

## Assessment of Use of Information and Communication Technology among Interns in Dental Colleges of Bangalore City – A Cross Sectional Survey

Padma K Bhat<sup>1</sup>, Amrita Kumari<sup>2</sup>, Anjan Giriraju<sup>3\*</sup>, Jayachandra MY<sup>4</sup>

<sup>1</sup>Department of Public Health dentistry, Rajarajeswari Dental College and Hospital, Bangalore, India

<sup>2</sup>Department of Public Health dentistry, Pragathi Dental Clinic , Bangalore, India

<sup>3</sup>Department of Public Health dentistry, Rajarajeswari Dental College and Hospital, Bangalore, India

<sup>4</sup>Department of Public Health dentistry, Rajarajeswari Dental College and Hospital, Bangalore, India

### Original Research Article

#### \*Corresponding author

Anjan Giriraju

#### Article History

Received: 23.03.2018

Accepted: 07.04.2018

Published: 30.04.2018

#### DOI:

10.21276/sjds.2018.5.4.6



**Abstract:** The use of computers as a learning tool in the medical and dental fields dates back to early 1970's. Internet is a useful tool to update knowledge. To assess use of Information and Communication technology among interns in Dental Colleges in Bangalore city. A predesigned questionnaire was used. There were 19 questions in the questionnaire and it was concerned to computer skills and training, computer activities, internet access and activities involving dentistry. By using simple random sampling technique about 12 dental colleges were selected to obtain sample size of 500 subjects. Ethical clearance was obtained from Institutional review board. Permission to conduct survey was obtained from Principals of selected dental colleges. Data collected were analyzed using SPSS -18 software and were represented in form of tables. Among 300 subjects (169 females and 131 males), 100 % of subjects had access to computer. About 231 (77%) of subjects had access to computers at home and remaining at the university. Out of 131 male subjects, 106 (81%) subjects opined that they find it very easy to open internet and remaining subjects felt opening internet as fairly easy and average. Out of 169 female subjects, 137 (81%) subjects felt it was very easy to open the computers and remaining subjects felt opening internet as fairly easy and average. The present study results convey that dental students have requisite knowledge to operate the computer for their studies and personal activities. However it is limited by the availability of ICT facilities to support their training using the E-education. In order to support their learning, research and training there is need to establish computer resource centers at the Dental Colleges.

**Keywords:** Computer, Dental students, Communication, Technology.

### INTRODUCTION

Information and Communication Technology (ICT) provides automation, creative tools, local, global communications and support for education. The past few years have seen rapid advances in ICT and pervasiveness of the worldwide web in everyday life which has important implications for education [1]. The use of computers as a learning tool in the medical and dental fields dates back to the early 1970's. In 1971, the Dental Science Study Centre at the University of Kentucky provided Computer Aided Learning (CAL) as part of an experimental flexible dental curriculum, while CAL was introduced into the medical curriculum for General Practice at Glasgow University at 1975[2]. The USA Dental School accreditation standards state that "Graduates must be competent in the use of information technology resources in contemporary dental practice". Similarly, the General Dental Council of the UK recommends that the dental students 'should develop an understanding of the advantages and limitations of electronic sources of health information,

the electronic patient record, electronic decision support systems and tele dentistry. They should have an opportunity to use ICT for research, health care provision and health promotion [3]. Computers and Internet are revolutionizing the process of education at all levels. Besides, being a key tool in the educational processes, computers are also being available in places and at time in which it was previously inaccessible [4]. In developing countries like India, internet is still only available to a minority of health professionals, and often it is not available at the point of care [5]. As of available information, India has 60 lakh internet users, which comprises 13% of Asia internet use population. ICT has brought many changes in medical education and practice in last couple of decades [5]. Teaching and learning medicine particularly has undergone profound changes due to computer technologies. Medical schools around the world particularly in industrialized countries have invested heavily in new computer technologies or in the process of adapting to this technological revolution. In order to catch up with the rest of the

world, developing countries need to research their options, design necessary process and implement essential changes in adapting to new technologies [6]. Dental profession should effectively develop a conducive atmosphere, both in clinical care as well as in dental teaching institutions to go beyond traditional methods of teaching and operational set-ups, to more contemporary methods using the expertise of Information and Communication Technology [4].

On review of literature using different search engines it was found that there were few studies in relation to Indian scenario among medical students and very few studies in relation to Dental students. So a need was felt to conduct a survey to assess use of Information and Communication technology (ICT) access and usage among interns in Dental Colleges of Bangalore city.

