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Extent of Usage of Internet Resources and Services by Dental Science Professionals in Karnataka

Dr. Umesha
Chief Librarian,
Kempegowda Institute of Medical Sciences
Bangalore-70
Email: umeshlib@gmail.com

Dr. Chandrashekara M.
Professor, and Chairman
Department of Studies in Library and Information Science
University of Mysore,
Manasagangotri, Mysore, Karnataka.
Email:chandra.uom@gmail.com

Abstract: - *The Rajiv Gandhi University of Health Sciences has started HELINET (Health Library and Information Network) consortia in 2005 to provide access to dental literature and full text e-journals with back files. Dentists depend more and more on the Internet for doing their work better. This study has established that the use of the Internet by dental sciences teachers and students is growing, the information seeking behaviour exhibited in a professional institution, particularly in a dental institution is for their academic, research and point of care. It is also an established fact that students use it for their learning and practice. The information resources used by students is (related to their curriculum) for their regular studies, research, communication and entertainment.*

Keywords: Extent of usage, Internet resources and Services, Dental science professionals, Karnataka

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.
(D. Leung,1997).Dental sciences are like any other science, which has tried to raise the quality of their own speciality (Almas K,Al-Mutairi F,1999). Schleyer, Spallek, and Torres-Urguidy (1998) developed a profile of current Internet users in Dentistry (that is, professionals who either subscribed to dental discussion lists or who frequented dental websites with high traffic) dentists, assistants, hygienists, dental students, and educators. The study reported that respondents used the Internet for discussing clinical cases, obtaining diagnostic and therapeutic information, buying dental products, communicating with patients, and participating in continuing education. A majority of the respondents (80%) considered the Internet to be a useful or very useful resource in dentistry.

Sources of information available via the Internet are increasing exponentially (Asemi, 2005). The Rajiv Gandhi University of Health Sciences has started HELINET (Health Library and Information Network) consortia to provide access to dental literature and full text e-journals with back files. This comes with a steady increase in Internet use for education (Edwards and Bruce, 2002) and for research. The Internet is also making substantial inroads in patient care and dissemination of health care information. It is changing the way health sciences professionals obtain information. They use the Internet and electronic resources to do things like accessing medical records, providing remote patient care through telemedicine facilities, and accessing health care literature (Joos, et al., 2006). Dentists also depend more and more on the Internet. Dental product information, continuing education resources, online supply catalogs, and reference information have made Internet increasingly popular in dentistry (Schleyer,Spallek and Torres-Urguidy, 1998). The present study is an attempt to examine the extent of the usage, Internet and electronic resources and services in dental professionals in Karnataka.

Objectives

To assess the extent of usage of various aspects of web resources by dental science professionals.

Hypothesis

Dental science professionals differ significantly in their extent of usage of various web resources.

Sampling technique

A questionnaire was designed after conducting a comprehensive review of the related literature and survey of the students and the dental science professionals in Karnataka was conducted. There were 1155 questionnaires were administered to the respondents and out of which 623 were received by the researcher.

Statistical Tools used for the Study

As the response rate of the study was 71.74 percent. Data were analyzed by using SPSS software version 19.1. Findings were presented with the help of statistical analysis.

Limitations

- Time for the Dental science professional was the greatest hindrance to the research.
- Researcher could able to limit the sample to 623, for 5% significance level, as the number of respondents were more; research would have been more effective and the findings could have been generalized.

Data Analysis and Interpretation

Table.1 Distribution of the sample by gender and category of respondents

Gender	%	**Category**		**Total**
		PG	**TF**	
Male	%	52.3	60.9	58.3
Female	%	47.7	39.1	41.7
Total	%	100	100	100

CC=.080; P=.044; PG=Post graduate students; TF=Teaching faculty

Table 2 Frequency of access to Internet

Frequency	%	Category		Total
		PG	TF	
Always	%	34.2	16.7	22.2
Very often	%	37.8	40	39.3
Often	%	21.2	33.5	29.7
Seldom	%	6.2	9.3	8.3
Never	%	0.5	0.5	0.5
Total	%	100	100	100

CC= .203**;** P=.000

Among 623 dental professionals, 193 PG students and 430 teaching faculty are respondents to the statement “how frequently do you login to the Internet.” The most reflected response was ‘very often’ (39.3%) followed by ‘often’ (29.7%), ‘always’ (22.2%) and ‘never’ (0.50%) was the least response. The Contingency Coefficient value obtained for the association between respondents and their responses was found to be highly significant (CC= .203; P=.000). From the table it is evident that the frequency of usage was more by PG students than the teaching faculty.

