COMPUTER SKILLS AMONG MEDICAL LEARNERS: A SURVEY AT KING ABDUL AZIZ UNIVERSITY, JEDDAH

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Background: We conducted a survey at King Abdul Aziz University to assess computer and Internet related activities, needs, and attitudes of our medical students towards computer assisted medical learning. **Methods:** A questionnaire containing 16 questions was distributed among medical students. The question form was prepared to assess the computer skills among students and their involvement in computer and Internet assisted medical and clinical learning activities. Each question was followed by a four or five points containing Likert-type multiple choice answer. **Results:** A total of 303 medical member of the university filled the forms. Among them majorities were medical students constituting 247 (81.5%), 10 (3.3%) were interns, 9 (3%) residents and 36 (11.9%) were senior residents. 55% of the responders were male and 45% were females. The most important points with their brief responses are: Computer skills: 6.3% Not aware; 93.7% Aware. Purpose of using computer: Personal 62.5%; Professional 15%; Academic 21.9%. Software(s) used: MS office 9.4%; MS Office and Internet 31.3%; MS Office, Internet and any medical software 37%; No software 21%. Connecting to Internet or Email: Not at all 18 %; Rarely 18%; Once a week 15%; Every alternate day 25%; Daily 12.5%; Multiple times a day 9.4%. Use of Internet for medical learning: Not at all 22%; Very rarely 22%; Some times 41%; Regularly 15%. Computers and Internet can improve studies and professional skills: No not at all 6%; Yes, to some extent 41%; Yes, too much 53%. **Conclusion:** The use of modern computer and Internet technology will result in more effective medical education. Expansion of computer-assisted learning requires careful strategic planning, resource sharing, staff incentives, and active promotion of multidisciplinary working and effective quality control.

Keywords: Computer skills among medical students, computer assisted learning, Continuous medical education CME.

INTRODUCTION

It is becoming 'a truth universally acknowledged' that the medical education of medical students and doctors will be enhanced through the use of computer assisted learning[1]. Access to the wide range of online information and options must surely make learning more exciting, effective, and likely to be retained.

Computer technologies can support a wide range of learning activities, which engage students in a continuous collaborative process of building and reshaping understanding. Computer assisted learning is now to be widely anticipated. Now individual lecturers and departments are already beginning to introduce a wide range of computer based applications, sometimes in a haphazard way. Planned and coordinated development is better than indiscriminate expansion[1]. It is convenient and flexible and courses supported by computer assisted learning applications may require fewer face-to-face lectures and seminars and place fewer geographical and temporal constraints on staff and students. Students at distance and less benefited areas like peripheral hospitals or primary care centers may benefit in particular. The unique presentational benefits of computer presentation are particularly suited to subjects that are visually intensive, detail oriented, and difficult to conceptualize, such as complex biochemical processes or microscopic images[2]. Furthermore, 'virtual' cases may reduce the need to use animal or human tissue in learning. Use of computer and Internet for medical learning has made learning a more personalized learning. Each learner can progress at his or her preferred pace. They can repeat, interrupt, and resume at will, which may have particular advantages for weaker students. It is more economical if properly utilized. Once an application has been set up, the incremental cost of offering it to additional students is relatively small[1].

A lot of such surveys have been published in literature from West by large universities and most medical organizations in an attempt to assess the use of computer and needs for doctors[3-5]. Although our survey is on smaller scale, but it will help to give us some idea about this important issue among our medical students and to improve our learning facilities more effectively.

MATERIALS AND METHODS

A sixteen questions-containing multiple-choice questioner was distributed among medical learners (students, interns and residents). The question form was prepared to assess the computer skills among students and their involvement in computer and Internet assisted medical and clinical learning activities. All 16 questions were related to computer or Internet use and needs. Each question was followed by a four or five points containing Likert-type multiple choice answer format (usually four or five point scale). A mention about the confidentiality of the data was expressed in the question forms. A total of 303 medical members from the university filled the question forms. These 303 question forms were analyzed by SPSS statistical software.

RESULTS

A total of 303 medical members of the university filled the question forms. Among them majority were medical students constituting 247 (81.5%), while 10 (3.3%) were interns, 9 (3%) residents and 36 (11.9%) were senior residents. 55% of the responders were male and 45% females.