#### AIM OF THE STUDY

To assess use of Information and Communication technology (ICT) access and usage among interns in Dental Colleges of Bangalore city

#### Objectives of the study

- To assess use of Information and Communication technology (ICT) access among interns in Dental Colleges of Bangalore city
- To assess use of Information and Communication technology (ICT) usage among interns in Dental Colleges of Bangalore city

#### MATERIALS AND METHODS

This questionnaire based, cross-sectional survey was conducted during January 2016 to March 2016. Questionnaire was distributed to internees during free hours (that is during lunch time), with prior permission from Dean of the Institution. A total of 300 intern dental students were approached for their participation in the survey. After explaining the aim and objectives of the study, written informed consent was obtained from the participants prior to the start of the survey. Participants were assured that their information would be held confidential. Ethical clearance was obtained from the Institutional Review Board of Dental College, Bangalore, and Karnataka.

#### INCLUSION CRITERIA

All interns present on the day of the survey were included.

#### EXCLUSION CRITERIA

##### Interns who were not willing to participate were excluded

A self-administered, pretested, structured questionnaire was employed to record the data. The questionnaire consisted of two sections; the first section included information on demographic characteristics, and second section concerned about computer skills and

training, computer activities, internet access and activities involving internet and dentistry.

#### Sample size calculation

Sample size was calculated using the formula

$$N = \frac{(Z_{\alpha} + Z_{\beta})^2 \times P(1-P)}{d^2}$$

$Z_{\alpha} = \infty$  error;  $P = \leq 0.5$ ,  $Z_{\alpha} = 1.96$ .

$Z_{\beta} = 0.9$  (90% power)

p= prevalence

D = difference to be detected. It is 10%.

Final sample size (N) = 295+10% expected partial response)  
= 300 participants

Test-retest reliability was performed to test the reliability of the questionnaire, it was found to be good with Cronbach's alpha ( $\alpha$ ) 0.86.

#### Distribution of Questionnaire

On the scheduled date taken from the Institution Head, the investigator reached the venue of the survey on time and then collected all the participants at lecture hall and distributed the questionnaire. It was instructed to the participants that they were free to ask any questions in the questionnaire which they did not understand. On an average participant took about 15-20 minutes to fill the questionnaire. The questionnaire was collected back from the participants on the same day.

#### STATISTICAL ANALYSIS

Using the data obtained, a master chart was prepared, later the data was subjected to statistical analysis using Statistical Package for Social Sciences (SPSS Inc., Chicago, IL, USA) version 18.0. The results were represented in the form of tables.

#### RESULTS

The response rate of the survey was 100%. Sample size of the survey was 300, out of which 169(56.3%) participants were female and 131(43.7%) participants were male.

Among 300 participants about 231 participants (77%) had access to computer at home and only 69 (23%) had access to computer at university. About 255 (85%) of participants felt that their access and usage of computers to be very good. About 210 (70%) of the participants responded that they had familiarized themselves with computer through personal computer courses. About 276 (92%) participants used computer to access internet activities. In pursuit of their studies 243 (81%) participants used computer for Microsoft word processing usage. Computer usage for academic activities by participants was about 238 (79%) (Table-1).

Out of 300 participants about 243 (81%) of the participants felt it was very easy to access and use internet. About 194 (65%) of participants responded

that they used internet for dentistry once in a month. Virus problem was regarded as main barrier for usage of internet by about 194(65%) of participants (Table-2).

**Table-1: Distribution of participants according to computer access and usage**

Si no.	Characteristic of computer access and usage	
1	Availability of access to computer	
	a. At home	- 77%
	b. At university	- 23%
	c. Both	- 45%
2	Familiarity to computer	
	a. Through course at University	- 5%
	b. Personal study and experience	-70%
	c. Special course / Training	- 5%
	d. Combination of all above	- 20%
3	Computer activities	
	a. Multimedia	- 2%
	b. Internet	-92%
	c. Academics	- 1%
	d. Combination of above	- 5%
4	Computer usage for pursuit of studies	
	a. Word processing	-81%
	b. Data Management	-1%
	c. Presentations	-15%
	d. Medline	-3%

**Table-2: Distribution of participants according to internet access and usage**

Si no.	Characteristic of internet access and usage	
1	Ease of access to internet	
	a. Very easy	- 81%
	b. Fairly easy	- 12%
	c. Not so easy	- 7%
2	Usage of Internet for Dentistry	
	a. Every day	- 5%
	b. 2-3 days a week	-12%
	c. Once a week	-18%
	d. Once a month	-65%
3	Computer activities	
	e. Multimedia	- 2%
	f. Internet	-92%
	g. Academics	- 1%
	h. Combination of above	- 5%
4	Reason minimising use of Internet use	
	a. Viruses	-65%
	b. Cost of Use	-15%
	c. Time	-8%
	d. Availability of computers	-2%
	e. Lack of confidence	-10%

**DISCUSSION**

The study was conducted with the aim to assess use of Information and Communication technology (ICT) access and usage among interns in Dental Colleges of Bangalore city. The response rate of the survey was 100%. Intern Dental students were selected for the present survey as these students are in verge of finishing the course and becoming dentists. They would be in the better position to explain various aspects regarding use of ICT in their various daily

activities and also in their research oriented activities during their 4 years study tenure. The results of the present study revealed that even though the accessibility of internet facility at the respective institutions was limited, ICT literacy of the study subjects was comparable to the dental students from the developed countries.