Table 3 Time spent in each session of Internet browsing

Maximumtime spent on the Internet	**%**	**Category**		**Total**
		PG	**TF**	
Upto one hour	%	44	51.2	49
More than one hour	%	24.9	32.1	29.9
More than two hours	%	21.2	11.2	14.3
More than three hours	%	9.8	5.6	6.9
Total	%	100	100	100

CC= .162**;** P=.001

The statement “maximum time spent on the Internet” shows with the help of above table, that the most indicated response was towards ‘up to one hour’ (49.00%) followed by ‘more than one hour’ (29.90%). The least response obtained was 6.9 percent for ‘more than three hours’. The Contingency Coefficient value obtained is found to be non- significant (CC= .162; P=.001).

From the table it is evident that PG students spend more hours using the Internet than the teaching faculty.

Table 4 Willingness to pay for accessing information

Willingness to pay		Category		Total
		PG	TF	
Yes	%	36.3	41.9	40.1
No	%	63.7	58.1	59.9
Total	%	100	100	100

CC= .053**;** P= .188

Table 4: reflects that 193 PG students and 430 members of the teaching faculty had responded to the statement of "are you willing to pay for information." The most reflected response (Overall) was 'no' (59.9%) followed by 'yes' (40.1%). The Contingency Coefficient value obtained is found to be significant (CC= .053; P= .188) indicating a similarity in the pattern of responses by PG students and Teachers.

Table 5 Willingness to pay for your study, research and practice

Responses	%	Category		
		PG	TF	*Total*
Only essential resources	%	28.2	34.4	32.4
Only highly essential resources	%	39.5	30.4	33.4
Only rarely	%	30.6	28.8	29.4
All the resource	%	1.6	6.4	4.8
Total	%	100	100	100

CC= .136**;** P= .069

Table 5: reflects that out of 623 respondents, 124 PG students and 250 teaching faculty responded to the statement of "would you like to pay for your study, research, and practice." The most indicated response (Overall) was 'only highly essential resources' (33.4%) followed by 'only essential resources' (32.4%). The least response was found for 'all the resources' (4.8%). The Contingency Coefficient value obtained is found to be non-significant (CC= .136; P= .069) indicating that the response pattern by PG students and teaching faculty was statistically the same.

Table 6 Formal training for users

Training received	%	Category		
		PG	TF	Total
Yes	%	51.8	42.3	45.3
No	%	48.2	57.7	54.7
Total	%	100	100	100

CC=.088**;** P=.028

Out of 623 respondents, 193 PG students and 430 teaching faculty responded to the statement of "have you ever received any formal training or orientation as to how to search for scientific / technical information**.**" The most indicated response (Overall) was 'no' (54.7%) followed by 'yes' (45.3%). A significant association was observed between the category of responses and the respondents where the contingency coefficient value of .088 was found to be significant at .028 levels. From the table it is clear that PG students received more training than the teaching staff.

Table 7 Usefulness of formal training

Usefulness of the training	**%**	**Category**		**Total**
		PG	**TF**	
Very much useful	%	72	71.4	71.6
Undecided	%	25	25.3	25.2
Not at all useful	%	3	3.3	3.2
Total	%	100	100	100

CC=.009**;** P=.989

Of the 282 respondents, 100 PG students and 182 teaching faculty responded to the statement of "formal training or orientation was useful." The most indicated response (Overall) was 'very much useful' (71.6%) followed by 'undecided' (25.2%) and very few of them indicated 'not at all useful' (3.20%). Further, the Contingency Coefficient value revealed a non-significant association between the usefulness categories and the category of respondents indicating a similarity in their pattern of responses.

Table 8 Use of various services on Internet

Responses	**%**	**Aspects**											
		Searching scientific literature			**Email**			**Accessing website**			**Search engines / Directories**		
		PG	TF	Total	PG	TF	Total	PG	TF	Total	PG	TF	Total
Regularly	%	92.7	90.2	91	88.1	87	87.3	82.9	73	75.8	86	77.2	79.9
Rarely	%	7.3	9.3	8.7	9.3	11.6	10.9	15	24	21.7	11.9	17.2	15.6
Never	%	0	0.5	0.3	2.6	1.4	1.8	2.1	2.8	2.6	2.1	5.6	4.5
Total	%	100	100	100	100	100	100	100	100	100	100	100	100
Test statistics		CC= .051**;** P=.442			CC= .053**;** P= .418			CC=.112**;** P=.020			CC=.108**;** P=.026		

Responses		Aspects											
		List serves			Newsgroups/bulletin boards			IRC/Chat rooms			Internet use for courses (assigned)		
		PG	TF	Total	PG	TF	Total	PG	TF	Total	PG	TF	Total
Regularly	%	15	10.7	12	31.1	19.5	23.1	13	10	11.1	46.1	33.5	37.4
Rarely	%	53.9	57.2	56.2	52.3	59.1	57	47.2	35	39	34.7	41.9	39.6
Never	%	31.1	32.1	31.8	16.6	21.4	19.9	39.9	54	49.9	19.2	24.7	23
Total	%	100	100	100	100	100	100	100	100	100	100	100	100
Test statistics		CC=.062; P=.305			CC=128; P= .006			CC=.133;P= .004			CC=.033;P=.004		

