

INTERNET USAGE AMONG DENTAL PROFESSIONALS IN RIYADH

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ABSTRACT

The aim of this study was to assess the value and the measures for the utilization of Internet services among dental professionals in Riyadh, Saudi Arabia by using a survey questionnaire at various locations including College of Dentistry, King Saud University (DUC & MUG); Armed Forces Hospital, King Faisal Specialist Hospital, King Fahad National Guard Hospital, and Riyadh Medical Center. The sample was 363 subjects of dental professionals (63.3% response rate) aged ranged 19-65 years, the gender was 55.4% male, 42.7% females, education ranged from undergraduate students, postgraduates, faculty and hospital staff. The result showed that 77% were using Internet, however 62% had low knowledge in dealing with computers, 82% subjects were using Internet at home, 34% in their offices and 6% at Internet café. Only 12.5% received lectures regarding Internet usage. While 69% learned the Internet by themselves, 22% faced difficulty in finding of dental information on Internet. 84.9% of the subjects used the Internet for e-mail services, 58% for research purpose, 49.5% for chatting, while 43% had no clear objectives. The most popular sites were www.ada.org followed by www.smile4ever.net. 12% tried to publish on Internet. 83.2% agreed that if there is an Internet supporting center at their work I university it will increase dental publishing over Internet.

It was concluded that the Internet was widely used and there was an obvious increase in Internet usage. Furthermore, dental professionals depended on themselves to learn how to use Internet.

Keywords: Dental professionals, Internet, Riyadh Survey, Saudi Arabia.

INTRODUCTION

Internet is a system that links computer networks all over the world so that anyone from any point on the network can communicate with others on the network through a service provider. ⁶

Internet has been in use for over 35 years¹⁰. Its development initially began as a result of the need for an effective communication tool for scientists.

It started in 1962 as communication tool between several computers related to the U.S. Defense Advanced Research Projects Agency¹⁰, nowadays is used by more than 30 million people all over the world⁶.

The availability of Internet has opened up a new horizon of scientific co-operation and collaboration at a global level. One of the reasons that give the Internet

great importance is the availability of the various tools that allow us to interact with the resources on Internet. Through Internet users can gain access to different resources in many forms, e.g., documents, pictures, sounds and even videos.

Dental science like any other science have tried to raise the quality of their own speciality.¹¹

Dental professionals can get the benefits of Internet by using the various applications such as:
Electronic mail

The first e-mail program was created in 1972.¹² This service allows users to transfer almost any kind of data through the network. This medium of communication is not only useful in exchange of information between professionals, but also can be used for con-

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ducting research studies. In one study, subjects were sent questionnaires over Internet¹. The response rate was 48%, which definitely demonstrates that e-mail is an efficient tool in distributing the questionnaires. Another survey study was conveyed by e-mail with a response rate of 57%¹³.

News groups

It is a service where you can join a specific topic (group) in a news group site. Through a news group you can chat and discuss about a certain topic. The information being posted is entirely based on the individual's opinion, you can not assume that every piece of information is fact.

Various news groups have been developed in the past few years. These, as well as various discussion forums, often provide specific information for the dental professional. Such forums, however, are not new. Since 1985, "conferences" have been developed on-line. These have been used for information exchange, discussions, and education. Many such sites are offered by Universities, and can thus be considered reliable sources of information^{1,4}. Such services are of obvious educational value to both clinicians and students. Thus, an obvious advantage of using Internet in the dental context is the availability of useful information at one's fingertips.

World Wide Web (WWW)

Now a days WWW is the most commonly used application on Internet. The Internet usage has grown at an exponential rate since the introduction of the WWW in 1992⁸. Currently there are more than 22 million World Wide Web pages available at the Internet as reported by Hobbes' Internet Timeline v5.2. These pages provide our modern society with valuable educational, commercial, and leisure channels. For the practitioners, the information available on the WWW can improve and upgrade the level of current understanding in various disciplines⁶

Internet can offer dental professionals a lot of resources. According to Regennitter, et al., Internet can provide the dentist with quick acquisition of knowledge, reduction of professional isolation, and promotion of life-long learning⁵. Furthermore, Internet can help provide a better link between the dentist's education and his or her clinical practice.

Another utilization of the Internet's potential is the creation of a web site. Tan states that creating a web site for an orthodontic office can offer communication, patient education, and making general infor

mation available to the general public⁶. Thus, one can obviously recognize the tremendous commercial potential of developing a web site.

Internet offers many commercial sites useful for dentists which offer product information, news, and convenient secure on-line ordering. Additionally, non-commercial sites such as various sites of dental societies offer valuable information for dental professionals.