Majority of the participants responded to have access to computers. More than two-third of the

participants reported to have access to computer at home and felt its usage to be very easy. This finding in line with studies conducted by Kumar S *et al.*[1] and Griggs P *et al.*[3]. The following result can be attributed to the fact, majority of the subjects get training of basic computer skills both at their primary and secondary schools itself, which in turn increases their accessibility to computer right from their early age.

Our study results showed that majority of the participants got familiarized to computer through special courses. Similar results were seen in studies conducted by Woreta *et al.* [7], Travis LL *et al.* [8] and Jail PK *et al.*[9] The following results can be attributed to the fact, that majority of students in their high school and college vacations tend to attend many computer courses which tend to add more grades to their future career.

Our study results showed that in pursuit of their studies , majority of students 238 (79%) used computer for academic activities and Microsoft word processing was main software used by majority of participants. Similar results were seen in studies conducted by Butali A *et al.* [10], Rajab D *et al.* [2] and Kumar S *et al* [1].

Majority of participants about 81% of the participants had access and used internet with ease, but only about 65% of participants used internet for dentistry also. Similar results were seen in studies conducted by Walmsley *et al.* [11]. And Addah J. [12]. The following results can be attributed to the fact that majority of dental schools in India have not adopted evidence based problem solving approach which utilizes internet in many dimensions and also makes it very necessary for dental students to have requisite knowledge of internet for use in evidence based dentistry and research.

Majority of participants felt virus attack on software during internet usage as main barrier for efficient usage of internet. Similar results were seen in studies conducted by Rajab D *et al.* [5], Butali *et al.* [10] and Tantawi AMM [13].

## CONCLUSION

The findings of the study highlight that interns in training have the requisite knowledge to operate the computer for use in their study and personal activities. However these are limited by availability of ICT facilities to support their training using the E-education.

## ACKNOWLEDGEMENT

Authors would like to acknowledge all the interns of Dental colleges for their participation and Management and college authorities, Bangalore for their support during the study.

## REFERENCES

1. Kumar S, Balasubramanyam G, Duraiswamy P, Kulkarni S. Information Technology practices amongst dental undergraduate students at a Private Dental Institution in India. *Journal of Dentistry of Tehran University of Medical Sciences*. 2009;6(3):130-8.
2. Rajab LD, Baqain ZH. Use of information and communication technology among dental students at the University of Jordan. *J Dent Educ*. 2005 Mar;69(3):387-98.
3. Grigg P, Stephens CD. Computer-assisted learning in dentistry. A view from the UK. *J Dent*. 1998 Jul-Aug;26(5-6):387-95.
4. Kaadakuppe S, Bhat PK, Umesha, Nayak SS. Digital Revolution: Informatics for oral health profession. *IJLTEMAS*,2015;4(1):31-5.
5. Houshyari AB, Bahadorani M, Tootoonchi M, Gardiner JJ, Peña RA, Adibi P. Information and communication technology in medical education: an experience from a developing country. *J Pak Med Assoc*. 2012 Mar;62(3 Suppl 2):S71-5.
6. Sharma C. Information Technology and Online Resources in Dental College Libraries of Haryana. *Library Philosophy and Practice (e-journal)*;310:1-9
7. Woreta SA, Kebede Y, Zegeye DT. Knowledge and utilization of information communication technology (ICT) among health science students at the University of Gondar, North Western Ethiopia. *BMC medical informatics and decision making*. 2013 Dec;13(1):31.
8. Travis LL, Youngblut J, Brennan PF. The effects of an undergraduate nursing informatics curriculum on students' knowledge and attitudes. *Proc Annu Symp Comput Appl Med Care*. 1994: 41-45.
9. Jali PK, Singh S, Babaji P, Chaurasia VR, Somasundaram P, Lau H. Knowledge and attitude about computer and internet usage among dental students in Western Rajasthan, India. *J Int Soc Prev Community Dent*. 2014 Jan-Apr; 4(1): 29-34.
10. Butali A, Adeyemo WL, Akinshipo AO, Fashina A, Savage KO. Use of information and communication technology among dental students and registrars at the faculty of dental sciences, University of Lagos. *Nigerian journal of clinical practice*. 2011;14(4):467-72.
11. Walmsley AD, White DA, Eynon R, Somerfield L. The use of the Internet within a dental school. *Eur J Dent Educ* 2003; 7: 27-33
12. Addah J. Computer literacy and E-learning: Attitudes among first year students in a Ghanaian medical school. *International Journal of Computer Applications*. 2012 Jan 1;51(22).
13. El Tantawi MM, Saleh SM. Attitudes of dental students towards using computers in education-a mixed design study.2008.