Responses		Aspects											
		Internet use for courses (own)			Downloading software			Playing audio/video			Shopping online		
		PG	TF	Total	PG	TF	Total	PG	TF	Total	PG	TF	Total
Regularly	%	44	27	32.3	40.9	27.4	31.6	30.6	14	19.1	9.8	7.4	8.2
Rarely	%	36.3	42.3	40.4	42	47	45.4	38.9	46	43.8	39.9	34	35.8
Never	%	19.7	30.7	27.3	17.1	25.6	23	30.6	40	37.1	50.3	58.6	56
Total	%	100	100	100	100	100	100	100	100	100	100	100	100
Test statistics		CC=.173; P=.000			CC=.141; P=.002			CC=.193; P=.000			CC=.079; P= .142		

From Table 8 the researcher opines that of the 623 respondents, 193 PG students and 430 teaching faculty responded to the statement “Aspects of Internet usage regularly / rarely”. In the aspect of “searching scientific literature” most of the respondents (Overall) pointed out ‘regularly’ (91%), followed by ‘rarely’ (8.7%) and we find very few responses for the category ‘never’ (0.3%).

Most of the respondents for “Email” indicated ‘regularly’ (87.3%) followed by ‘rarely’ (10.9%) and ‘never’ (1.8%). The Contingency Coefficient tests revealed non-significant associations for both of these aspects indicating a similarity in the response patterns of both PG students and teachers.

For the statement of “accessing websites” the most indicated response was ‘regularly’ (75.8%), followed by ‘rarely’ (21.7%) and ‘never’ (2.6%). The Contingency Coefficient tests revealed a significant association with 0.112 and significant level of 0.020. From the table it is clear that PG

students accessed websites more than the teachers. The analysis for "search engines / directories" revealed the most repeated response as 'regularly' (79.9%), followed by 'rarely' (15.6%), and 'never' (4.5%). The Contingency Coefficient tests revealed a significant association between the responses and the respondents (CC=.108; P=.026) revealing that again PG students used the Search engines/directories more than the teaching faculty.

In the case of "The list serves (Email discussion group)", 56.2 percent of the respondents point out 'rarely', followed by 'never' (31.8%) and 'regularly' (12%). The Contingency Coefficient tests revealed a non-significant association with .062 and significant level of .305. It is indicating a similarity in the response pattern of PG students and teaching faculty.

When the analysis was done for "news groups / bulletin boards", 57 percent respondents indicated 'rarely', followed by 23.1 percent as 'regularly' and the remaining 19.9 percent indicated 'never', and the Contingency Coefficient tests revealed a significant association (CC=.128; P=.006). For "IRC / chat room", most of the respondents indicated 'never' (49.9%), followed by 'rarely' (39%) and 'regularly' (11.1%). The Contingency Coefficient tests revealed a significant association with .133 and significant level of .004. Also, 37.4 percent of the respondents (regularly) focused on "Internet use for courses (assigned)" followed by 39.6 percent on 'rarely' and remaining 23 percent indicated 'never'. The Contingency Coefficient of .033 was found to be significant at .004 levels. For all these 3 aspects - Newsgroups/bulletin boards, IRC/Chat rooms and Internet use for courses (assigned), PG students used more of these aspects than the teaching faculty, which was statistically significant.

The40.4 percent of the respondents indicated 'rarely' followed by 'regularly' (32.3%) and 'never' by 17.1 percent of the respondents. For "downloading software" aspect, 45.4 percent of the respondents indicated 'rarely' (45.4%), followed by 'regularly' (31.6%) and 'never' by 23 percent. For the statement of "Playing audio or video over the Internet / downloading music or video" the most indicated response was 'rarely' (43.8%) followed by 'never' (37.1%) and 'regularly' (19.1%). The Contingency Coefficient tests revealed a significant associations for all the 3 above mentioned aspects- Internet use for courses (own) (CC=.173; P=.000), Downloading software (CC=.141; P=.002) and Playing audio/video (CC= .193; P= .000). It was observed that for all these aspects the usage was more significantly by PG students than teaching faculty.

For "Online Shopping" 56 percent respondents indicated 'never' followed by 35.8 percent on 'rarely' and 8.2 percent on 'regularly'. A non-significant association was observed between the category of respondents and the category of responses where CC value of .079 was found to be non-significant (P=.142).