The advantages of Internet usage are clear. As it has been shown, utilization of the Internet's wealth of information is beneficial to dental clinicians, students, and patients. Yet, many dentists still do not take advantage of the Internet's many resources. A recent Canadian study has shown that 71% of Canadian dentists have an in-office computer, and 55% have an in-office modem. Yet only 15% of those Canadian dentists have conducted Internet searches¹.

In Saudi Arabia internet was officially introduced for more than 3 years ago by King Abdulaziz City For Science And Technology (KACST) which is providing the kingdom with internet access. By the end of the year 2000 there were more than 250,000 subscribers¹⁶.

However, we were not able to find any published study documented in the literature regarding the Internet usage among dentists and dental students in Riyadh City. The only study that has been found was done before the introduction of Internet in KSA, which was done in 1998. This study involved 213 of dental professionals in Riyadh and it showed that 17.5% used the Internet regularly¹⁵.

Therefore, our present study conducted in Riyadh City is an attempt to gather data regarding the utilization of Internet resources, future plans for publishing and feelings about the value of Internet services.

MATERIALS AND METHODS

This study has been conducted using a survey questionnaire. A pilot testing has been conducted with the help of some faculties, students, interns and hospital staff. Then, the outcome of the pilot testing has been incorporated to produce the finalized version of the questionnaire.

Several areas have been targeted: College of Dentistry, King Saud University (DUC & MUC), Armed Forces Hospital, King Faisal Specialist Hospital, King Fahad National Guard Hospital, and Riyadh Medical Center.

We faced some procedural difficulties in distributing our questionnaire in the Military Hospital. Therefore, it has not been included in this study.

The questionnaire was distributed in January 2001 among the faculty, postgraduates, the hospital staff, interns, and among the undergraduates students of DUC and MUC.

The questionnaire consists of 33-questions and it was distributed with covering letter introducing the author and presenting the purpose of the study.

The collected data were entered into a micro-computer using Fox pro windows 2000 and statistical package for social sciences program (SPSS ver 9.0) were used to compute descriptive statistics.

RESULTS

Out of the 570 distributed questionnaires, 363 were returned (63.6% response).

Age ranged 19-65 years; the gender was 55.4% male, 42.7% females. The demographic data showed that 58.3% were undergraduate students while 9.9% were postgraduate students, 13.2% belonged to the faculty of College of Dentistry King Saud University and 17.4% were hospital staff. Regarding nationality, 80.7% were Saudi and 13.8% were non-Saudis.

COMPUTER KNOWLEDGE

Most of dental professionals (74.7%) own a computer. Out of them 37.6% described their computer knowledge as high, while 62.35% recorded their knowledge as low (see Figure 1).

INTERNET HABIT AND EXPERIENCE

23.1% of dental professionals didn't use Internet while 76.9% used Internet, 20.1 % of them have reported using Internet for 3 years or more, 21.1% have been using it for 2-3 years, 29.4% were using it for 1-2 years, and 29.1% have been using it for less than 1 year.

When asked about the access to Internet 80.2% have reported using internet from homes with an average of 8.3 hrs/week, 34.4% from work with an average of 3.8% hrs/week, 20.4% from internet café with an average of 1hr/week, and 7.9 in friend's house with an average of 2.6 hrs/week.

SOURCE OF TRAINING

69.2% of dental professionals learned using Internet by themselves, 63.8% learned with the help of colleagues or friends, 15.1% used Internet guidebooks, 9.3% were involved in courses or seminars about how to use Internet. And only 2.9% get the benefit of computing services centers in their hospital/university. When asked about the provision of lectures or instructions about Internet at their hospital/university, 85.7% said no and 12.5% said yes.

USAGE COMPLICATION

More than half of dental professionals (58.8%) found that the time needed to be spent using Internet was the major problem they were facing, while 57.7% of them mentioned that the slowness of Internet, 40.1% mentioned the broken links, 38.4% mentioned

