ISSN 0189 - 2657

Nigerian Quarterly Journal of Hospital Medicine

VOLUME 15 NUMBER 3 JULY - SEPT. 2005

Nig. Ot J. Hosp. Med. Vol. 15(3) July-Sept., 2005

A Survey Of Medical Students Computer Use Skills:The University Of Lagos, College Of Medicine Experience

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ABSTRACT

It is no gain saying that application of computers in medicine have contributed enormously in the delivery of high quality health care.

This to a large extent is fully integrated into the education and healthcare system in developed countries but is yet to be fully utilized in developing countries.

Therefore, it is imperative that medical students in Nigeria should learn skills and gain knowledge in the use of computers while in the medical school. This study aimed primarily to assess the awareness and use of computer by the Medical students of the University of Lagos, College of medicine, in comparison with what exists overseas.

The study found that out of 200 respondents 130(65%) were aware of the enormous benefits of computer use to both academic and medical practice however; 70(35%) have never used this facility in the library before. The use of computer among the medical students ranged from 1 to 3 times 13%, 4 to 6 times 21%,7 to 9 times 18.5%, more than 9 times 12.5%. When the sampled respondents were asked to indicate the major inhibitors to computer use, the findings showed that poor use of computer among the medical students was largely due to cost of undertaking computer search, irregular training on computer use, insufficient computers that are not networked and inconvenient hours of undertaking computer search. In view of this problem discovered in this research, the following remedies were suggested as follows:

The number of personal computers should be increased, the librarians should be involved in the training of medical students on computer use; in other words, efforts should be made to integrate information searching skill programme into the medical school curriculum.

INTRODUCTION

Medical education and its curriculum have been affected by a number of factors. Among these are the students, societal needs and technological development and changes in the world at large. The aim of Medical education is to produce competent physicians. And computer technology has brought very significant changes in both the teaching and practice of Medicine. The Medical Doctor now depends on information Technology such as computer databases and on-line literature searching for biomedical information. It is fast, with increased accuracy, reliability and ability to perform several operations simultaneously. It has thus become an important means of communicating with students in both Universities and other research institutions.[1-4]

Arguably, the computer constitutes the single most important resource ever to become available to the teachers and students since the invention of the printing press, and may well have a similar revolutionary effect on the way education is carried out bringing about the massive shift from conventional expository teaching to the mediated individualized learning which is interactive, stimulating and rewarding.[5]

Several studies in the developed countries as reported by Hollander,[3] Kolner [6] and Orr [7] revealed that many medical students feel their skills in information retrieval are lacking. In a similar study conducted by Bresnit [8] they found almost 40% of students representing four classes at the Medical College of Pennsylvania in Philadelphia had no experience with computers prior to entering Medical school. Seventy -five percent of the students would take a computer literacy course in medical school if offered. It was also reported that students in the medical professions were not confident of their ability to carry out simple computing task, for example copying a file to disk or printing out a document. Similar survey was reported by Orr and Edelstein [7] in a study of medical students' computer experience and anxiety. It was discovered that the level of computer skill of the average medical student, in their sample was on the increase. More than half of the students reported that the time spent on computer instruction was inadequate. The report of a survey of third year medical students' computer skills conducted at Edinburgh College of Medicine revealed that 22% of medical students, had never used the University library computerized catalogue while 43% had never carried out a MEDLINE search using the library CD-ROM.[9]

Hollander also discovered that majority of medical students who entered Chicago College of Medicine, did not know how to use computer assisted instructional programs, or search the medical literature[3].

According to the Nigeria's Hon. Minister of Education inaugural address of 1987, he emphasized the need for computer policy that will enable the country "catch up" with the rest of the world and be ready to "enter" with them into the 21st century which is the century of high technology.[10] The center of this high technology is the computers. It was in recognition of this fact that the College of Medicine, University of Lagos in 1999 provided free access via the computer laboratory for staff and students. Internet access was made available in the College Medical Library In addition, to the MEDLINE service. The main reason being to support and strengthen the academic preparation of students through the provision of basic computer skills and

resources that will enhance learning in the Medical school and after graduation.The usefulness of computer technology in the study and practice of Medicine have been variously reported by Hollander[3], Ibegwam [11], Jensha and Veloski,[1], and others.

