Use of the Internet Among Dental Students in Turkey

Nurgul Komerik, D.D.S., Ph.D.

Abstract: The extent to which dental students in Suleyman Demirel University (Turkey) use the Internet during their undergraduate dental training and their attitudes towards the Internet in general were assessed in this study. Ninety-three percent of the students use the Internet in various frequencies. Seven percent stated that they do not know how to use the Internet and, in this regard, the gender proportion was higher in the female students (p=0.026). In general, male students use the Internet more often than their female counterparts (p<0.001). Although a similar proportion of students (approximately 55 percent) use the Internet to retrieve information for general and dental topics, dental topics were searched in the Internet less frequently. To obtain information on dental topics, students generally referred to lecture handouts or textbooks (76 percent) while 32 percent accessed the Internet. Students who use the Internet to obtain information on dental topics most commonly preferred the university sites (71 percent), followed by search engines by performing key word searches (47 percent). The texts are the most commonly accessed materials (83 percent). Clinical photographs were accessed by 53 percent and histopathologic and radiographic materials by 14 percent of the students.

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Key words: Internet, dentistry, student, education

Submitted for publication 10/28/04; accepted 2/8/05

In recent years, medical and dental education has been going through a transformation from the traditional didactic education system to an approach whereby students take a more active role in their education.1,2 In this context, computer-mediated learning is becoming a commonly used tool, and Internet-mediated education is gaining more and more popularity.3-9

There are numerous advantages of Internet-mediated education. The Internet is a user-friendly communication medium that is cost-effective and fast. The required information can be accessed from anywhere with an Internet connection and with no time limitation. The information on the Internet is usually up-to-date, which makes it a useful tool to follow recent developments. Internet sites containing clinical, histopathological, and radiographic data create an environment for students to study at their own pace. The Internet provides means of accessing the expertise of specialist clinicians and academicians all over the world. Students can have the opportunity to learn about different views on controversial topics, can review extensive case reports, and can gain knowledge of rare diseases. In addition to serving as a learning tool, the Internet may motivate students to undertake research and help to develop skills in collecting and analyzing data. Discussion groups via electronic mailing or chat rooms, videoconferencing, interactive learning environment by animation, and simulation methods are further advantages of the Internet.

Another important advantage of the Internet is that students in developing countries can have the opportunity to access a large pool of data, which could help reduce the information gap resulting from the disadvantages of the education opportunities in these countries. The aim of this study was to investigate the extent to which students in Suleyman Demirel University Dental School take advantage of the Internet during their dental education and to assess their attitudes towards the Internet in general.

Materials and Methods

Undergraduate students attending Suleyman Demirel University Dental School were included in this study. A questionnaire consisting of multiple choice questions was prepared regarding the methods students prefer to access dental subjects; reasons for Internet use; where they get access to the Internet; factors restraining students from using the Internet; frequency of Internet use; and how often they are able to find dental subjects in Turkish and English sites. Forms were distributed to all students attending lectures before the lecture started and were col-
lected immediately after the students finished filling them out, which took approximately ten minutes.

One hundred and thirty students (sixty-nine female and sixty-one male) out of a total of 170 were included in this study. Dental students from each year were represented: first year: thirty-one; second year: twenty-nine; third year: twenty-eight; fourth year: twenty-three; and fifth year: nineteen. The aim of the study was explained in detail, and students were reminded not to write their names in the forms. They were also reminded that they could choose more than one option in some of the questions.

The data were analyzed using SPSS for Windows 10.0 (SPSS Inc., Chicago, IL, USA) statistical package. Chi-square test was employed, and the results were expressed as percentages and frequencies.

Results

Ninety-three percent of the students who took part in this study use the Internet with various frequencies while 7 percent stated they have never used the Internet. Five percent of the students used the Internet every day, 32 percent once a week, and 18 percent once a month for general use (Table 1). In general, male students used the Internet more frequently than their female counterparts. While 80 percent of the male students used the Internet at least once a week, this frequency is 42 percent for female students (p<0.001). In addition, the use of the Internet by senior students was found to be more common than their junior counterparts. For instance, 21 percent of the final-year students as opposed to 5 percent of the first-year students use the Internet on a daily basis.