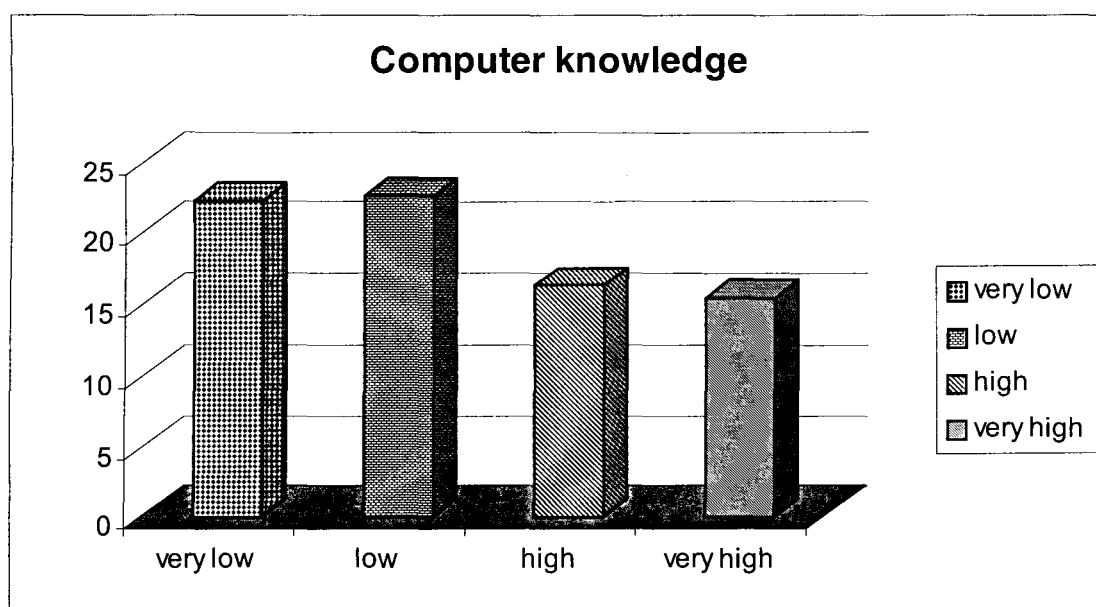


Fig. 1. Computer knowledge among dental professionals.

high cost of the Internet services, 24.7% mentioned inability to find information in internet, 17.2% recorded unorganized huge information, and 8.6% mentioned the language to be one of the top problems in using Internet.

Regarding finding dental information on Internet, it has been found that 29.2% of dental professionals said that it was easy, while 46.6% said it was normal, however 22.6% gave the impression of difficulty.

INTERNET USAGE OBJECTIVES

84.9% of the surveyed sample used Internet for e-mail services, 58.1% for research purposes, 51% for gathering news and information, 43.7% surfing through Internet without any clear objective, 36.2% used it for chatting, 37.6% for reading online magazines, 14.3% for voice communications, 15.6% for shopping, and 10.8% for playing games.

INTERNET TOOLS SERVICES

I. E-Mail

Majority of subjects (84.9%) used e-mail as shown in table (1). While 10% were rarely using the e-mail. The average numbers of e-mail messages sent was 10 messages per week, while 19 messages received per week.

II. E-mail List and News Group

Table (3) shows the usage of news group regarding e-mail list. 81.4% subscribed to dental e-mail list.

III. World Wide Web

Table (2) shows the kind of web sites that the dental professionals are familiar with.

The entire sample usually visits English sites while 14.7% didn't visit Arabic sites. Regarding the criteria of the site, which make them visit it again and again 60.9% choose the extremely useful content, 52.7% choose information tailored to their needs, 44.8 choose grasping their attention by the site, 37.6 choose very entertaining. The most frequent sites they visited were:

1 www.ada.org

2 www.smile4ever.net

3 www.dentalcare.com

The usual dental information sought by the dental professionals is shown in table (4)

I Chatting

Table (5) shows the usage of chatting.

I Local Publishing

When asked whether their hospital/college have their own web site 46.2% answered yes, 12.9% said no, and 40.1% said that they don't know.

43.4% of the sample surveyed were members of Saudi Dental Society. Out of them 41.3% have visited the Saudi Dental Society web site.

Regarding the trials to publish on Internet 83.2% didn't try, while 12.5% of dental professionals tried to publish on Internet, 5% of them published through e-mail list, 4.3% through news group, and 1.5% through web pages.

When asked about the level of difficulty of publishing on Internet 52% of subjects indicated that it is easy to publish on the Internet while 39.4% said it is difficult.

36.6% describe the reason of difficulty as lack of technical knowledge, 16.1% as finding host locations, 12.5% as lack of material to be published, 11.5% as cost of publishing and hosting.

32.3% of dental professionals had the interests of publishing on the Internet, while 76.6% did not have.

Lastly, 83.2% agreed that if there was an Internet supporting center at their work/university that would have increased dental information dissemination (publishing) over Internet, 12.9% were unsure, and 2.8% disagreed.

