Knowledge and attitude about computer and internet usage among dental students in Western Rajasthan, India

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Abstract

Background: Internet is a useful tool to update the knowledge. The aim of the present study was to assess the current level of knowledge on the computer and internet among undergraduate dental students. Materials and Methods: The study consists of self-administered close ended questionnaire survey. Questionnaires were distributed to undergraduate dental students. The study was conducted during July to September 2012. Results: In the selected samples, response rate was 100%. Most (94.4%) of the students had computer knowledge and 77.4% had their own computer and access at home. Nearly 40.8% of students use computer for general purpose, 28.5% for entertainment and 22.8% used for research purpose. Most of the students had internet knowledge (92.9%) and they used it independently (79.1%). Nearly 42.1% used internet occasionally whereas, 34.4% used regularly, 21.7% rarely and 1.8% don't use respectively. Internet was preferred for getting information (48.8%) due to easy accessibility and recent updates. For dental purpose students used internet 2-3 times/week (45.3%). Most (95.3%) of the students responded to have computer based learning program in the curriculum. Conclusion: Computer knowledge was observed to be good among dental students.

Key words: Computer, dentistry, education, internet, students

INTRODUCTION

The use of computer is increasing among dental students. Advances in information technology (IT) have changed our life-style. Use of computer and internet is a part of the student's daily activity. Use of the internet is integrated in their daily communication habit and has become a technology as ordinary as the telephone or television.[1] The internet is a user friendly communication medium, which is cost-effective. With internet, the required information can be accessed from anywhere without time limitation. The information on the internet is usually updated, which helps in updating the recent knowledge and motivate students to undertake research activity.[2] In the medical and dental field computers are mostly used for office procedures such as billing, research and less often for medical education. Several studies have shown that the use of computerized information system in dental and medical field can improve the quality of care, enhances the use of evidence-based treatment and helps in updating the current knowledge.[1]

The World Wide Web has made instantaneous access to recent information with reduced time consumption. The internet was originally developed by the United States of America’s military in the 1960’s as...
a communication system. It is now one of the most important sources of information for students. In developed countries the internet usage in health care is well-established, whereas in the developing countries it is slowly improving due to low socio-economic and low literacy rate.\textsuperscript{[3]}

The current concern on evidence based health care may increase the need for computer and internet usage in dental practice. Online data bases such as PubMed, Medline and Google are key tools in search for the best evidence and their use depends on computer knowledge and internet access. Recent studies have shown use of online information systems by medical professionals can improve the quality of care.\textsuperscript{[3]} The internet has been used for medical education in diverse ways including teaching of organs, diagnosis of diseases and conduct of medical examinations.\textsuperscript{[4]}

Since the application of internet in dentistry is limited, hence dental students need training to learn how to use the web-based search tools and techniques in order to find high quality information resources.\textsuperscript{[1]} The aim of the present survey was to assess the current level of knowledge on computer among under graduate dental students.

MATERIALS AND METHODS

The present study was carried out on undergraduate dental students from 1\textsuperscript{st} to 4\textsuperscript{th} year Bachelor of Dental Surgery (BDS) and internship students, studying in Vyas Dental College and Hospital Jodhpur, Rajasthan, India. The research protocol was approved by the Institutional Review Board and verbal consent was obtained from the respondents.

Before starting up the study validity of each question was assessed by pilot study on five students selected from each group. The study was conducted during a period of July to September 2012 and students who were absent on the days of the survey were excluded from the study. The study population consisted of 340 students who were present during the study. Prior to administrating the questionnaire, the class was addressed regarding the purpose and process of data collection. Then the pre-tested close ended questions were distributed to students during class time to fill up the questionnaire form. 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, frequency of internet use and how often they are able to find dental subjects in English sites. Five questions were relevant to computer usage and 10 questions regarding internet use. The collected data were tabulated and its percentage was obtained.