In view of its enormous benefits, an increasing number of Medical Schools in developed countries have introduced computer courses into their Medical education curricula. [6,4] However in Nigeria, emphasis has always been placed on access and use of information technology by urging the physicians, students and other healthcare professionals to use electronic information resources. [12],

The current level of computer use skills by the Medical students of the College of Medicine, University of Lagos and perhaps the role Medical librarians are playing in making sure that students are more computer literate is not known when compared with what is obtained elsewhere in developed countries.

We therefore investigated the awareness and use of computer by the Medical students of the University of Lagos, College of Medicine, in comparison with what exists overseas.

THE INSTITUTION

The College of Medicine, University of Lagos was established in 1962 and belongs to the first generation of Medical schools in Nigeria. Like similar institutions, it was founded to produce highly trained Medical manpower and to conduct research into health related problems. [13]The medical library of the College of Medicine of University of Lagos serves the entire medical community made up of undergraduate and postgraduate students, Resident Doctors, Nurses, Medical Laboratory Technologist, Health workers and the academics.

The Medical programme for obtaining Bachelor of Medicine and Surgery {MB,BS} at the University of Lagos, College of Medicine, Lagos, Nigeria last for 6 years, this excludes the 1-year of internship training provided for Medical graduate. Medical students enter the College of Medicine, University of Lagos, Idi-Araba, in their second year after completing the first year Pre-Med Class, at the University of Lagos, main campus Akoka, Lagos, Nigeria.

METHODOLOGY

The total population of the University of Lagos, College of Medicine, Medical students in the year 2003/ 2004session when the data for this study were collected stood at 1,038 (CMUL enrolment statistics)

A total of 300 Medical students were chosen using random sampling technique to select students across 200 levels to 600 level (final year class). This constituted 28.90% of the entire population. The questionnaires were administered during class time with the permission of the lecturer, this method was adopted to help ensure an adequate number of questionnaires were returned for analysis. While a proportional sampling unit was selected from each class to ensure unbiased representation. The questionnaire was anonymous, the information asked for could not identify a student and they were also re-assured of the confidentiality of their responses. The questionnaire was structured to ensure that all pertinent variables were measured. This included students previous computer experience, the extent of students' use of computers since starting medical school, students interest in receiving training in computer applications, students opinion on how computer skills might be enhanced in undergraduate medical education and problems students faced in its use.

Out of the three hundred students administered with questionnaires, two hundred returned their duly completed questionnaires. This represented a compliance rate of 66.7%. Of the total respondents 128 (64%) were male while 72 (36%) were female. The distribution among the various classes was 50 (25%) students in the 600 level class, 48 (24%) in the 500 level class, 30 (15%) in 400 level, 28 (14%) in 300 level and 44 (22%) in 200 level.

RESULTS

The study showed that 130 (65%) out of the 200 respondents had used computer laboratory and internet facility in the Medical library at one time or the other, while 70 (35%) had never used this facility in the library before. The study also found out that majority of the respondents 150 (75%) had acquired computer skill/experience through a computer literacy programme.(see table 1). In the same vein, 110 (55%) of the medical students did introduction to computer science FSC 103 in their pre-med class. 120 (60%) of the students indicated that they had acquired computer skills through teaching by colleagues, 60 (30%) claimed self taught, while 40 (20%) of the respondents also claimed to have participated in library orientation programme.

TABLE 1: SOURCES OF COMPUTER SKILL/ EXPERENCE ACQUIRED BY MEDICAL STUDENTS

	No	%
Computer Literacy course	150	75
Introduction to computer science (FSC 103) in pre-med class)	110	55
Teaching by colleagues	120	60
Self directed instruction	60	30
Library orientation	40	20

FREQUENCY OF USE

The frequency of computer use among the medical students ranged through 1-3 times per week (13%), 4-6 times per week (21%), 7-9 times per week (18.5%) >9 times per week (12.5%).

