

# A Cross-Sectional Analysis of Use of Information Technology by Selected Students of Health Colleges of a Saudi University

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## ABSTRACT

**Objective:** To determine the use of information technology (IT) among students of Medicine, Dentistry, and Pharmacy in Prince Sattam Bin AbdulAziz University, Al-Khraj, Saudi Arabia (PSAU).

**Study Design:** A cross-sectional survey.

**Place and Duration of Study:** From September 2014 to January, 2015.

**Methodology:** A close-ended questionnaire consisting of 30 multiple choice questions (MCQs) was distributed to the students. The questions were related to their access to computers, skills and training, computer activities, and internet access. Data analyses and descriptive analyses for various variables were performed using SPSS version 17.0.

**Results:** An overall response rate of 84.9% (488 out of 575) was obtained. All of the students (100%) had an access to the computers. Most of the students (61.9%) used computers for academic purposes. A majority of the students (74.4%) preferred the use of powerpoint presentations aided by marker-and-board method for teaching. For communication from the colleges, 62.9% of the respondents preferred it through the email; 100% of the students had an email account. All of the students (100%) used internet; 83.1% considered the information as accurate. The internet was used by 47.6% of the students for seeking the medical information.

**Conclusion:** All of the students had an access to IT and used it for their educational purposes.

**Key Words:** *Computer. Internet. Medical education.*

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## INTRODUCTION

The traditional method of instruction in health colleges (medicine, dentistry, pharmacy) has been through teaching on a board with technical demonstrations. With the advent of the information technology (IT) involving use of computers and related equipment, teaching methods have been revolutionized, as per the requirements of a teacher to be updated.<sup>1,2</sup> Computer-assisted learning in health education is rapidly increasing.<sup>3</sup> The use of the currently available information on internet is required to improve not only the educational methods, but also the evaluation methods.<sup>4</sup>

In order to develop effective IT programs for education and evaluation, baseline data on the trends of the students as well as their knowledge on IT is required. There have been, however, very few studies reported on the use of IT in education involving medicine, dentistry, and pharmacy students in the Middle East.<sup>1,5,6</sup>

A study conducted in a private dental college in Riyadh, Saudi Arabia, showed that the students of that college had an access to substantial IT resources and

demonstrated a favourable attitude towards the use of computers and the internet.<sup>1</sup> Another study was reported on dental students of a governmental university, Prince Sattam Bin AbdulAziz University, Alkharj, Saudi Arabia (PSAU), which showed similar trends as well.<sup>5</sup> Both of these studies were limited as the sample included the dental students only. It is essential to know the trends among medical and pharmacy students as well to generalize the understanding for health-related students.

Therefore, this study was undertaken to investigate the current knowledge, skills, and trends of the selected undergraduate male students of medical, dental, and pharmacy students of SAU.

The objective of this study was to collect information about the use of IT among students of Medicine, Dentistry, and Pharmacy for teaching methods in Prince Sattam Bin AbdulAziz University, Al-Kharj, Saudi Arabia (PSAU).

## METHODOLOGY

The study design was a cross-sectional survey conducted during the first semester (September 2014 to January 2015) of the academic year 2014-15. The research design was approved by the ethical committee of the College of Dentistry, Prince Sattam Bin AbdulAziz University, Al-Kharj, Saudi Arabia (PSAU). A close-ended, structured questionnaire consisting of 30 multiple choice questions was distributed to the voluntary undergraduate male medical, dental, and pharmacy students of PSAU. Each group (inclusive of all years) of

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**Table I:** Questions on computer access: numbers (percentage).

Questions	Result n = (%)
Access to computers	Yes 488 (100%) No 0 (0%)
Do you use internet and computer?	Mobile 127 (26%) Computer 49 (10%) Both 312 (64%)

**Table II:** Questions on skills and trainig: numbers (percentage).

Since when you are using computer?	1-6 months - 37 (7.6%) 1-6 months - 60 (12.3%) 1-6 months - 23 (4.7%) >24 months - 368 (75.4%)
Computer usage	Academic purpose - 302 (61.9%) Other purpose - 350 (71.7%)
How did you gain knowledge about computers?	Special computer courses - 158 (32.4 %) Personal study & experience - 330 (67.6%)