RESULTS

In questionnaire format, five questions were regarding computer usage and 10 questions were included about internet knowledge and usage [Lists 1 and 2]. The total selected sample was 340 and response rate was 100%. Age-wise participation was lowest at 17 years age (1, 0.3%) and highest at age 21 years (72, 21.2%) [Table 1]. Female students participation was (192, 56.5%) more compared with male students (148, 43.5%) [Table 1], whereas interclass participation was maximum in 1\textsuperscript{st} BDS (78, 22.9%) and minimum in interns (56, 16.5%) [Table 2].

Computer usage

Table 3 shows the response to computer and internet usage among dental students. As shown in Table 3, 94.4% students have the computer knowledge and only 5.6% respondents don’t have computer knowledge. Only 5.6% have stated that lack of time is the reason for computer illiteracy. Nearly 77.4% students were
having own computer and access at home, 18.2% access at hostel and only 4.1% goes to cyber café respectively. About 40.8% of students used computer for general purpose, 28.5% for entertainment and 22.8% for research activity. 56.2% of students used computer for Microsoft and PowerPoint presentation and 26.2% for other purposes.

Internet knowledge

Nearly 92.9% of students had internet knowledge [Table 3]. Most of the students used internet services at home and hostel (69.7%, 19.7% respectively), as they are having their own computer or laptops. Most of the students have internet knowledge and use it independently (79.1%) and 20.9% uses with the help of others. Regarding frequency of use, 42.1% of students used internet occasionally whereas, 34.4% use regularly, 21.8% rarely and 1.8% don’t use respectively.

Commonly students use internet for web browsing, E-mail and research activity (37.4%, 30.9% and 23.5% respectively). Google is a common search engine used (80.9%), followed by PubMed (10.3%) and Yahoo (6.2%). Internet is the most common preferred medium for getting information (48.8%) followed by television (19.1%) and textbooks (16.5%) because of easy accessibility and recent updates in internet. For dental purpose 45.3% students used internet 2-3 times/week, whereas 11.8% don’t use, however 9.7% showed preference of textbook over internet. Most (95.3%) of the students responded to have computer based learning program in the curriculum.

DISCUSSION

Rapid development in computer technology and the wide availability of personal computer together with internet access have changed both the study and the practice in dentistry.[5] Information and communication technology is an increasingly important tool in dental education.[6] Several studies have shown the potential use of computers, IT and internet in dental curriculum as an educational tool. In Northern America, online learning has become the recognized method for delivering the education in dental school. In the National Library of Medicine Public Medical Information Service (www.nlm.nih.gov) it is possible to access the abstract or full texts of the articles published in scientific journals.[2] Despite these advantages, computer learning has certain limitations like, some students have complained of insufficient time and limited computer access.[9]

In the present survey, response rate was 100%, which is similar to Chudasamab et al. study 2009.[7] In consideration of age, participation was lowest at 17 years age (1, 0.3%) and highest at age 21 years (72, 21.2%) [Table 1]. Female students participation was more (192, 56.5%) compared with male (148, 43.4%) this is due to higher female admissions to dental courses [Table 1]. A study by Hamissi et al. observed no difference in computer and internet usage among both sexes.[6] Among interclass participation, maximum was in 1st BDS (78, 22.9%) and minimum was in interns (56, 16.5%) [Table 2].

Computer usage

As you can be seen in Table 3, 94.4% students have the computer knowledge and only 5.6% respondents don’t have computer knowledge which was better than Nigeria (43%) and Glasgow in UK (84%) study and equivalent to Jeddah, Saudi Arabia (94%), Oulu, Finland (95%) and Spain (93.3%) study on students with computer literacy respectively.[4,9-12] Only 5.6% have stated that lack of time is reason for computer illiteracy. It has been observed that, 77.4% students had their own computer and access at home, 18.2% at hostel and only 4.1% goes to cyber café, these results were in accordance to Europe (72%), Jordan (74%), Pakistan (73%), Saudi Arabian (82.74%) and Spain study (76.8%), where students had accessed computers at home.[8,12] Lack of time and limited access of the internet in the dental school and having personal computer may be the probable reason for preference in home and hostel for web search. This study was done in private college, where students are from good socioeconomic background, which is another reason to have personal computers. A Tanzanian study indicated