FACILITY MOST USED BY THE UNDERGRADUATE MEDICAL STUDENTS IN THE COMPUTER LAB AND THE INTERNET

When the respondents were asked to indicate the most important computer facility they used in the computer lab (see table 2), it was of interest to find that electronic mail was mostly used by (30%) of the respondents, followed by (15%) of the respondents who used it for MEDLINE literature search, (10%) of the respondents reported using it for general browsing of the internet, the computer lab was used for word processing by 10% of the respondents.

TABLE 2: COMPUTER USE SKILLS OF MEDICAL STUDENTS

Year/level	E-mail		MEDLINE literature search		Browsing the Internet		Word processing	
	No	%	No	%	No	%	No	%
200	28	14	-	-	2	1	2	1
300	15	7.5	2	1	2	1	3	1.5
400	7	3.5	5	2.5	3	1.5	4	2
500	6	3	10	5	5	2.5	4	2
600	4	2	13	6.5	8	4	7	3.5
Total	60	30	30	15	20	10	20	10

One hundred and thirty (130) i.e. (65%) of the medical students acknowledged that computer was very useful, sixty-five (32.5%) useful and five (2.5%) fairly useful. On the usefulness of computer, one of the medical students commented thus "I used to use things like pub-med for up-to-date documentation at the college medical library, and I found it very useful". Interestingly, 196 (98%) of the respondents indicated 'yes' when questioned if they desire that computer literacy course be integrated into the medical school curriculum.

When the respondents were further asked to indicate the major inhibitors to computer use, the responses presented in Table 3 indicated that 136 (68%) of the students felt that the cost of computer service was expensive. This was followed by irregular training in the use of computer facilities offered to medical students with 125 (62.5%), closely followed by 105 (52.5%) medical students who identified insufficient computers that are not networked as impediment to computer use. 80 (40%) of the respondents claimed that the present hours of operating computer service is not convenient and therefore should be extended. Another 20 (10%) of the respondents indicated that the present location of the computer laboratory on the third floor of the library is a major inhibition to their computer use, while 15 (7.5%) claimed that they were not aware of the availability of computer laboratory in the college library.

The study sought comments from the medical students on how computer skills could be enhanced in the medical school in view of the problems encountered. One of the respondents commented thus, "the college management should provide more computers with Internet facilities in the computer laboratory at a reduced price. In the same vein, Computer education for medical students should be tailored towards imparting practical use skills useful for information retrieval and future medical practice, since computer knowledge is vital in the medical world".

TABLE 3: FACTORS RESPONSIBLE FOR POOR USE OF COMPUTER

	No	%
Cost of Computer Service	136	68
Irregular training in the use of computer.	125	62.5
Insufficient computers that are not networked	105	52.5
Inconvenient hours for undertaking computer search	80	40
Inconvenient Location of computer lab.	20	10
Lack of awareness	15	7.5

DISCUSSION

The application of computer technology in Medicine have over the years facilitated the organization, retrieval and communication of information. This to a large extent, is fully integrated into the education, and health, care system in developed countries but is yet to be fully utilized in developing countries.

Emerging facts from this study and previous studies by Ogunyade and Oyibo [14] affirmed that the reasons for this poor utilization range from structural inadequacies to lack of awareness.

The result of this study showed that majority of the respondents acknowledged the usefulness of computer information searching for academic and Medical practice, however, they do not possess the necessary skills required for effective literature search. An important method of creating awareness and use is having the college require students do a computer search for information. It has been reported that connecting assignment and other academic activities to computer searching brought about an increase in the awareness and computer use skills of medical Students.[15] When the sampled respondents were asked to indicate the major inhibitors to computer use, the findings showed that poor use of computer among the medical students was largely due to cost of undertaking computer search. To solve this problem, it may be necessary to review the cost downward or fix a student rate, a suggestion already made by Olatunji-bello, Ibegwam, Odugbemi , in a study titled REVIEW OF THE USE OF COMPUTER AND INTERNET SERVICES IN A LAGOS TERTIARY INSTITUTION.[16], The issue of irregular training on use of computer, insufficient computers that are not networked and inconvenient hours for undertaking computer search, can be solved by increasing the number of computers in the library that are accessible to the student population. The issue of the maintenance of these computers must

also be taken seriously in order to ensure that they function optimally.

