Original Article

Knowledge, Attitude and Practice in Electronic Education Among Teaching Staff and Students in Governmental Medical Faculties - Khartoum State

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ABSTRACT

Background: Electronic education (E-education) is used worldwide as a basic tool for medical education for its advanced improving in medical training. In spite of its wide use in the system of the medical faculties in Sudan, e-education has not taken its right place yet.

Objectives: To explore knowledge, attitude and practice (K.A.P) in electronic education among teaching staff and students in governmental medical faculties in Khartoum state 2013.

Materials and Methods: This is a descriptive, cross-sectional, and institution-based study. A sample of 31 teachers and 345 students were chosen using stratified random sample. Structured pretested questionnaire was used for data collection. Data collected were fed to Statistical Package for Social Sciences (SPSS) version 20.

Results: Knowledge about e-education was excellent (91.3%), attitude was highly positive (83.9%) and practice was good among73.1%of the teachers. And among students knowledge about e-learning was excellent (96.8%), attitude was positive in 70.4% and practice was average among 52.2% of them.

Conclusion: The research shows a good K.A.P among the majority of the students and teachers in Governmental Khartoum State medical faculties especially among teachers. The K.A.P. increases with age among teachers and increases in the clinical level among students. The faculties which take care of e-education and made workshops show higher K.A.P. compared with other faculties. The faculties should take attention to e-education and introduce it in the most ideal way, and more researches should be conducted in this field.

Key words: E-education, teaching staff and students, Khartoum state Governmental medical faculties.

The use of computer and network is considered as E-Education for they enable transfer of skills and knowledge, as well as using electronic applications and processes used for learning and teaching. This includes Web based, computer-based education, virtual classrooms and digital collaboration. Besides E-education delivered via the Internet, audio, video tape, satellite TV and CD-ROM. All of these might include media in the form of text, image, animation, video and audio.

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The e-education has a lot of advantages. It enhances the Problem based learning with its visual and interactive features; it allows the instructor to introduce photos and videos to the problem and give the students immediate feedback. Another point is the cost effectiveness: web-based learning can result in significant cost reduction, compared with traditional learning. Moreover, in the virtual environments there is some reduction of paper usage. Finally, it's a Green Technology, because e-education reduces the environmental impact and allows people to avoid travelling and thus reducing the overall carbon output[1-3].

The shift toward competency-based curricula, the complexity and breadth of medical

education content, changes in health care delivery and advances in medicine have all increased demands on doctors to update their knowledge constantly. These factors require adaptations in education and e-learning which is a proposed solution[4].

In this study, the researchers would like to assess the K.A.P. of students and teachers toward e-education and present its importance in developing and improving medical education.

MATERIALS AND METHODS:

This descriptive, cross-sectional, institution based study had been conducted in governmental medical faculties of Khartoum state-Sudan in 2013. It included all medical students and teaching staff of governmental medical faculties in Khartoum state in 2013. A structured pretested self-administered questionnaire was distributed to 31 teachers and 345 students according to stratified random sample. The questionnaire covered age, university, level (clinical or preclinical, knowledge, awareness about the importance, using, using regularity, availability of tools, preference and encourage students to use. Regarding students we added preference in both teaching and learning. Data analyzed using computerized analysis (S.P.S.S.).

Ethical consideration: Permission from ethical committee of Omdurman Islamic University was taken, Informed consent obtained from universities in which the research had been conducted and a verbal consent from the students and teachers who filled the questionnaire was also obtained.

Limitation of the research methodology: Faculty of Medicine in Khartoum University had not been taken in the sample, because the dean refused to give us the approval to conduct the research in the faculty.

RESULTS:

There are 4 Universities included in this study; their participation from the total was: Omdurman Islamic University with 35.7%, Al-Neelain University with 27.0%, and University of Bahari with 18.6% and Alzaiem Alazhari University with also 18.6%. The preclinical students represent 63% and the clinical students represent 37% from the total.

