

# KNOWLEDGE, VIEWS AND ATTITUDES REGARDING THE INTERNET AND ITS USE IN DENTISTRY AMONG DENTAL UNERGRADUATE AND POST GRADUATE STUDENTS – AN OBSERVATIONAL STUDY

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## Abstract

The use of computer and information technology is on escalation. There is little contemporary literature outlining the knowledge, views and attitudes of dental students regarding the use of the internet in dentistry especially in our country, India. Hence, it was decided to conduct a pilot questionnaire study regarding the internet and its use in dentistry among dental undergraduate (UG) and postgraduate (PG) students.

A prospective, cross-sectional, self-designed questionnaire with questions on various aspects of usage of the internet by the dental students was circulated among the UG and PG students at two dental institutes of Belgaum, Karnataka, India: KLE VK Institute of Dental Sciences (KLE VKIDS) and Maratha Mandal's NGH Institute of Dental Sciences and Research Centre (MMDC).

Completed questionnaires were received from 284 out of 335 UG students and 112 out of 196 PG students, with a response rate of 84.8% and 57.14%, respectively. 82.04% of UG and 87.5% of PG students had personal laptops with access to the internet, indicating easy accessibility to technology. E-mail/surfing was the most common purpose of the internet usage among all the students. Tient relationship.

Our study highlights that the internet technology is regularly used for entertainment than for academic purposes. Hence each graduating dentist should not only have a thorough knowledge of the internet but should also be trained for literature search and this can only be accomplished by proper and compulsory training of these students for various applications of the internet in dentistry as practicing evidence-based health care might come in huge way tomorrow.

**Keywords :** Dentist – internet – questionnaire - students.

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## CONNAISSANCES, VUES ET ATTITUDES CONCERNANT L'UTILISATION DU WEB PARMIS LES ETUDIANTS EN PRE ET EN POST-GRADUES

### Résumé

*Il y a peu de littérature contemporaine décrivant les connaissances, les opinions et les attitudes des étudiants en médecine dentaire en ce qui concerne la recherche sur web en dentisterie, en particulier en Inde. Pour cela, l'objectif de la présente étude était d'évaluer l'ampleur de l'utilisation de «l'internet» dans le domaine de la dentisterie. Par conséquent, il a été décidé de mener une étude pilote sur son utilisation en dentisterie parmi des étudiants du deuxième et du troisième cycle.*

*Un questionnaire portant sur des questions relatives aux divers aspects de l'usage de l'internet par les étudiants en médecine dentaire a été distribué aux étudiants de deux instituts dentaires de Belgaum Karnataka, Inde.*

*284/335 étudiants du deuxième cycle et 112/196 étudiants du troisième cycle ont rempli le questionnaire. 84% des étudiants du deuxième cycle et 87,5% des étudiants du troisième cycle avaient des ordinateurs portables avec accès à l'internet.*

*Vérifier/ lire le courriel électronique ainsi que la navigation sur internet était le but le plus cité parmi tous les étudiants, s'agissant de l'utilisation de l'internet.*

*Les résultats de cette enquête peuvent être essentiellement considérés comme une révélation qui traite diverses raisons de l'utilisation de l'internet par les étudiants UG et PG. Notre étude met en évidence le recours régulier à cette technologie aussi bien dans un but de divertissement qu'à des fins didactiques / académiques. Ainsi, chaque dentiste diplômé doit non seulement avoir une connaissance approfondie de l'internet mais devrait également être formé à la recherche sur les réseaux et moteurs de recherche en ligne.*

**Mots-clés :** dentiste – questionnaire – recherche.

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## Introduction

The internet has taken the world by storm within the last few years. It has gradually become the most essential part of daily lives both in society and in education. Today it is estimated that more than 30 million people all over the world use the internet for commerce, education, research, entertainment, recreation and even business opportunities [1]. In developing countries, the internet is still only available to a minority of health professionals, and often it is not available at the point of care. India is considered a developing country [2]. At present, India has 60,000,000 internet users, which comprises 13% of Asia's total internet use population (461,703,143 users, which is 37% of the world's internet users) (Internet World Stats, 2007 [3]).