| Options | QN. 1 | QN. 2 | QN. 3 | QN. 4 | QN. 5 | QN. 6 | QN. 7 | QN. 8 | QN. 9 | QN. 10 | QN. 11 | QN. 12 | QN. 13 | QN. 14 | QN. 15 |
|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| A       | 94.4  | 5.6   | 4.1   | 28.5  | 7.1   | 92.9  | 8.8   | 20.9  | 34.4  | 30.9  | 6.2   | 16.5  | 12.9  | 10.6  | 95.3  |
| B       | 5.6   | 9.7   | 77.4  | 40.8  | 10.6  | 1.8   | 79.1  | 42.1  | 37.4  | 80.9  | 19.1  | 56.5  | 45.3  | 4.7   |
| C       | -     | 5.9   | 18.2  | 22.8  | 56.2  | -     | 69.7  | -     | 21.7  | 23.5  | 10.3  | 15.6  | 20.9  | 32.3  | -     |
| D       | -     | 78.8  | 0.3   | 7.9   | 26.1  | -     | 19.7  | -     | 1.8   | 8.2   | 2.6   | 48.8  | 9.7   | 11.8  | -     |
| Total   | 100   | 100   | 100   | 100   | 100   | 100   | 100   | 100   | 100   | 100   | 100   | 100   | 100   | 100   |

Jali, et al.: Knowledge and attitude about computer and internet usage among dental students

January-April 2014, Vol. 4, No. 1

Table 3: Response according to questionnaire (QN. 1-15)
that 76% of the participated doctors didn’t have computers at home.\[^{[7]}\] 40.8% of students use computer for general purpose, 28.5% for entertainment and 22.8% use for research (dental purpose) activity which is lower than the rates reported in other countries for dental purpose use, such as 58% in Nigeria and 53% of dental students in UK.\[^{[3]}\] Nearly 56.2% of students use computer for Microsoft and PowerPoint presentation and 26.1% for other purposes.

**Internet knowledge**

The present study showed reasonable increase in internet knowledge among dental students in western Rajasthan of India (92.9%) \[^{[7]}\] which is better than that observed in Malaysia (67%), Nigeria (61%) and UK (53%) studies.\[^{[4]}\] Most of the students used internet services at home and hostel (69.7%, 19.7% respectively), as they are having their own computer or laptops. In Nigerian study, cyber café (76.4%) was the common place for internet access as they don’t have their personal computer. In Nigeria, nursing students had lesser internet knowledge since they joined nursing immediately after secondary school.\[^{[4]}\] In our study most of the students had internet knowledge and used it independently (79.1%) however 20.9% needs assistance from others, this rate is similar to Chudasamab et al. study, where 74% were able to work comfortably.\[^{[7]}\] In the present study, 42.1% used internet occasionally whereas, 34.4% use regularly, 21.7% rarely and 1.8% don’t use, this rate is poor compared to Yazd study (72.41% once week, 82.75% once a month) and Britain study (26% and 83%). In present study females was observed more among dental students. Only few studied had internet less commonly than male students.\[^{[3]}\] Females used internet more for web browsing and E-mail and dental purpose in comparison to males, which is in accordance with previous studies done in India, Europe and Turkey.\[^{[3]}\]

Commonly students use internet for web browsing, E-mail and research activity (37.4%, 30.9% and 23.5% respectively). Google was a common search engine used (80.9%), followed by PubMed (10.3%) and Yahoo (6.2%) but Hamissi et al. observed 80.8% for Google search and 54.6% for PubMed database.\[^{[8]}\]