About 96.8% of Teachers know the concept and also the importance of e-teaching. Media, friends account for 13.5% of knowledge's sources, 32.3% for colleagues where 45.2% of them get the knowledge from other sources. The teachers show a good attitude, 83.9% of them know how to use electronic equipment (86.7% from those who know the concept and the importance), 73.1% of them use it and 42.1% use it regularly. Regarding students about 91.3% of the students were familiar with the concept of e-education by the media and colleague as major sources of knowledge by 53.3% and 17.7% for each. 72.8% of the students know the importance of e-education and the electronic tools available for 70.4% but the users are only 52.2%; 13% of them only use it regularly, 34.5% of them use it irregularly and 6.1% rarely use it. Electronic equipments were available to 64.5% of the teachers. In spite of this only 61.3% of teachers use it and only 25.8% use it regularly. About 82.3% of the students prefer to use both electronics and traditional tools in their learning, 10.4% prefer only e-learning and 7.2% prefer only traditional learning. On the other side 77.1% of the teachers prefer both electronic and traditional teaching with close result in preference each one alone: 11.6% was e-teaching and 11.3% was traditional teaching.

About their opinion of e-education: 89.0% with e-education and only 5.8% were against.

About (72.2%) of the students who have skills in using electronic equipment are really use it. The study revealed that 64.5% of the students who know and convinced about the importance of the e-education are really users. Hundred percent of the teachers who know the concept and importance of E-teaching encourage students to deal with E-learning. E-teaching was known by100% to teachers of all universities except Omdurman Islamic University by 88.9%, (Figure 1). When we compared between clinical and preclinical students: there is a minimum

difference in their knowledge of the concept of E-education with a percent of 90.6% and 91.7%, respectively. The clinical students use E-education by 60.2% but only 47.6% from the preclinical students use it. Figure 2 illustrate the relation between knowledge of usage of e-learning and availability of its tools among studied teachers.

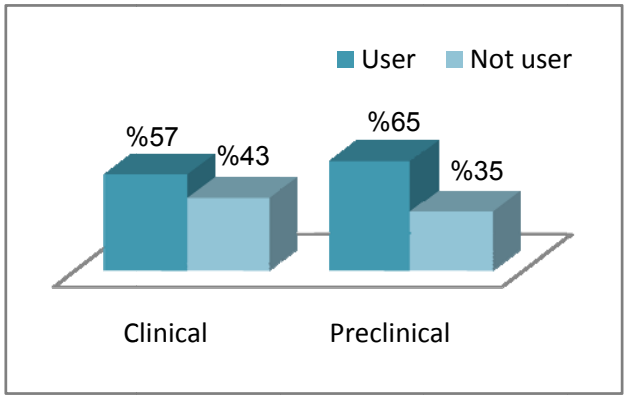

Figure (1): Comparison between knowledge and practice of E-teaching among studied clinical and preclinical teachers.

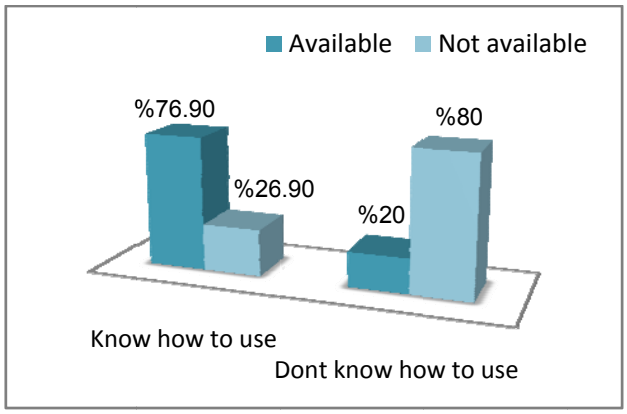

Figure (2): The relation between the availability of E-teaching equipment and knowledge of its usage among studied teachers.

DISCUSSION:

The purpose of this study was to explore knowledge, attitude and practice towards E-education among medical teachers and students in the Governmental medical faculties in Khartoum state. The respondents who completed the questionnaires were 100%, 31 teachers and 345 students. There are 4 universities included in the study.

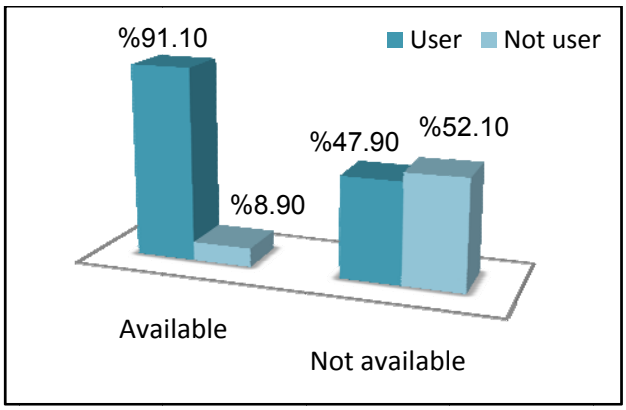

Figure (3): The relation availability of e-learning equipments and the usage of it among studied students.

