

Computer knowledge amongst clinical year medical students in a resource poor setting

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Abstract

Objective: To study the computer knowledge and desires of clinical year medical students at one of the oldest and largest medical schools in Nigeria.

Design: A survey using validated structured questionnaires.

Setting: Medical school of Ahmadu Bello University, Zaria, Nigeria.

Subjects: Two hundred and thirty seven clinical year (4th, 5th and 6th years) medical students.

Outcome measures: Computer knowledge, mode of acquiring computer knowledge, regular access to computer, desire for inclusion of computer training in curriculum.

Results: One hundred twenty (50.6%) students had knowledge of computer technology and its use. Of these, 108 (90%) had no regular access to a computer and none owned a computer; only 32 (26.7%) were sufficiently familiar with computer tools to perform advanced tasks, but 72 (60%) were comfortable with word processing. Seventy two of the 120 students acquired their computer knowledge through self-learning efforts while 45 (37.5%) attended short periods of formal training. Overall, 45.7% of males and 64.5% of females had computer knowledge. The main reason for lack of computer knowledge was lack of time and lack of access to a computer. Eighty percent of all students would like computer education to be included in medical school curriculum.

Conclusion: Knowledge and use of computers amongst clinical year medical students in this setting is low. It is important that computer education be taught to the students to enhance their ability to use electronic information and communicate more effectively using computer resources.

Key words: Computer technology, medical students, knowledge, low

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Introduction

In the last decade, advances in computer technology have occurred at a very rapid pace. These developments have impacted greatly on developments in medicine. A large amount of medical literature and information is now available electronically and even medical teaching is becoming electronically based in some developed countries. In many developed countries, computer literacy among medical students is high,^{1,2} and may even be taken for granted. In resource poor settings, however, computer technology may not be widely utilized by medical students.

This is a report of a survey on the computer knowledge and desires of clinical year medical students at one of the oldest and largest medical schools in Nigeria. The survey was done out of interest of the authors in this aspect of medical education, and also to generate objective data to initiate a discussion on the inclusion of computer education in the curriculum for medical schools in the country.

Materials and methods

The Ahmadu Bello University, Zaria is located in the north of Nigeria and is one of the first generation (oldest) and largest universities in the country. At the moment, the medical school has no public access computers for medical students and computers are not available in the library for student use. Computer education is not formally taught to medical students at any time during the 6-year course.

This is a longitudinal questionnaire study involving clinical year (4th, 5th and 6th year) medical students on their knowledge about computer technology and their desire for computer knowledge. Questionnaires were self-administered to the students in 2004. The students were asked the following questions; knowledge about computer technology, ability to use computers, familiarity with word processing and programming, how they acquired computer knowledge and their desires for computer education. The questionnaire was first pretested and validated among a small number of students from each class.

Three hundred questionnaires were administered to students who consented to participate in the study. Two hundred and thirty seven students completed and returned the questionnaires and form

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the basis of this report.

Results

The response rate was 79%. The 237 students were distributed as follows; 4th year 82, 5th year 114 and 6th year 41. There were 175 males and 62 females.

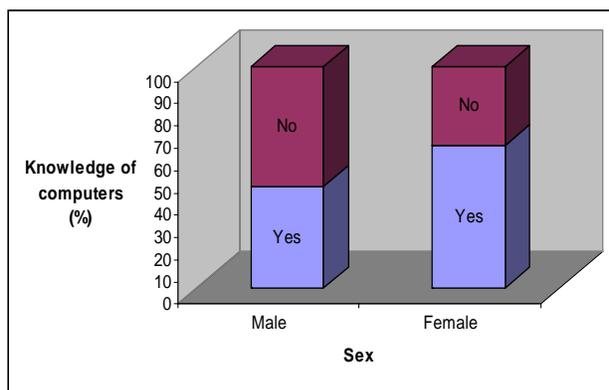
Of the 237 students, 120 (50.6%) had knowledge about computer technology and its use while 117 (49.4%) did not know much about computers and their use.

Of the 120 who knew about computers, 80 (66.7%) were males and 40 (33.3%) females; 108 (90%) had no regular access to a computer and none owned a computer. Only 32 (26.7%) of these students were sufficiently familiar with computer tools to perform useful tasks, but 72 (60%) felt they were comfortable with word processing (Table 1). Seventy-two (60%) of the students acquired their computer knowledge through self-learning efforts while 45 (37.5%) attended a short period of formal training (Table 2). The level of computer knowledge was similar among the various clinical years (Table 3) and age groups (Table 4). Overall, 80 (45.7%) of 175 males and 40 (64.5%) of 62 females had computer knowledge (Figure 1).

Table 1: Level familiarity of students with computers in 120 students with computer knowledge

Aspect familiar with	No. (%)
Word processing only	72 (60.0)
Programming only	9 (7.5)
Both	32 (26.7)
Not indicated	7 (5.8)
total	120 (100)

Figure 1: Knowledge of computers amongst male and female medical students



Amongst the 117 students who had no computer knowledge, 95 (81.2%) were males and 22 (18.8%) females. The main reasons for lack of computer knowledge were lack of time and lack of access to a computer.