The development and expansion of the internet represents one of the greatest advances in our ability to communicate and disseminate knowledge [4]. The literature shows that the internet usage is rapidly increasing; it has become a valuable source for delivery of quality health sciences information for patient care and evidence-based care [5]. To a dentist, this means reliable dissemination of information; electronic patient communication and appointment scheduling; patient referrals to colleagues and transfer of their records to distant locations; online diagnostic analysis, backup, and retrieval; submitting manuscripts to journals; distant learning through webinars; or real-time interactions without the physical presence of faculty [6].

Students have the opportunity to learn about different views on controversial topics, review extensive case reports, and gain knowledge of rare diseases. In addition, to serve as a learning tool, the internet may motivate students to undertake research and help them develop skills in collecting and analyzing data.

To a patient, the internet is useful in obtaining dental information, maps, and direction, checking accounts,

making payment and also for checking, making and changing appointments [7].

The opportunity for unlimited, rapid access to vast quantities of knowledge via internet depends on us. However, while access to the internet is exciting and unrestricted, information on the internet is generally unevaluated. This prevailing, widespread network has a significant impact on how dentists process and present information in the coming decades [8].

Although there has been considerable research concerning the impact of the internet on medical care in general, its impact on dentistry has been less intensively examined [4]. Against this backdrop, the present study was conducted to seek the views of a representative sample of the dental students of Belgaum, a part of North Karnataka in South India, on some aspects of how the internet has impacted dentistry, namely:

1. Estimate the extent and purpose of the internet usage among undergraduate (UG) and postgraduate (PG) students;
2. Identify factors that encourage the students to use the internet;
3. Determine the factors influencing the delivery of oral care to patients;
4. Estimate the extent of use of the internet by dental students themselves;
5. Assess the topics of interest in dentistry looked for on the internet.

## Methodology

The research protocol for this study was reviewed and approved by the Institutional Review Board of two dental institutes of Belgaum, at KLE VK Institute of Dental Sciences (KLE VKIDS) and Maratha Mandal's NGH Institute of Dental Sciences and Research Centre (MMDC).

A prospective, cross-sectional, questionnaire-based study was

conducted at KLE VKIDS and MMDC, Belgaum from July 2011 to September 2011. The sample frame consisted of 335 UG and 196 PG students.

An extensive review of the literature was conducted; a questionnaire was designed in the Department of Oral Medicine and Radiology, KLE VKIDS, Belgaum by a study team. The questionnaire consisted of fifteen structured questions and a combination of open and closed-ended questions which were initially piloted to a small focus group - not included in the study- to determine the validity and the clarity of the questions. The questionnaire consisted of four categories:

- A. Demographic data (questions 1–2).
- B. Information about the use of the internet (questions 3–9).
- C. General opinion about the usage of the internet (questions 10–12).
- D. Information about the internet affecting the dentist-patient relationship (questions 13–15).

Participation in the study was voluntary; all participants remained anonymous. Information on gender, age, and year of study was requested in the questionnaire. During the study period, two batches (2009-10 and 2010-2011) of UG students (third and fourth year) were available. The questionnaires were distributed in appropriate lectures and retrieved immediately after completion. Among the PG students working in different dental disciplines in the two institutions, three batches were available (2009-10, 2010-11 and 2011-2012). They were contacted during working hours in their respective departments. A verbal explanation of the rationale behind this study was given to students before they agreed to participate in the survey. The pilot testing indicated that completion time was approximately 6 to 7 minutes. The questionnaire was hand delivered to all the UG and PG students and was collected the next day.

		UG student (n=284)	PG students (n=112)
Question 1	Age (in years) (mean $\pm$ SD)	21.46 $\pm$ 3.2	28.6 $\pm$ 4.1
Question 2	Gender (Male:Female)	118:166	61:51

Table 1: Questionnaire items on demographic profile of students.