DISCUSSION

The present study is of importance as so far there was no available data from Saudi Arabia regarding the usage of Internet by dental professionals on large scale. Interest in Internet use has been shown in a review article from Riyadh.¹¹

TABLE 1. USAGE OF E-MAIL SERVICES BY DENTAL PROFESSIONALS

Application	Always	Some-times	Rarely	Never
E-mail	74.2%	12.5%	5%	4.7%

TABLE 2. FREQUENCY OF WEBSITE VISITED BY DENTAL PROFESSIONALS

Site	Always %	Sometimes %	Rarely %	Never %
Medical	18.3	38.7	23.3	10.8
Dental	36.6	41.9	11.5	6.8
Universities	17.2	29.4	24.7	16.5
E-mail services sites	60.2	15.8	5	7.5
Search engines	53	26.9	8.2	4.3
News sites	21.9	34.4	24	10
Web-based discussion groups	3.6	13.3	28.7	35.8
Commercials sites	5.7	22.9	28.7	28.3
Entertainment sites	15.8	26.9	19.4	14

The response rate was encouraging compared with other studies on the same topic, i.e., 63.6%

It is apparent from this study that the surveyed dental professionals were familiar with the Internet resources. This was indicated by high percentage of Internet users (76.9%) also associated with high percentage of computer ownership (74.7%). This percentage is the same as of a study done by Almas *et al*¹⁵ of College of Dentistry King Saud University which was 74.6%, however, 62.3% described their knowledge in dealing with computers as low.

This low knowledge could be related to the deficiency of training and helping opportunities. We can see that only 2.9% got the benefit of computing center at their work and 12.5% received lectures or seminars while majority of them learned by themselves or by help of their friends (69.2% and 63.8%, respectively).

A close look at the subjects who were using Internet, it has been found that the lowest percentage of Internet users was among students (74.2% of the students were using the Internet)

The highest percentage was shown by the faculty, which was 91.7%. This could be related to the availability of Internet access to faculty offices.

TABLE 3. USAGE OF NEW GROUP BY DENTAL PROFESSIONALS

Application	Always	Some-times	Rarely	Never
News group	7.5%	22.9%	26.5%	25.8%

TABLE 4. TYPE OF DENTAL RESOURCES REQUESTED BY DENTAL PROFESSIONALS

Site	Always %	Some-times %	Rarely %
Articles/Researches	42.3	32.6	19.4
Dental societies	12.5	39.1	83.5
New materials in dentistry	16.8	32.3	33
New methods/ideas in dentistry	18.3	29	30

It is obvious to recognize the growth of Internet usage in our society for the past 3 years since the Internet services have been started in Saudi Arabia. Almost 80% of dental professionals have used the Internet after the introduction of Internet services in Saudi Arabia.

In our study, most of the dental professionals used Internet from home (80.2%). This percentage shows the same result that was reached by Prilutsky *et al* in USA¹⁴.

Because of the importance of e-mail it is expected to find high percentage of e-mail usage, i.e., 84.9% which is almost similar to the study done in England by Downes¹³.

TABLE 5. USAGE OF CHATTING AMONG DENTAL PROFESSIONALS

Application	Always	Some-times	Rarely	Never
Chatting	23.7%	22.8%	17.2%	19.4%

The most popular web site was www.ADA.org, which is an international site. The second popular site among dental professional was www.smile4ever.net, which is a local published site. This may indicate that we have the ability to produce such a useful and popular site in our society.

Because of lack of time for dental professionals to use Internet, (58.8%) of them consider the time consuming as one of the top problem in using Internet. This factor may explain the types of Internet usage like high percentage of using e-mail and web browsers compared with the percentage of using news group and publishing on Internet.

Due to lack of time and low knowledge majority of the sample agreed that presence of an Internet supporting center at work/university will increase dental information dissemination (publishing) over Internet.

The percentage of chatting were (49.5%) and surfing without any clear object (43.7%) which may indicate that still some subjects use internet for entertainment objects.

CONCLUSION

- Further studies are needed in different areas in the Kingdom of Saudi Arabia.
- Most of dentists recognize the importance of Internet to their work.
- The Internet usage, especially by dental professionals, is increasing since the introduction of Internet in Saudi Arabia in 1998.
- Most Internet accesses are done from homes particularly by students.
- Furthermore, dental professionals relied on themselves to learn how to use Internet and its tools. Therefore, to encourage Internet usage by students, it is recommended that the college provides internet access by setting up an Internet lab with help-desk support staff to support the students and faculty so that they take the most advantage of Internet.
- The telecommunication infrastructure is not yet totally capable of supporting all the required high bandwidth to navigate Internet sites with multimedia capabilities. This presented an obstacle for more use of Internet as well as use of other lightweight applications, e.g., e-mail.

- The local web site, www.smile4ever.net, has proved that local engineers and professionals are capable of implementing a wonderful and frequently visited site by professionals.

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