**Table III:** Questions on computer activities: numbers (percentage).

What features of computers do you use more for your studies?	MS Word - 249 (51.0%) MS Excel - 38 (7.8 %) MS PowerPoint - 260 (53.3%) Internet - 206 (42.2%) Others - 202 (41.4%)
How do you prefer your lectures to be taken?	Using white board with marker - 36 (7.4%) PowerPoint presentation - 100 (20.5%) Both - 48 (9.8%)
Do you think, the college library should have access to online scientific journals?	Yes - 446 (91.4%) No - 42 (8.6%)
How would you like the communication to you from the college's administration/ teachers?	Online through email - 307 (62.9%) Printed memos - 94 (19.3%) Short messaging service (SMS) - 87 (17.8 %)
Do you think you should have online access to faculty, if you need any assistance after academic hours?	Yes - 339 (69.4%) No - 149 (30.6%)
How useful do you think lecture notes on the college website would be?	Useful - 326 (66.9%) Not useful - 162 (33.1%)
If lectures are available on the internet, do you think this would stop you from going to the lecture?	Yes - 145 (29.8%) No - 343 (70.2%)

undergraduate medical, dental, and pharmacy students consists of approximately 575 individuals. All of the students were approached. The students who declined to fill the survey forms were excluded from the study. Participation in the study was voluntary and all participants remained anonymous. The questionnaire was adopted and modified from a previous study in Saudi Arabia.<sup>1</sup>

The questionnaire was composed of 4 sections being Multiple Choice Questions (MCQ) in the English language. The 4 sections were: access to computers (4 questions), skills and training (5 questions), computer activities used in the health colleges (10 questions), and internet access (11 questions).

Data analyses were performed using SPSS version 17. Descriptive analyses were performed for the various variables, as given in the results.

**Table IV:** Questions on internet access.

Do you use internet?	Yes - 488 (100%) No - 0(0%)
Do you feel internet is useful?	Yes - 463 (95%) No - 25(5%)
Which type of material you search from internet?	Text- 300 (61.5%) Pictures- 186 (38.1%) Radiographs- 65 (13.3%) Videos- 324 (66.4%)
What are main reasons for internet access?	Medical information- 232 (47.6%) Email- 238 (48.8%) Entertainment- 82 (16.8%) Chat- 116 (23.8%) Movies- 200 (41.1%) Pictures- 136 (27.9%) General information- 195 (40%) Any other reasons- 232 (47.6%)
Do you have your personal Email ID?	Yes- 488 (100%) No- 0 (0%)
Do you think the information on the internet is accurate?	Accurate- 406 (83.1%) Not accurate- 82 (16.9%)

## RESULTS

There were 575 students registered in the 3 health related colleges of PSAU; 173 medical students; 162 dentistry students, and 240 pharmacy students. In total, 488 out of 575 students participated in the survey; response rate being 84.9%. All of the participants were males.

All (488, 100%) of the students had an access to the information technology. A majority of the students (64%) used both smart phones (26%) as well as computers (10%). Three-fourth (75.4%) of the students had an access to IT for more than 3 years; 61 (9%) of them using it for the academic purposes. Majority of the students (67.6%) learnt the use of computers through personal study and experience, while only 32.4% learnt through special courses.

All the students (100%) used internet; 83.1% considering the information on internet as accurate. Internet was used by 47.6% of the students for seeking medical information, and only 16.8% for entertainment. All of the students (100%) had an email account; 62.9% preferred communication from the College through the email. Only 19.3% preferred the communication through the printed memos, while 17.8% preferred short messaging service (SMS).

For delivery of the lectures, a majority of the students (74.4%) preferred the use of powerpoint presentations aided by marker-and-board method for teaching. A majority of the students (69.4%) desired online access to their faculty, with 66.9% preferred the lectures to be on the College website. Among the students, 70.2% considered that availability of the lectures on the College website would not stop them from attending the lectures.