		UG student (n=284)			PG students (n=112)		
Question 3	Have personal laptops / computers	Yes	No		Yes	No	
		233	51		98	14	
Question 4	Primary place of internet access:						
	Home / hostel	192			51		
	College / work place	58			38		
	Cyber cafe	34			23		
Question 5	Browse internet through mobile phones	Yes	No		Yes	No	
		136	148		60	52	
Question 6	Years of using the Internet	1-5	5-8	>8	1-5	5-8	>8
		88	52	144	10	23	79
Question 7	Time of access of the internet per day (in hours)	1-3	4-6	>6	1-3	4-6	>6
		159	41	84	17	72	23
Question 8	Common search engines used:						
	Google	195			86		
	Yahoo	89			26		
	Others	14			21		
Question 9	Awareness about:	Yes	No		Yes	No	
	Online dental courses	219	65		112	–	
	Online dental journals and publications	200	84		112	–	
	Online library resources	202	82		112	–	

Table 2: Questionnaire items on information about use of the internet.

### Statistical analysis

The returned questionnaires were checked for completeness of data and were recorded in a standard proforma. The data was then analysed by means of the Statistical Package for the Social Sciences (SPSS PC Version 15.0).

### Results

An overall response rate of 84.8 percent (284 out of 335) was obtained from UG students whereas it was only 57.14 percent (112 out of 196) from PG students. The UG students were in the age range of 18-24 years and PG students were in the age range of 25-30

years. Among UG students, the female population was 58.45%; the males formed 41.55%. Among PG students there was almost equal representation of sex i.e. 45.53% of the participants were females (Table 1).

The present study showed that among UG and PG students, 82.04% and 87.5% respectively had personal computers/laptops and among all the participants, the internet was accessed most commonly from home. 47.89% of UG and 53.57% of PG students accessed the internet through mobile phones.

Most of the participants (50.7% and 70.54% of UG and PG students,

respectively) have been using the computers for more than 8 years. 56% of UG students had been accessing the internet for 1 to 3 hours per day whereas 64.29% of PG students had been accessing the internet for 4 to 6 hours per day with google being the most common search engine used by all the participants. Most of the UG and all the PG students were aware of online dental courses, journals, publications, etc (Table 2).

When asked about the reliability of information on oral health available on the internet, 94.37% of UGs and 73.21% of PG students agreed that the information on oral health available on the

		UG students (n=284)		PG students (n=112)	
Question 10	Views about reliability of information on oral health available on the internet	Yes 268	No 16	Yes 82	No 30
Question 11	Reasons for preferring the internet as a source of dental information:				
	Recent trends, latest advances	284		112	
	Time saving	284		112	
	Easy accessibility	284		112	
	Cheaper than printed ones	251		112	
Question 12	Principle purpose of internet use:				
	Education (accessing journals, treatment guidelines, e-book, statistical softwares)	181		112	
	Send or receive email	284		112	
	Chatting	284		96	
	Entertainment (download movies, music, wallpapers, screensavers)	179		99	
	Others (News/buy products/ banking/ rail and airway reservation)	122		58	

Table 3: Questionnaire items on general opinion about the usage of the internet.

internet is reliable. All the participants had common view about the various reasons (recent trends, time saving, easy accessibility, etc.) for preferring the internet as a source of dental information with e-mail/surfing being the principle purpose of the internet usage (Table 3).

When asked about the patient dissatisfaction due to dependency upon the internet information, 55.63% of UG and 72.32% of PG students agreed to the fact the usage of the internet by the patients had led to their dissatisfaction due to increased demand of inappropriate interventions. 77.81% of UG and 85.71% of PG students believed that the internet represent a threat to dentist-patient relationship (Table 4).

## Discussion

The internet is extensively used by the current generation of dental students. In the present study, an overall response rate of 84.8% (284 out of 335) was obtained from UG students whereas it was 57.14% (112 out of 196) from PG students. A study conducted on UG students in Chile found an overall response rate of 81% (268 out of 332) [9].

Gender wise comparison revealed that among UG students, the female population (58.45%) was more as compared to the males (41.55%). Among PG students there was almost equal representation of sex i.e. 45.53% of the participants were females. We can definitely appreciate the increasing number of females in the sector of higher education. Similar findings were reported in studies conducted in Yazd and Chile [7, 9]. However, a study conducted in Jordan reported that female undergraduate dental students use the internet less frequently than male students [10].

The present study showed that among UG and PG students, 82.04% and 87.5%, respectively, had personal computers/laptops; similar findings were reported by a study conducted in India that revealed that majority of the dental teachers and students (73.7%) had personal laptops [2].