In this study 96.8% of teachers have an excellent knowledge about the concept and also the importance of e-teaching. Media and friends were the least source of knowledge. In 32.3% of the teachers the source of knowledge was the colleague where as 45.2% of them get the knowledge from other sources, which is opposite to the researchers expectations which state that the colleague should be the highest as a source of knowledge.. That may be due to the fact that most of teachers got their higher education, specialties or even work abroad, where e-education is advanced and more applicable, the thing which provide them a high experience and good knowledge toward e-teaching.

Students also have excellent knowledge; about 91.3% were familiar with the concept of e-education from the media and colleague as major sources of knowledge with 53.3% and 17.7% for each, respectively. This good knowledge may be due to the fact that most of the students who access to medical faculties come from middle or rich communities, and also might be due to the fact that those teachers use e-education and so encourage the students to use it. In the other way, the source of knowledge go with the researchers expectations which state that colleague should be the highest as a source of knowledge in which they use the e-learning equipment.

Teachers have shown good Knowledge and practice; 83.9% of the teachers know how to use electronic equipment, and 86.7% know

the concept and the importance, but only 73.1% of them use it, and only 42.1% from those who use it, they use it regularly. Electronic equipment was available to 64.5% of teachers. In spite of this only 61.3% of them use it and only 25.8% use it regularly. The fact that many teachers have experiences with E-teaching abroad and due to the availability of electronic equipment for their good financial status make their knowledge and attitude good which is represented by encouraging students to use E-education. Student show some kind of negative attitude and practice toward using E-education compared with teachers; 72.8% know the importance of E-education and the electronic tools are available for 70.4% but the users are only 52.2%, and only 13% of them use it regularly, 34.5% use it irregularly and 6.1% rarely use it. That may be due to their underestimation of the importance of E-learning. It also may be due to the availability of electronic equipment among students is scanty, and the faculties don't provide electronic equipment to students to fill the gabs in the need as it been referred to before by comparing between availability and usage.

When the teachers were asked about their preference between electronic and traditional method of teaching, 9.7% answered that they prefer traditional methods, 16.1% prefer electronic methods and 74.2% prefer to use both of them. That shows the electronic methods were more preferable than traditional methods. Most of them state that because it is easier and take the attention of students as it is more interesting and simplifying the information.

About 82.3% of the students prefer to use both electronics and traditional tools in their learning process, 10.4% prefer only e-learning and 7.2% prefer only traditional learning. In the other side 77.1% prefer both electronic and traditional teaching with similar results in preference of each one alone: 11.6% and 11.3%, respectively. Most of students prefer electronic teaching as they found it interesting, not boring and also it makes the information clearer so they can understand it better.

All teachers who know the concept and importance of E-teaching encourage students to deal with E-learning. This shows a very positive attitude.

E-teaching was known by 100% of teachers from all universities except Omdurman Islamic university where E-teaching is known to only 88.9% of teachers. That's because some colleges made workshops in order to improve the knowledge and attitude among their teachers, Unlike Omdurman Islamic University which is recently started to take care of the e-education. Regarding students the knowledge in the 4 universities were very close but Al-Neelain University was the best (94.6%), the students related that to workshops that were done in the last months and due to the encourage from their colleges. The second is university of Bahari (93.8%) then Alzaiem Alazhari University (92.3%) and Omdurman Islamic university shows the lowest knowledge (87%), but the dean states that an electronic library will be opened soon.

When we took the age of teachers as constant variable all age groups know the concept of E-teaching by 100%, except age group between 20 and 30 in which the knowledge was only 80%. Different age groups also differ in knowing how to use electronic equipment, where age group of above 60 years old know how to use electronic equipment by 100%, but use it by 66.7%. According to the age group (50 - 60) years old, the knowledge of how to use electronic equipment was about 80% of teachers, and the users were 40%. Age group (40-50) recorded 75% in knowledge of how to use electronic equipment and 50% in using it. Among age group (30- 40), 86% of them know how to use electronic equipment and 71% used it and lastly age group (20- 30) recorded 78% knowledge of how to use and 60% are using it. This shows that knowledge of how to use electronic equipment increases with age but its usage was higher in younger groups of age which may be due to the fact that most members of old age groups as it was mentioned have high experiences. In comparing the knowledge of how to use electronic equipment between clinical and