Table 9 Use of RGUHS Consortia

Response	%	Category		Total
		PG	TF	
Yes	%	56	67.9	64.2
No	%	44	32.1	35.8
Total	%	100	100	100

CC= .114; P= .004

Among 623 respondents, 193 PG students and 430 teaching faculty responded to the statement "Accessing the journals from RGUHS consortia". On the whole 64.2 percent indicated that they do access. 56 percent PG students and 67.9 percent teaching faculty indicated 'yes' to the statement. The Contingency Coefficient tests revealed a significant association with .114 and significant level of .004. We find that the teaching faculty accessed journals from RGUHS consortia significantly more than PG students.

Findings

1. About 49 percent of the users access the Internet up to one hour per session and they login into the Internet (39.30%) very often.
2. 40.10 percent of the users are willing to pay for information, wherever a serious need arises. At the same time, it is inferred that routinely, 59.90 percent respondents are not interested to pay for information access.
3. The study interpretation provides the view that 54.70percent of the respondents have not received any formal training.
4. 71.60percent of the users feel that 'formal training on searching and accessing information' is very essential and useful.
5. 91percent of the respondents are using the Internet for searching scientific literature, 87.30 percent for e-mail, 75.80 percent for accessing websites and 37.50 percent for course materials, 79.90 percent of the respondents are using Internet search engines or subject directories for searching for information.

It has already been established that the use of the Internet by teachers and students is growing, the information seeker in a professional institution, particularly in a dental institution is for their academic, research and point of care, including communication and collaboration. It is also an established fact that students use it for their learning and practice. The information resources used by students is (related to their curriculum) for their regular studies, research, communication and entertainment. The main need in this context is the awareness of resources and searching knowledge, in addition, there is a significant use of the Internet for many social roles and entertainment. Huang et al. (2007) envisages that the "Web can act as an instrument of communication, education, business, entertainment, finance, staying informed, passing time, relaxing, escape, socialization, work, surveillance, etc."

The acceptance by students in the use of the Internet (online) as a medium is growing in academia, both at work place and at home. At the same time, institutions are restricting the use of the Internet for academic and access to scholarly materials only. The use of social networks like Facebook, Skype and chats are blocked, but some of the discussion forums and YouTube are used for learning and presentation.

The study has accepted the above hypothesis as the test statistics revealed the extent of use of various tools of Internet and web resources by dental science professionals, also there are some non-significant parameters. The extent and effective use of the web depends on both, access infrastructure and the resources relevant to academic, research and point-of-care service to the users. The following finding throws light on it:

- The study found that the status of e-resources appeared to be almost at the same level across all the dental institutions in Karnataka, due to HELINET consortia of the Rajiv Gandhi University of Health Sciences.
- The use of the Internet, as per the response, is predominantly for searching scientific literature, email, accessing websites and course materials. Other aspects such as listserv, newsgroups, and IRC chat rooms are very rare. Few respondents are using the Internet for downloading software, playing audio/video and shopping online.
- The survey response of the students shows that time and frequency of the use by students is more than the faculty. Ranking on the purpose of Internet use is as follows:
- Searching scientific literature (highest response),
- Emails,
- Use search engines / directories,
- Accessing websites,
- News group/bulletin boards,
- Listservs,
- IRC/Chat rooms (lowest response).

The response to computer user ratio is uneven and respondents do not have clarity. The study also covers the impact of the media on information seeking behavior, which generally has a huge impact on academic institutions. Most respondents, among dental institutions in Karnataka, preferred searching information in the hybrid environment (electronic and print media). There were no outright differences in the medium preferences of faculty and students, in the present study. While both print and electronic sources remain the most favored medium for academics, electronic or web resources were also popular, due to consortia access to RGUHS.

Considering the current trends in online behavior, the results illustrate that the use of the Internet is gradually on the rise as more and more people become web literate. On an average, most people can now use a wide variety of web information sources or channels, hence it is required to augment ICT infrastructure.

The use of e-resources, in order of response and frequency of access, is in consonance with the preferential job of the category of students and faculty. The extent of use of the resources depends on the purpose of the use, enunciated in the next hypothesis.

Conclusion

It has already been established that the use of the Internet by dental sciences teachers and students is growing, the information seeking behaviour exhibited in a professional institution, particularly in a dental institution is for their academic, research and point of care. It is also an established fact that students use it for their learning and practice. The information resources used by students is (related to their curriculum) for their regular studies, research, communication and entertainment. The main need in this context is the awareness of resources and searching knowledge, in addition, there is a significant use of the Internet for many social roles and entertainment. Huang et al. (2007) envisages that the "Web can act as an instrument of communication, education, business, entertainment, finance, staying informed, passing time, relaxing, escape, socialization, work, surveillance, etc."

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