Overall, 83% of all the students (81% of those with computer knowledge and 86% of those who had no computer knowledge) want computer education to be included in their medical school curriculum.

Table 2: Method of acquiring computer knowledge in 120 students

Method of acquiring knowledge	No. (%)
Self-learning	72 (60.0)
Formal course (<3months)	27 (22.5)
Formal course (>3months)	18 (15.0)
Not indicated	3 (2.5)
Total	120 (100)

Table 3: Medical school year and knowledge of computers

Medical school year	Knowledge of computers	
	Yes (%)	No (%)
4 th (n = 82)	41 (50)	41 (50)
5 th (n = 114)	59 (51)	55 (49)
6 th (n = 41)	20 (48)	21 (52)
Total (n = 237)	120 (50.6)	117 (49.4)

Discussion

Computer technology now plays a vital role in the packaging and delivery of medical literature and information. It is therefore important that medical students are not only familiar with computers but should be able to use them in various aspects of their training.

While in developed countries most students are computer literate,^{1,2} in our institution only 50.6% of the students had any knowledge at all about computers and less than one-half (26.7%) of these were sufficiently familiar for any reasonable use; nearly all (90%) had no regular access to a computer.^{1,3} A report from Tanzania noted a generally low level of ability to use internet and computer technology (ICT) facilities among 4th year medical students and 76% had no computer at home; only 52% understood basic terminology and concepts of computing. This is in contrast to reports from developed countries where majority had regular computer access and 77% even owned a computer.³ Most students in developed countries as at 1999 had e-mail address and internet access.^{1,3} This seems to be a luxury in our setting.

Table 4: Age and computer knowledge of medical students

Age (years)	Knowledge of computers		Total (%)
	Yes (%)	No (%)	
<21	2 (50)	2 (50)	4 (100)
21 – 25	58 (56.9)	44 (43.1)	102 (100)
26 0 30	53 (47.3)	59 (52.3)	112 (100)
>30	7 (36.8)	12 (63.2)	19 (100)
Total	120 (50.6)	117 (49.4)	237 (100)

Table 5: Desires of medical students regarding inclusion of computer education in curriculum

Knowledge of computer	Want computer education included in curriculum		Total (%)
	Yes	No	
Yes	97 (80.8)	23 (19.2)	120 (100)
No	100 (85.5)	17 (14.5)	117 (100)
Total	197 (83.1)	40 (16.9)	237 (100)

In the present report, computer literacy was significantly higher in females compared to males. In a report from Denmark, ¹ more males had a more positive attitude towards computer use in their studies. The reason for the gender difference in our report is not clear as it was not specifically addressed in the study design.

In our institution, 60% of the students who were familiar with computers acquired their knowledge through self-learning efforts while 37.5% attended a formal training. In order to address such training problems, one report from Tanzania ⁴ used United Kingdom elective students to tutor Tanzanian medical students on ICT with good effect.

As in another resource poor country,⁴ majority of the students in the present report agreed that they should receive training in the use of computers and 83% suggested its inclusion in the curriculum. If curriculum introduction can be achieved, then students can be formally trained in the basics of information and computer technology, rather than self-learning which may not be effective.

At the present time, the shelves of most libraries in developing countries are filled with old and outdated books and journals. The high cost of books makes it difficult for the average student to purchase current textbooks. Although efforts have been made by the international community to provide free electronic access to journals and books (open access journals, World Health Organization's HINARI), their optimal utilization is hampered by lack of computer knowledge and internet access.

The measures studied in the present report (knowledge of computers, computer tasks that can be

performed, mode of acquisition of computer knowledge and desire for inclusion of computer education in curriculum) have important implications for medical education in the setting. Although computer knowledge and competence are not currently required by medical education programmes in this country, they are important for the following reasons;

1. Students with poor knowledge and familiarity with computers would have difficulty accessing and utilizing electronic information. Access to current books and journals is difficult and the knowledge of up to date information will be limited and may affect performance at examinations and even practice after graduation.
2. In this institution, medical students write a dissertation based on a public health research work in the final year. Poor computer knowledge may adversely affect the collation and analysis of data as well as the final quality of the research work due to inability of the student to access current information and use relevant statistical softwares.
3. After graduation computers are now used routinely in Nigeria for communication and accessing relevant literature, particularly for those undergoing postgraduate training.
4. Desire to include computer technology in the curriculum is most important because cooperation, motivation and commitment of the students is important to achieve the goals of the curriculum.

The use of ICT in medicine has become quite advanced in developed countries and is now being used in

problem-based learning^{2,5} as well as in patient simulation and video conferencing to teach students at remote locations.⁶ These will all be beneficial to resource poor countries but only if computer knowledge and access can be significantly increased in the medical schools. To begin with, it may well be worthwhile to formally introduce students to ICT at entry into medical school. With the basic knowledge, provision of access will enable them to develop and progressively improve their competence and use.

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