Internet was the most common preferred medium for getting information. 48.8% students responded for internet and 16.5% for textbook for getting information. 56.5% preferred internet over textbooks because of latest updates, 20.9% for easy accessibility and 12.9% for time saving where as 9.7% didn’t prefer internet over textbooks which is in accordance to Unnikrishnan et al. study.\[^{[1]}\] In United States, use of computer for dental purpose is higher among dental students (Schleyer et al. 2001)\[^{[3]}\] For dental purpose, internet used every day in 10.6% and 2-3 times/week (45.3%) which is higher than the reported rates of 20% weekly and 40% monthly among Turkish dental students and lesser to Britain study (26% and 83%) on students.\[^{[3]}\] Several studies shown that computers and internet could improve studies and professional skills. Computers should be supplemental and not substitute to traditional education.\[^{[13]}\]

Most (95.3%) of the student’s prefer computer based learning program in curriculum. Better equipped computer laboratories with continuous and free of charge access to the internet in the dental colleges would enable students to use it more frequently as a part of education tool. Computer based learning including education materials available on online courses, may encourage students to use the web based services for dental purposes and enhance dental education. Online teaching allows students to focus on managing their own learning and to work at their own time and place. It also allows the use of audio, video and animation mode for better understanding the subject.\[^{[9]}\]

In present study response obtained from questionnaire survey was good. Computer and internet knowledge was observed more among dental students. Only few students had lower internet and computer knowledge due to lack of time and access at home.

Limitation in relation to the present study are; (1) this study used multiple choice questions rather than yes or no format, which could be inconvenient for students to answer (2) because of multiple questions, it has become difficult to combine and present all tables (3) response from other Private and Government Colleges were unknown, because the study was constraint to only one Private Dental College.

In consideration to strength of the present study; (1) dental students used computer and internet services for updating recent knowledge, since it is easily accessible when compared to text books, (2) most of the dental students are willing to have computer based learning program in the curriculum and (3) this study proves that dental students had enough computer and internet knowledge, which can be used to provide
comprehensive dental care by upgrading recent research activity.

This study reflects the attitudes of dental undergraduate students to computer based learning in dental education. In the present study students had good knowledge on computer and internet application but they used internet for general purpose and mailing more compared to dental purpose. Hence students should be encouraged to use internet for updating dental and medical knowledge.

Such study should be expanded to all dental colleges of India to evaluate knowledge and attitude of dental students about computer and internet usage. This data could be useful to implement computer based learning program in the dental curriculum which will helps to improve the quality of patient care, teaching and learning in future.

CONCLUSION

This study reflects the knowledge and attitude of undergraduate dental students about internet and computer based learning. Computer knowledge was good among dental students but its dental application was limited compared with general purpose. Hence computer application for dental education should be encouraged.

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LISTS

List 1: Questionnaires about computer usage
1. Do you have computer knowledge?
   Yes    No
2. Reason for computer illiteracy
   I don’t have time no access to computer not interested not applicable
3. Places where you use computer mostly
   Cyber café home hostel library
4. Purpose for which computer you use
   Entertainment general information research others
5. Types of programs used
   • Microsoft word PowerPoint both of the above others.
6. Do you ever used internet
   Yes    No
7. Where you use internet services mostly?
   Cyber café library home hostel
8. Mode of internet used
   Assisted (with others help) not assisted (independently)
9. Frequency of internet used
   Regularly occasionally rarely don’t use
10. Purpose of internet services used by students for
    E-mail web browsing research others
11. Search engine used
    Yahoo Google PubMed don’t use
12. Preferred medium for getting information
    Textbooks Television News paper internet

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List 2: Questionnaires about internet usage

33 Journal of International Society of Preventive and Community Dentistry January-April 2014, Vol. 4, No. 1
13. Reason for preferring internet over textbooks
   - Time saving
   - Latest knowledge
   - Easy accessibility
   - Don’t prefer internet

14. How often do you use internet for dental purpose
   - Every day
   - 2-3 times a week
   - Less frequently
   - Don’t use

15. Should computer and internet usage be encouraged in teaching institutes
   - Yes
   - No

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