Places for Internet access preferred by students and the reasons for Internet use are shown in Table 2. Students accessed the Internet most commonly at Internet cafes (70 percent). While 39 percent preferred university and/or faculty computer facilities, 33 percent connected to the Internet from their home and 13 percent from others’ computers. Students used the Internet most frequently for electronic mailing (79 percent). Although a similar proportion of students said that they use the Internet to retrieve information for general and dental topics (Table 2), dental topics were searched on the Internet less frequently (Table 1). Only one of the students used the Internet to gain information on dental subjects on a daily basis. Nevertheless, among the students who used the Internet, 20 percent accessed it to find information on dental subjects at least once a week. A higher percentage (57 percent) used the Internet once a month or once in a couple of months (Table 1). When analyzed according to gender, male students (46 percent) used the Internet more than did female students (19 percent) to access general information (p=0.001). Similarly, although not statistically significant, male students preferred the Internet to obtain dental information more frequently than did female students. There was no statistical difference on Internet use for dental subjects between classes; however, in general, the Internet was used for dental subjects most frequently in the first and final years.

The majority (76 percent) of the students preferred to use textbooks and/or lecture handouts when they needed information on dental subjects, while 32 percent preferred the Internet. Figure 1 shows the Internet sites that students preferred to use to access information on dental topics. Students who used the Internet most commonly preferred university sites (71 percent). This is followed by use of search engines by entering key words (47 percent). Literature search using PubMed was almost never used in the first four years, while one in every five students in the final year searched the literature on the Internet. Regarding the dental topics, texts were most com-

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<th>Table 1. The frequency of Internet use by dental students for general and dental subjects</th>
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<td><strong>General Use</strong></td>
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<tr>
<td>Every day</td>
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<td>Two to three times a week</td>
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<td>Once a week</td>
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<td>Once a month</td>
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<td>Once in a couple of months</td>
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<td>Never</td>
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<th>Table 2. Proportions of students regarding the places they prefer and the reasons for Internet access</th>
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<td>Internet cafe</td>
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<td>Email</td>
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<td>University/faculty computer lab</td>
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<td>Entertainment</td>
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<td>Home</td>
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<td>General information</td>
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<td>Other’s computer</td>
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<td>Dental information</td>
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monly (83 percent) searched. While 53 percent of the students accessed clinical photographs, histopathologic and radiographic materials were favored by 14 percent (Figure 2). The final-year students were more interested in the clinical presentations when compared to other students (p=0.026).

The percentage of students regarding how frequently they accessed dental information in Turkish-language and English-language sites is presented in Table 3. Sixty-seven percent of the students stated that they accessed sources related to dental subjects frequently in English language. However, only 21 percent stated that they were able to find dental subjects in Turkish sources frequently. Seventy-nine percent of the students stated that they rarely or never found the topic they searched for in Turkish sources as compared to 33 percent for English sources. Ten percent of the students can understand the language in English sources very well, while 36 percent can understand some of it. Approximately half of the students (54 percent) understand English very little or none at all.

The main reason for not being able to use the Internet was said to be lack of time (Table 4). This
was more obvious for second-, third-, and fourth-year students \( (p=0.002) \). While 24 percent of the students complained that they had difficulty finding a computer with Internet access, 13 percent stated that the cost was the drawback for Internet use. Seven percent of the students stated that they do not know how to use the Internet, and in this regard female students outnumbered males \( (\text{female:male}=12 \text{ percent}:2 \text{ percent}, \ p=0.026) \).

### Discussion

Internet use is becoming more and more commonplace in Turkey. However, currently, utilization of web-based education in dentistry is in its infancy. A basic information technology course has been in the undergraduate curriculum in our faculty since 1998. However, the findings of this study suggest that an information technology course, in the absence of other amenities, is not enough to motivate our students to use the Internet more often for their education.

Students included in this study mainly preferred textbooks and/or lecture handouts \( (76 \text{ percent}) \) when they need information on dental subjects, while only 32 percent preferred the Internet. In addition, 56 percent of the students who use the Internet utilized it as an adjunct to their dental education. A similar percentage \( (60 \text{ percent}) \) was reported for dental students in the rest of Europe.\(^{10,11}\) However, the frequency of Internet use is lower among Turkish students compared to their European counterparts. In this study, among students who used the Internet, 20 percent accessed dental topics at least once a week and 40 percent at least once a month, as compared to 26 percent and 83 percent in Britain, respectively.\(^{12}\) Computer use for dental purposes appears higher among dental students in the United States. Schleyer et al. reported that 45 percent of the students from nine dental schools in the United States use the computer for school-related purposes at least two hours per week.\(^{13}\)

One of the reasons for our students not using the Internet as often as their European and American counterparts may be due to the limitations of Internet access for undergraduate students in our dental school. At present, there are only two computers with Internet connection allocated for undergraduate student use in the dental school library. Although there is an extensive central computer library in the university, it is not located in close proximity to the dental school. The limited access of the Internet in the dental school may be the probable reason for why Internet cafes are preferred most commonly for web searches. Likewise, 24 percent of the students stated that having difficulty to access the Internet kept them from using the web. Better-equipped computer laboratories with continuous and free of charge access to the Internet in the dental school would enable students to use it more frequently as part of their education.

