

EXTENDED ABSTRACT

ICT Literacy Among Medical Students In The University Of Malaya

Awang Bulgiba Awang Mahmud

Dept of Social & Preventive Medicine
Faculty of Medicine
University of Malaya
50603 Kuala Lumpur

In its report in 2001, the Institute of Medicine in the US declared that information technology has enormous potential for transforming the health care delivery system (Committee on Quality of Health Care in America, 2001). The GPEP Subgroup Report on Medical Information Science Skills concluded that "the use of computer systems to help physicians retrieve information from the literature and analyse and correlate data about patients can be expected to grow" (Muller, 1984). A dozen years later, Smith's review of the information needs of physicians found that experienced physicians used approximately two million pieces of information to manage patients, and that with the current doubling time of the biomedical knowledge base of 19 years, a physician can expect a fourfold increase in available medical knowledge during a typical professional lifetime (Smith, 1996). Thus, having a certain degree of ICT (information and communication technology) knowledge and being able to use computer is critical for the new breed of doctors.

The increased availability of microcomputers in medical schools runs parallel to the increased computer literacy of medical students. A 1985 survey of medical students at one medical school revealed that students who had used microcomputers prior to medical school were much more likely to use them while in medical school (Bresnitz et al., 1986). Medical students tend to use computers mainly for telecommunications and word processing, but few are interested in their use for office management and database.

Computer skills are vital for medical practitioners of the future. However, a survey conducted in a large university hospital indicated that 66% of medical students and staff admitted having low computer literacy, despite the availability of a computer laboratory (Crowe et al., 1998). The medical curriculum in the University of Malaya has little ICT element in it as the emphasis in past years was on producing doctors of calibre rather than ICT-literate doctors.

Few studies have been done locally to look at computer usage among medical students. The objective of this study is to determine the knowledge, attitude and practice of information technology among medical students. This is a cross-sectional survey carried out in the Medical Faculty, University of Malaya from December 2000 to January 2001. The sample comprised all undergraduate medical students in the university at that time. The study instrument consisted of a self-administered questionnaire that was distributed to all medical students in the faculty.

The overall response rate to this survey is 75%. The majority (95%) of respondents have been exposed to ICT before entering medical school. Of this, 60% were exposed to computers in secondary school. Sixty percent had minimal computer knowledge (merely enough to operate), while 33% had intermediate knowledge (able to troubleshoot minor problems). Computers are mainly used for browsing the Internet (85%) and word processing (80%). However, 70% of medical students only spend 1-4 hours per week using computers. The majority of students think that ICT facilitates their studies (83%), research (90%) and 71% recommended that ICT be incorporated in their medical training.

Students mean rating of computer use among fellow students and academic staff were rather close at 3.13 (students) and 3.28 (staff) out of a maximum 5. In this survey, about three-quarters of the respondents think that there are inadequate ICT facilities in the faculty. However, printing facilities are considered inadequate by 81% of students.

Students were asked to rate their own skills on a scale of 0-5, with 0 the lowest and 5 the highest. The highest self-rated skill was for e-mail followed by surfing the World Wide Web and word-processing. Spreadsheet, database and statistical software skills were rated the lowest among the students, reflecting some unease with the use of computers for such purposes. This rating is computed into a score called the self-reported ICT score. There is some degree of weak correlation between the self-reported ICT score and some variables. The higher the parents' income, the higher the self-reported ICT score ($r=0.165$, $p<0.001$). There is however, a negative correlation with the number of years of study and self-reported ICT score. The more senior the student, the lower is the score ($r=-0.139$, $p<0.001$).

Students were also tested on 9 commonly used terms in ICT and this was compiled into an ICT identifier score. Males appeared to have a significantly higher mean score compared to females ($p<0.001$). Place of residence, having scholarships or previous experience with computers do not appear to influence the ICT identifier score. As expected, the self-reported ICT score was significantly correlated with the ICT identifier score ($r=0.577$, $p<0.001$). The terms were PC, LAN, LCD, modem, FDDI, UTP, RAM, ROM, and BIOS.

Male students are more likely to use the Internet compared to female students (OR 2.15, 95% CI 1.23, 3.74) and those who have used computers before entering university are also more likely to use the Internet compared to those who have not (OR 8.46, 95% CI 3.83, 18.70).

Being comfortable with software does not appear to make students feel that ICT facilitates their studies or research but it does seem to facilitate presentations (OR 1.73, 95% CI 1.04, 2.88). Indian students appear to be most comfortable with software compared to other races. Male students are relatively comfortable with software as compared to female students (OR 2.07, 95% CI 1.49, 2.87), reinforcing the belief that males tend to be early adopters of technology.

Being comfortable with hardware does not appear to make students feel that ICT facilitates their studies or research but it does seem to facilitate presentations (OR 1.73, 95% CI 1.04, 2.88). Again, as with software, male students are more likely than female students to be comfortable with computer hardware (OR 2.14, 95% CI 1.46, 3.12).

Usage of ICT before entering university seems to influence the perception that ICT facilitates studies, research and presentations. Ethnicity and gender do not seem related to these perceptions.

Stepwise multiple linear regression was performed for 8 independent variables with the ICT identifier score as the dependent variable. Of the 8 variables, only 4 were found to be statistically significant and appeared in the final model. The 4 variables are self-reported rating of computer knowledge, number of siblings, parents' monthly income and gender.

This study has managed to establish a few basic truths about ICT literacy among medical students in the University of Malaya. It appears that the majority of medical students are ICT-literate with a positive attitude towards its application in their daily undertakings. The younger students i.e. the first and second year students have better exposure to ICT and the Internet than the older ones. This may be in part due to the emphasis by schools in recent years to encourage the use of ICT. The government's campaign to push Malaysians to be ICT-savvy may be partly responsible for the high ICT awareness among these students. However, there is a serious gap in the awareness and the capacity of the university to cater to these needs. The university needs to ensure that adequate facilities are in place to address the problems expressed by the students in this survey. Respondents in this survey are of the opinion that ICT training should be incorporated into the current medical curriculum. This reflects their awareness of the importance of ICT to health care and augurs well for the government's Telehealth project. More research needs to be done into the type of training needed for these future doctors. The university should also consider setting up a medical informatics unit and developing medical informatics as a subject to be incorporated into the medical curriculum.