preclinical teachers we found that preclinical teachers have more knowledge of the usage of electronic equipment (100%) and those using it (64.7%) are more than clinical teachers where knowledge of its usage is (92.9%) and actual users are (57%) as shown in figure1. This might be justified by the fact that clinical teachers have a minimum need to use electronic method in their teaching process compared with the preclinical teachers. The students show a minimum difference in their knowledge about the concept of e-education; preclinical 91.7% and clinical 90.6%. This result goes with the researchers' expectation which state that the younger students have a higher access to e-learning than their elder colleagues. However, the percentage of the students who use the electronic equipment was 60.2% among clinical students and only 47.6% among preclinical students as illustrated in figure1 and that may be due to the fact that clinical students gain knowledge from their friends and the colleagues, unlike the new preclinical students who are new in the colleges and have fewer friends and low experience, which might increase with advanced levels.

The regularity of use is higher in clinical students (19.5%) than preclinical students (9.2%). That has a direct relation to the availability of electronic equipment as shown. Clinical students declare higher equipment availability (74.2%) than preclinical students (68.2%) as a social factor, in Sudan, the elder person is the one who have the priority to buy electronic equipment, but this decreased in educated and rich communities.

When the students were asked about their opinion about e-education, 89.0% agreed, and they thought it's good to use because it saves money and time and the students will be updated by the recent researches and the new studies. Only 5.8% were against, as they thought it makes students lazy and electronics dependent beside it decreases the communication between students and teachers and also for its high cost for poor students especially in developing countries like Sudan.

This study found the regularity of electronic equipment usage is higher in clinical students than preclinical students (19.5% and 9.2% respectively). The reasons may be attributed to the fact that preclinical students have more available electronic equipment, than clinical students (74.2% and 68.2%, respectively).

About 72.2% of the students who know how to use electronic equipment are really users. Again this is explained by problems in the availability of the equipment, this besides another real problem which is lack of their real convincing knowledge about the importance and benefits of e-education.

About 64.5% of students who know and are convinced about the importance of the e-education consider themselves real users, which is considered a good practice.

When it comes to the preference of learning methods among the students who know the importance of e-education, the researchers found 13.1% of the students prefer e-learning only, 83.7% prefer the combination of electronic and traditional methods and 3.2% prefer traditional only. The students who prefer e-education and those who prefer combination methods related that to the fact that e-education is more interesting, more effective, simplifying the information and even cheaper compared with traditional methods. This is in concordance with the results of a research that was conducted in Japan and found that interactive 3-dimensional computer graphics (3DCG) materials have positive effects on medical education when properly integrated into conventional education. In particular, their results suggest that interactive 3DCG is more efficient than textbooks alone in medical education and can motivate students to understand complex anatomical structures5.But the students who were against electronic methods think that it makes the students dependent and lazy, and also think that Sudan does not have the best environment to introduce electronic equipment because of the poor status of the country. Similar results had been recorded in a research done in Tehran about Integrated Digital Library (IDL).They found that IDL plays valuable role of the information needs of faculty members at Tehran

University of Medical Sciences[6]. E-learning in medical education is a means to an end, rather than the end in itself. Utilizing e-learning can result in greater educational opportunities for students while simultaneously enhancing faculty effectiveness and efficiency. However, this potential of e-learning assumes a certain level of institutional readiness in human and infrastructural resources that is not always present in low- and middle-income countries. Institutional readiness for e-learning adoption ensures the alignment of new tools to the educational and economic context[7].

That shows medical faculties and ministry of higher education will find a high acceptability in introducing e-education in the medical curricula. In Sudan, there is perfect environment to introduce electronics in medical education, there is expertise, accepted by medical students, and there is a need for it to educate the largest amount of students with less cost. The weak financial support from the government slows down the engine but will not stop it as said a specialist from the ministry of health. All concerned should keep trying and trying till one day the dream of introducing electronics in medical education in Sudan find its ideal way.

CONCLUSIONS:

This study shows an excellent knowledge among most of students and teachers in Governmental medical faculties in Khartoum state with better percentage among teachers. The attitude and practice was good also in the majority of them. The knowledge, attitude and practice increase with age among teachers and in the clinical level among students.

The faculties which take care of e-education and made workshops show the higher K.A.P. compared with other faculties.

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