Also, among all the students, the internet was accessed most commonly from home; only a small percentage of students used computers at college. This finding was consistent with data found in earlier studies conducted in Jordan [10] and Europe [11] where 72% of the students had access to compu-

ters at home. On the contrary, 100% of UG students at college of Chile [9] followed by 70.8% of UG students in India [2] accessed the internet most commonly from college.

In our study, the majority of the participants had more than 8 years of experience in the internet usage. This proportion was greater than 21.6% for Jordan students [10]. Fifty-six percent of UG students had been accessing the internet for 1 to 3 hours per day whereas 64.29% of PG students had been accessing the internet for 4 to 6 hours per day. This is higher than the 5% for Bristol, 20% for Manchester, and 22% for Newcastle students cited in a study conducted in the UK [12].

Google was the most common search engine used by all the participants, a finding inconsistent with the results of a study conducted in Jordan where yahoo was the most commonly used search engine [10].

When asked about the reliability of information on oral health available on the internet, the majority of the students agreed that the information on oral health available on the internet is reliable. This is in agreement with the results found in a study where the majority of the students reported

		UG students (n=284)		PG students (n=112)	
		Yes	No	Yes	No
Question 13	Do you perceive that internet information has led to increased patient dissatisfaction?	158	126	81	31
Question 14	Does the internet foster demand for inappropriate interventions?	221	63	96	16
Question 15	Does the internet represent a threat to dentist-patient relationship?	221	63	96	16

Table 4: Questionnaire items on information about the internet affecting dentist-patient relationship.

that the information on the internet was “fairly” or “moderately” relevant to dentistry and accurate. This may reflect an ongoing improvement in the quality of websites providing dental information [10].

Time saving was the main reason for preferring the internet as a primary source of information among UG students; updating with recent advances was the reason for PG students unlike the study conducted in India among medical students [13]. The principle purpose of the internet use in the present study for majority of the participants was e-mail/surfing or chatting which was in strong contradiction with 91% of students using computers for academics at college of Jordan [10].

When asked about the patient dissatisfaction due to dependency upon the internet information, 55.63% of UG and 72.32% of PG students agreed to the fact that the usage of the internet by the patients had led to their dissatisfaction due to the increased demand of inappropriate interventions. The evolution of the internet has enabled the public to view vast reserves of information at the single click of a computer mouse, to the extent that access to dental information is no longer the sole reserve for dental professionals. As a result, the internet has potential to educate and empower the dental consumer by providing information on oral health services and by supporting self-help and patient choice [14]. A study conducted in Wales to identify how patient informa-

tion on the internet has influenced the delivery of oral care and the use practitioners make of the internet concluded that 39% of respondents agreed that information gained from the internet had led to patients demanding inappropriate care and unrealistic expectations in treatment outcomes, particularly with regard to cosmetic and orthognathic procedures [4]. 77.8% of UG and 85.7% of PG students believed that the internet represent a threat to dentist-patient relationship as it can lead to disagreements on a course of treatment resulting in tension between the dental practitioner and the patient, similar to the findings reviewed previously by few authors [15].

The overall impression of the present study was that UG and PG dental students who participated in the study seemed to be computer literate but they used the internet more frequently for personal work than academic purposes.

## Conclusion

Technology is reinventing the world, and dentists need to keep pace with the people they serve. These new and not-so-new technologies will enhance dental services and productivity, which ultimately will raise the bar for the standard of care in dentistry. The internet is a marvellous communication tool that definitely has a place in dentistry, however, the same degree of caution and similar criteria should be applied to evaluating information and data from internet sources.

In this situation the academic dental community needs to be more vigilant to ensure that electronic dental information are authentic. They should aid students to get trusted dental information from the internet.

The data obtained from the present study indicates that the majority of the participants embrace and use the internet to access dental information. Hence, we believe that the value of available internet resources and of electronic communication in supporting dental learning can no longer be denied. Studies on the internet knowledge and use among dental students are important tools to assess the need to train them for the use of this technology.

Although the results of this study reflect the attitudes of dental students to internet usage as a part of their education, multicenter studies would give a more reliable picture about the use of the internet by dental students in India. The issues raised here may not be generalisable to all dental schools in India, but we believe that a significant number of those schools face these challenges. The study could have recruited more students from different dental colleges which can enhance the validity of the study hence the present results should be viewed as preliminary.

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