## DISCUSSION

The overall impression of the present study was that the students, under this study, seemed to have comparable computer literacy skills with the studies as reported earlier.<sup>1,9,10</sup> However, availability of computers and internet to them was better than the students in other countries. Most of the students had a better access to computers, as well as computer systems are available in new smart mobile phones now. This observation is supported by the fact that most of the students in this study showed that they used both mobile phones and computers and had access to computers at home. This finding is consistent with the data found in an earlier study conducted in a private dental college in Riyadh<sup>1</sup> as well as a study conducted among the dental students of PSAU.<sup>5</sup> The results are also similar to those reported in a European dental school where 72% of the students had access to computers at home.<sup>8-10</sup> In a similar study carried out on students taking higher education in a University at Pakistan, 73% of the students had an access to computers at home, indicating the results to be similar in lines.<sup>11</sup> Another study, in Jordan, showed use of computers by 74% of the students at home. These results were not comparable to the data obtained from a study carried out on the undergraduate students at a private dental institution in India, a decade ago, where approximately only 25% of the students had access to computers at home.<sup>12</sup> A recent study reported in India, has shown use of 94.4% of IT among dental students in a private dental college, which is similar to the results of this study.<sup>13</sup> It can, therefore, be concluded that there is a generalized growing trend in the use of IT among the students.

A majority of the students in this study stated that they had been using computer for more than 2 years, which was comparable to another study in a private dental college in Riyadh;<sup>1</sup> but not comparable to the results obtained for a similar study on students in Manchester and Bristol where 20%, and 14% reported the use of computers for more than 3 years, respectively.<sup>9</sup> This may be attributed to the fact that the study in these schools in the United Kingdom was carried out more than a decade ago, and the use of information technology has increased in recent times.<sup>9,13</sup> A more recent study carried out on the students in the University of Jordan, reported that 33% of the students were using computer for more than 3 years.<sup>6</sup> These results were comparable to the results obtained from a study on students in a private dental institution in India where 35% of the dental undergraduate students reported the use of computers for more than 3 years.<sup>12</sup> The reasonably higher computer usage rate for a longer period of time in this study could be due to a better access to computer facilities among the students in Saudi dental schools. This fact is also evident from the study in Riyadh as well as at PSAU previously.<sup>1,5</sup>

Primary and secondary schools in Saudi Arabia provide teaching in basic computer skills that includes introduction to computers. Most of the students (67.6%), however, in the current study claimed to learn computer operation through personal study and experience, which was comparable to the other study in Riyadh (63.7%).<sup>1</sup> Therefore, the universities should arrange formal computer training programs.

About half of the students used computers for the educational purpose and the other half used computers for medical information. Therefore, the development and sharing of learning material and educational tools for undergraduate education should be a high priority for the health-related colleges.<sup>7</sup> It is imperative to point out the substantial changes that have taken place in education area, over the past 2 decades. Many schools have moved towards problem-based learning approach and there has been an increased emphasis on the use of information technology.<sup>8,9</sup>

In the present study, a great majority of the students (83.1%) reported that the information on the internet was accurate, while a lesser trend (57%) was reported in the Riyadh study.<sup>1</sup> This fact again reflects the need for the improved internet availability, improved connection speed, and the mandatory undergraduate teaching of computer skills and medical informatics. Students must be careful in interpreting the information on the internet, and this is where the role of the teacher and the college will be vital.

All of the students, who responded to this questionnaire, used e-mail, similar to the study in Riyadh.<sup>1</sup> Therefore, the colleges can use (as against using paper communication) e-mail as a form of communication. Several universities around the world have successfully started using email as a mandatory communication method and the internet as a mandatory information and communication channel.<sup>10</sup> Similar to the Riyadh study (54.4%),<sup>1</sup> the students (62.9%) preferred their communication from the college administration through emails. This can be further expanded as a step towards online teaching and e-learning, as is also supported by the students of another study done on medicine, dentistry, and pharmacy in Pakistan.<sup>14</sup> Online teaching may allow students to focus more on managing their own learning and to work at their own convenient time and pace. It also allows the use of sound, videos, and animation to communicate information.<sup>15</sup> The use of online handouts and lecture notes can be used to support lectures and enable more face-to-face contact with the lecturer through methods such as small group teaching.<sup>16</sup> This fact may encourage the teaching staff to make available lectures and teaching materials on the web, as is preferred by the students in this as well as in the Riyadh study and other studies.<sup>1,9,16</sup> It is encouraging, as the students considered this would not stop them from attending lectures.<sup>1,8</sup> It is also important to note that

the majority of the students (74.4%) preferred the use of modern powerpoint presentations aided by marker-and-board method for teaching. It would need an updating of teaching methods with the aid of IT by the teachers.

### CONCLUSION

All of the students under study, at the College of Medicine, Pharmacy, and Dentistry, Prince Sattam Bin AbdulAziz University, Al-Kharj, Saudi Arabia, had an access to IT and used it for their educational purposes.

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