Electronic curriculum, consisting of computer-based learning including educational materials available on online courses, may encourage students to use the web for dental purposes and enhance dental education.\(^{14-16}\) The home page of our faculty does not serve the students for educational purposes, apart from electronic mechanisms to search the literature provided by the university. In Turkey, some dental schools have home pages with dental materials together with useful Internet links, but in general, electronic curriculum is a neglected issue mainly due to financial and technical difficulties. Online learning is becoming a recognized method for delivering educational content throughout dental schools in Northern America.\(^{17-20}\) Interactive online learning through web-based courses should also be implemented in dental schools in Turkey, which may transform education from lecture-only courses to student-driven learning.

Required information on the Internet can be found by either entering key words in search engines, but there are only two computers with Internet connection allocated for undergraduate student use in the dental school library. Although there is an extensive central computer library in the university, it is not located in close proximity to the dental school. The limited access of the Internet in the dental school may be the probable reason for why Internet cafes are preferred most commonly for web searches. Likewise, 24 percent of the students stated that having difficulty to access the Internet kept them from using the web. Better-equipped computer laboratories with continuous and free of charge access to the Internet in the dental school would enable students to use it more frequently as part of their education.

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Required information on the Internet can be found by either entering key words in search engines.
(such as Google or Yahoo) or going to the URL of a well-known website directly. Furthermore, it is possible to access the abstracts or full texts of the articles published in scientific journals through a system provided by the United States National Library of Medicine Public Medical Information Service (www.nlm.nih.gov/). Unfortunately, a very limited number of the undergraduate dental students at SDU benefit from this system, which is used commonly in academia worldwide. Virtanen and Nieminen reported that 80 percent of the dental students in Finland use Ovid Medline and the percentage of the students who employ Medline search increased as the students grew in seniority. SDU dental students do not tend to survey the literature in the first four years; however, 18 percent of the final-year students stated they used the PubMed literature search site. The reason for this increase in the final year may be due to the need for background literature for their graduation theses.

In this study, it is notable that male students tended to use the Internet more commonly than did female students. Female students preferred the Internet less frequently for both general information and information related to dental subjects. However, the disproportion in gender for Internet use is not peculiar to Turkish students. Thus, a study conducted in several countries in Europe reported that female undergraduate dental students use the Internet less frequently than male students. Nevertheless, a study conducted in the United States showed that the disparity in knowledge of information access between male and female dental students diminished between 1990 and 1993.

The opportunity to gain access to many international Internet sources adds to the importance of learning foreign languages. Despite differences in various countries, it was reported that only 5 percent of dental students in Denmark, Greece, Hungary, Britain, Ireland, Holland, Norway, Spain, and Sweden cannot speak a foreign language. In this study, 54 percent of the students can speak English very little or not at all. Paradoxically, our students stated that they could find required information on dental subjects in English sites much more frequently than in the Turkish sites. This further underlines the importance of being competent in the English language in order to pursue the information provided on a vast number of dental sites.

One of the problems associated with Internet use is the lack of quality control analogues to peer reviewers in scientific journals. One of the factors that prevented students from using the Internet was their uncertainty about the accuracy and quality of the information. For this reason, the users must determine the credibility of the material found in the Internet with critical thinking. The source of the site (such as recognized universities and organizations) is important in determining the validity of the information provided on the Internet. In this study, the majority of students (71 percent) who use the Internet stated that they preferred university sites for information on dental subjects.

This study included undergraduate students in one dental school, and the number of subjects was limited. Furthermore, it is natural to have differences in the attitudes of dental students’ Internet use between those attending better-equipped dental schools and those attending dental schools with limited Internet facilities. Although the results of this study reflect the attitudes of dental students to Internet use as a part of their education, multicenter studies would give a more reliable picture about the use of the Internet by dental students in Turkey.

Although the number of sites providing Internet-based education is growing rapidly, dental education via the Internet is still in a developing stage. It is believed that this education mode will be fully established in the near future. With this system, a common data resource can be established, and sharing and spreading of knowledge can be achieved.

REFERENCES