Answers with the questions are mentioned below number wise: [1: What is your present status (position) in hospital? (Medical student 81.5%); (residents 3.3%); (general physicians 3%); (Consultants 11.9%)]. [2: What is your approximate age? (10–19= 0%); (20–30= 90.8%); (30–40= 5.9%); (40–50= 3%)]. [3: How will you rate your computer skills? (6.3% Not aware at all); (43.8 Beginner); (46.9% Average); (3.1% Expert)]. [4: Do you have computer at your residence? (Do not have computer 18.8%); (Have computer at home 71.9%); (Have at home and clinic 6.3%); (Have only at clinic 3.1%)]. [5: How many times do you sit on your computer? (Not at all 3%); (Rarely by chance 31.3%); (Once a week 12.5%); (every alternate day 28.1%); (Daily 15.6%); (Multiple times a day 9.4%)]. [6: For what purpose do you use your computer? (Personal 62.5%); (Professional 15%); (Academic and education 21.9%)]. [7: Which software/s do you use? (Only daily use MS office applications 9.4%); (MS Office and Internet 31.3%); (MS Office, Internet and any medical software 37%); (No software 21%)]. [8: How many times do you connect to Internet or Email? (Not at all 18 %); (Rarely by chance 18%); (Once a week 15%); (Every alternate day 25%); (Daily 12.5%); (Multiple times a day 9.4%)] [9: Do you use Internet or Email for any medical purpose? (No, only personal use 37%); (Yes, Medical and personal use 63%)]. [10: Do you use Internet for your studies and/or clinical learning? (Not at all 22%); (Very rarely 22%); (Some times but not regularly 41%); (Regularly 15%)]. [11: Do you think it is necessary to learn high computer skills during medical education? (Yes, must 93.4%); (No, not necessary 0%); (no answer 6.3%)]. [12: On which computer subject do you especially like to increase your computer skill and knowledge? (General computer skills 12.5%); (Hospital medical record and administrative applications 3%); (Internet related skills 6.3%); (All of the above 78.1%)]. [13: What are your concerns about Internet? (No idea and no concerns 25%); (About security and viruses 15%); (About accuracy of information 31%); (About confidentiality 3%); (Time consuming and lack of time 25%)]. [14: Do you think computers and Internet can improve your studies and professional skills? (No not at all 6%); (Yes, to some extent 41%); (Yes, too much 53%)]. [15: Since how long you have acquired basic computer skills? (Since my school period 27.7%); (Within last one year 9.6%); (Within last five years 52.5%)]. [16: What is your gender? (1: male 55%); (female 45%)].

DISCUSSION

Computers have penetrated into every nook and corner of medicine. Internet is explosively developing as information superhighway that has provided huge amount of information on fingertips. It is now becoming a well known thing that the medical education of medical students and doctors will be enhanced through the use of computer-assisted learning. With the help of it we can achieve the ultimate goal of higher education and effective

learning. Computer applications, especially the Internet and World Wide Web, are an extremely efficient way of rapid and effective learning[4].

A large number of such surveys have been conducted among medical learners and practitioners. For example a huge survey conducted by American College of Internal Medicine showed that the majority of physician respondents (82%) use computers[5]. Most physicians connected to the Internet from home, but fewer from their offices. About two thirds of respondents connected to the Internet from home or the office on a daily or weekly basis. Finding time to connect to the Internet was problematic, and concerns were expressed about the accuracy, security, and confidentiality of information on the Internet. Knowing what is available on the Internet is also important to members. Physicians younger than 50 years old reported greater use of computers, especially if they had academic affiliations[5]. In the future, with the introduction of very fast wired (cable and telephone) and wireless communication, there may be greater integration of these services and information sources into the clinical workflow. If so, more physicians will use the Internet from their home and office on a more regular basis. Finding time to use the Internet will continue to be problematic for the busy physician, but the security and confidentiality of information on the Internet are currently being addressed with Federal regulations. Assuring the accuracy of information on the Internet and informing physicians about medical Web sources will be an opportunity and a challenge for medical organizations. The American College of Physician survey revealed that physicians used computers in professional settings, especially in the office, for administrative functions of billing, accounting, and scheduling appointments[5]. Fewer than 25% of physicians reported using computer applications for clinical management of patients, and the frequency of such use was low. Physician respondents rarely used computers at the point of care for medical information on a regular basis. Perhaps there is an unwillingness of physicians to sacrifice any more of their precious but limited time allotted for face-to-face patient contact. At home, the majority of physicians reported using computers for personal e-mail on a regular basis. They use computers to seek non-medical information, but rarely use computers for Continuing Medical Education[5].

In the future, most physicians will continue to use computers in the office for administrative functions. With increasing use of Electronic Medical Record systems and more monitoring of physician performance, there may be incentive to use computers to manage patients in the professional setting. At home, physicians will continue to use personal e-mail and seek non-medical information. Physicians rated their own computer skills as average and were not satisfied with their computer expertise. Physicians believe that it is very important to develop their computer skills to increase their efficiency and effectiveness in the future. This represents a great opportunity for medical organizations to help physicians increase their computer knowledge through a variety of learning formats. Physicians continue to want the delivery of new medical knowledge by printed material and CD-ROM products. Physicians wanted to increase their computer skills and use information technologies to enhance their clinical practice. Physicians reported a desire to learn about current general computer applications, new uses of telemedicine, including e-mail with colleagues, staff, and patients, and general Internet issues. Physicians also reported a need to increase their knowledge of computer-based information sources of patient care through use of EMR systems, electronic medical books and journals, electronic clinical guidelines, and electronic sources of CME[5].

The more wider use of modern computer and internet technology will result in reduced funding, rising student numbers, geographical dispersal, and the current increased competition in a complex global market have put medical schools under pressure to embrace computer assisted learning[1,2]. New technologies may have important educational advantages, but without support and training for staff and students they could prove an expensive disaster[1]. Expansion of computer-assisted learning requires cultural change as well as careful strategic planning, resource sharing, staff incentives, active promotion of multidisciplinary working, and effective quality control.

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