CONCLUSION

In the medical world, physicians requires reliable information that is timely, relevant and complete allowing services to be run efficiently and cost effectively. The application of computer in medicine have contributed enormously in the delivery of high quality healthcare. The result of this study shows that it is imperative that medical students should learn skills and gain knowledge in the use of computers while in the medical school. The outcome however is a promise for a more efficient educational process and improved patient care.

The paper recommends that health science librarians should be involved in the training of medical students on computer use, in other words, efforts should be made to integrate information searching skill programme into the medical school curriculum. The above enthusiasm and recognition by librarians that computer skills are important to medical education notwithstanding, some students felt training in computer searching skills will put additional burden on them and therefore undermine their ability to concentrate on their core courses in medicine. A starting point could be the Library Orientation Programme which is basically the introduction of the students to the information searching skills/instructions. The programme can incorporate the electronic search format. (computer basics, e-mail management, Medline and internet search tools) This must be done in such a way that it will not clash with the core courses of the students. From a comment of a respondent; "I do not object to the computer training programme, it is only that time is an elemental factor. I cannot afford to waste my time when I have a lot of Anatomy and other core textbooks to read;" gives an idea of the mind set of some of these students. Details of the modalities for this course should be a topic for another research.

REFERENCES

1. Jensha,R.P and Veloski, J ,Programme for increasing use of Computers in Medical Education.Journal Of Medical Education(1986) vol 61,feb,137-139
2. Bates,D.W. et. al. The impact of computerized physician order entry on medication. prevention.J. Am. Assoc. Med Inform(1999) 6(4)313-321.
3. Hollander,Sue. Assessing and enhancing Medical Students Computer Skills:a two year experience.Bull Med Libr Assoc (1999)87(1)67-73
4. Sancho,j.j,Gonzalez,j.C,Patak,A.Sanz,F and Sitges-Serra,A.Introducing Medical Students to Medical Informatics.Medical Education(1993)24,479-483
5. Rattan, Ashok, Mittal, Suneeta and Gupta, AK. Role of Computers in Learning- Application in formative Assesment. Indian Journal of Pediatric (1994) vol. 61: (No 2) 139 – 144.
6. Kolner, J. Stuart, Dalrymple, Prudence, W and Christiansen, Richard. Teaching Skills in Medical Information Retrieval To medical student. Journal of Medical Education, (1986) vol. 61 No. 11. 906 – 910.
7. Orr, N. A. and Edelstein, RA. Trends in measures of Computer experience and computer anxiety for students in three successive medical school classes Proc Annu Symp Comput Appl Med Care. (1991) 268 – 272.
8. Bresnitz, Eddy, A, Stettin, D. Glen, and Gabrielson, Ira W. A survey of computer literacy Among Medicals. Journal of Medical Education (1986). 61 (2) 410 – 412.
9. Osman; L.M, Muir, A.L, Computer Skills and attitudes to computer aided learning among medical students. Medical Education (1994) 28 (5) 381 – 5.
10. Federal Ministry of Education Minister of Education Inaugural address Newsletter (1988) Jan-Feb vol. 9,No. 1-2.
11. Ibegwam, A, Ogunyade, T.O. Library Use and information seeking behaviours of University of Lagos, College of Medicine Students. ASUU-UNILAG Journal of contemporary issues (2003) vol. 1 No. 3. 110 – 124
12. Akinade, H.O.J. Ogunyade, T.O Use of MEDLINE Database for Information Searching by students, Residents & Faculty College of Medicine, University of Lagos Nigerian Libraries (2002) 36 (1) 30 – 41.
13. College of Medicine University of Lagos prospectus 2003-2005.
14. Ogunyade T.O, Oyibo W.A Use of CD-ROM MEDILINE by Medical Students of the College of Medicine,University Of Lagos,Lagos,Nigeria. Journal of Medical Internet Research 2003 5(1) :e7 <URL:http/ /www.jmir.org/2003/1/e7/>
15. Olatunji-bello- I.I., Ibegwam, A, Odugbemi, T.O. Review of the use of computer and Internet services in a Lagos Tertiary Institution. Nigerian Journal of Health and Biomedical Sciences (2002.) Jan-June (1) 13-21.