postgraduate study or in preparing a lecture or a talk at a conference, compelled to use the Internet.

Problems on use of the Internet

The aim of our review is to discuss some problems and difficulties that face doctors on using the Internet. The status of the use of the Internet among our medical professionals seems to be poor. Our hospitals and medical schools lack proper Internet services or even enough number of personal computers. A previous study that investigated the use of the Internet by the Sudanese doctors (and medical students) was recently performed by the authors⁽⁶⁾. It reveals that only 18% of junior doctors use the Internet on a daily basis, and most of them use it for e-mailing at the expense of the other useful applications such as surfing databases or loading information⁽⁶⁾. Two thirds of the respondents rated their abilities on using the Internet as poor⁽⁶⁾. In another related study among registrar doctors in Sudan only 15% were found to access the Internet on daily basis confirming our findings⁽⁷⁾. The same study found that Internet café and home were quoted as the most site for accessing Internet, scoring 40% and 27% respectively. The study has also shown the lack of awareness among doctors regarding the source of reliable information on the web; 76% and 57% of

respondents did not hear about open access journals and HINARI respectively⁽⁷⁾. The situation in countries of similar socioeconomic status is not much better. A Tanzanian study indicated that 76% of the investigated doctors had no computer at home, and only 50% felt that they understood the basic terminology and concepts of computing (let alone the Internet)⁽⁸⁾. Even in an European country like Bulgaria a study shows that although 97.5% of the Bulgarian physicians have a positive attitude to information technologies and 86.7% recognize the need of using computers in medicine, 84.1% of them do not have the necessary skills and knowledge to use computers in their daily medical practice⁽⁹⁾. For our doctors and even for our community at large, the Internet use is at an 'embryonic' stage and a study such as ours is necessary to raise the awareness of the professionals and policy makers, and to rectify any emerging inadequacies and shortcomings.

Below is a list of problems that challenge use of Internet by our doctors and suggested actions for a better use:

1. Many doctors lack even the simplest technological knowledge and skills necessary to the mere operation of the personal computer. For some doctors terms such as URL (Uniform Resource Locator), or Medline or NCBI (National Centre for Biotechnology Information), or MeSH (Medical Subjects Headings) sound like mysteries or black magic^(2,3). The poor English language constitutes an additional problem, and then most of the available resources in the Internet are not really useful. Thus, for the computer-illiterate the approach to the Internet and retrieval of a piece of information seem a daunting task; they may feel drowned in an ocean of information. The situation is complicated by the fact that the current curricula of medical schools and continuous medical education pay little (if any) attention to include the

medical informatics in their syllabuses, and rather encourage the classical information-seeking behavior^(10,11). But the real problem is the slowness and reluctance of medical educators to incorporate the skills of computer literacy in the medical curricula, stating reasons such as the dense curriculum, lack of staff, scarcity of space and lack of belief in importance of modern information technologies. The current curricula do not encourage medical students to seek information independently. Students are rather needed at class, laboratory, or bedside (to be spoon-fed)⁽¹⁰⁾.

Suggested action: The doctors are in need of adequate training in skills of using the Internets through programs tailored to the specific needs of the different sectors of the medical community. Such programs are likely to be successful if the preferences of doctors are better understood and educational tools are designed accordingly (rather than 'one-size-fits-all' approach). The curricula of medical schools need some reforms to introduce the medical informatics, and then the doctors will be much comfortable with the use of Internet at an early stage of training. We believe that implementing a formal computer literacy course with stated objectives and measurable outcomes for the first year students is necessary to install a minimum level of competence.

2. The attitudes of the doctors towards the Internet can play a pivotal role in its adoption as a tool for their professional development. A major limiting factor in realizing the full potential of the Internet is the mere reluctance of doctors to use it!^(5,12). They may not see its relevance to their practice. Other causes of negative attitude towards the Internet include lack of training to operate it, discomfort with technological innovations in general and the perceived shift in doctor-patient relationship based on privacy and rapport⁽⁵⁾. Many doctors show high degrees of resistance to change their working and

information-seeking behavior, even if they are mastering the skills of the Internet. They do more likely value the interpersonal contact and prefer to use personal experience and communication with colleagues, then comes the textbooks and conferences⁽²⁾. For some doctors the Internet is regarded as a hobby and not a job-related task or routine daily work. The printed sources of information have many shortcomings such as the 'old age' of the textbooks, poor organization of the journal articles, inadequate indexing of books and time required to find the desired information⁽¹³⁾.

Suggested action: The negative attitude can be addressed by targeted educational activities showing the useful applications of the Internet. Understanding more about the information-seeking behaviors of doctors is crucial to encourage many to use the Internet. The old-fashioned administrative systems in the hospitals should change their negative attitudes towards the Internet (as a time-wasting tool!)⁽⁵⁾. In fact, provision of value, access and ease of usage are the most important determinants of adoption of computer and Internet use and not the age⁽¹⁴⁾. Although some authorities typify doctors as slow adopters of information technologies but if young doctors are raised in a computer-prevalent society, they may be more likely to embrace these technologies⁽¹⁵⁾.

3. Some doctors find great difficulty in obtaining required information. They usually feel that there is too little information to respond to a defined inquiry. This is mainly due to the doctors' navigation and searching difficulties. In addition, the low bandwidth of some Internet sites leads to spending a great amount of time to find something necessary on the Internet.

Suggested action: This problem can be solved by continuous practice and improvement of Internet use skills.

4. The high costs of the Internet and telephone services (more than one dollar per hour) is a limiting factor for using the Internet in the light of the low income of our doctors. In particular the junior doctors and students may have difficulty in accessing the Internet due to its high cost. The modern models of the PCs are also expensive. The rate of ownership of a computer among our young doctors is markedly low. In some instances, there is one computer for the whole family and the doctor may find a difficulty to access it in an appropriate time. On the other hand, the connection of the computer to an Internet server is far more difficult and costly. As the electronic resources are too limited in our medical schools, the doctors tend to use the services of the market cyber café.

Suggested action: The availability of the Internet services can be enhanced by providing funding assistance to the universities and young doctors to purchase computers linked with Internet facilities.

5. There are concerns on the credibility, relevance and accuracy of information derived from the Internet⁽¹⁶⁾. Then the Internet users must master the art of verifying the information. The quality of medical information is particularly important because misinformation could be a matter of life or death⁽¹⁶⁾. Thus, studies investigating the “quality of medical information” on the various internet venues such as websites, mailing lists and newsgroups, are mostly driven by the concern of possible endangerment for patients by low quality medical information. Despite that, many doctors claim that they critically appraise the Internet information but this term seems to be used loosely and they actually rely on the external validation of articles (by focusing on the authority of the journal, the publisher, the institution and the housing website).

Suggested action: For a true critical appraisal they should rather depend on the internal validation (which focuses on content rigor of research). A

training of doctors in identifying evidence-based sources and critical appraisal is highly needed.

6. A large number of doctors use the abstracts of journals’ articles due to the fact that only a few online journals offer a free full text of their articles. In fact some abstracts are unreliable source of information, over-representing the positive findings and oversimplifying the negative ones. In addition, the abstracts go short of the essential information about applicability of research results in clinical practice.

Suggested action: The online subscription of the hospital and medical schools on selected reputable journals in different disciplines (usually available at reasonable costs) will enable the doctors to obtain and download the required materials. The doctors and staff of electronic libraries at hospitals and medical schools should be able to know and share information on the free full-text resources on the Internet.

7. Studies have suggested that rural doctors do not properly use (or get use of) the Internet. Some rural areas in the developing countries lack even a simple land telephone (let alone an Internet server!). Being in remote areas isolated from libraries and colleagues, rural doctors are a group that should benefit from the Internet.

Suggested action: Intensive efforts await the policy-makers to correct the urban-rural ‘digital divide’ through equity in resources and changing the information-seeking behavior of the rural doctors.

8. Many patients and other lay people use the Internet as a source of health information through websites directly targeting the general population^(17,18). The information provided on the Web helps patients to better manage illness and to make informed choices, and ultimately changes the dynamics of the patient-provider relationship. There are concerns whether the access of patients to

large volumes of information will improve their health, and whether the variable quantities of information will have a deleterious effect. Some researchers fears that the doctors' role as medical experts is being challenged by the patients who have immediate access to the health knowledge in the Internet^(17,18). Eventually the patients become 'equal partners' and the doctors may fail to adjust to the new situation (simply by not keeping pace with their patients who are increasingly accessing the Web in rapid rates).

Suggested action: Patients must learn how to assess the accuracy of the online information and to avoid websites that transmit controversial material. No doubt that many advertisers and unauthorized bodies abuse the web for their own benefits.

9. Sometimes, problems arise from the part of the technology itself, e.g. low bandwidth, viruses and poor quality of the internet servers. There are increasingly frequent invasion of new computer viruses (500 ones discovered each month)⁽¹⁹⁾. The computers in the medical offices are vulnerable as well to significant corruption of files and interruption of access to important data.

Suggested action: The medical offices should strictly follow basic protective steps against viruses to assure some security.

10. Finding a time to use the Internet is a real problem for some doctors, especially those with multiple responsibilities, (practice, teaching, research, administration). Such busy doctors might seek the help of a secretary or a colleague to do certain tasks on the Internet. Some studies reported instances of that the Internet usage being interfering with other aspects of doctors' lives and creating problems in managing their time⁽¹⁹⁾. Problems similar to addiction were reported by the frequent users of the internet. Some users complain of repetitive strain injuries such as eye and vertebral injuries⁽¹⁹⁾.

Suggested action: A good scheduling of time is necessary, as, certainly, sitting for many hours a day might generate serious physical and psychological problems.

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