Use and Retrieval pattern of E-Health Information by Medical Students in Pathanamthitta District: A Survey

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ABSTRACT

E-health or Electronic health information is a powerful tool for health care professionals which provides information about diseases, symptoms, therapeutics procedure and pharmaceutical products, surgical operation techniques, prescriptions, etc. It also helps the students to act as an important source of studying, learning and research in patient care. This study is aimed to provide a clear picture of use and retrieval pattern of e-health information. A structured questionnaire was used to collect data from medical college students in Pathanamthitta district in Kerala state. The study revealed that majority of the students prefer mobile phones for accessing e-health information and websites /web portals as the most preferred electronic source of getting e-health information. The study also reveals that PubMed and Medline databases are prefer for accessing e-health information and clinical information is the most important purpose of retrieve e-health information by medical students.

Keywords: E-health information, Retrieval Pattern.

1. INTRODUCTION

Health information through electronic format or electronic device is known as "Electronic-Health Information or E-Health Information." E-health information helps medical or health care professionals for better patient care, learning and research activities. It provides up-to-date information about various diseases, symptoms, therapeutics procedure and pharmaceutical products, surgical operation techniques, prescriptions, etc.

2. REVIEW OF LITERATURE

Haneefa and Jina (2011) had already conducted a study on the web based information retrieval pattern of the students of Calicut Medical College. The major purpose of the study was to assess the web-based information retrieval pattern of the students. Structured questionnaire was used for data collection. The study revealed that internet access, computer infrastructure and e-resources are not adequate in the Calicut Medical College and these are the main reason of underutilization of web-based information resources. The study also revealed that majority of the students often use the web for communication and to get general information and recent advances in medicine and a good number of the students use web-mail and social networking sites very frequently. Finally it is reported that all the students use simple search methods for accessing the web. Similarly, Bhat and Mudhol (2014) had conducted a study on the use of e-resources by faculty members

and students of Sher-E-Kashmir Institute of Medical Science. The main objective of the study was to assess the contemporary use of e-resources. It is found that the faculty members and students heavily depend on e-resources for their needed information to keep themselves up to data in their subject areas. A similar study was conducted by Aldebasi and Ahmed (2013) on the computer and internet usage among medical students in Quassim University. They reported that majority of the male and female students use computer for academic activities and use Google for accessing the websites. Baikady and Mudhol (2011) had also conducted a study on the perception of web as learning resources by the faculty members and post graduate students in medical college libraries in coastal Karnataka. The result showed that the academic community prefers to use the web more than to the library.

3. OBJECTIVES OF THE STUDY

The main objectives of the study are:-

1. To know various electronic devices used by students for retrieving e-health information.

2. To identify different e-health information sources retrieval by students.

3. To find out the purpose of retrieving e-health information by students.

4. To determine different search logic used for e-health information retrieval.

5. To examine the format preferred for downloading e-health information from the web.

6. To find out the various problems faced by the students while retrieving e-health information.

4. METHODOLOGY

The study covered a representative sample of the MBBS, MD, MS and DNB medical students in Pathanamthitta District in Kerala. Dental, Nursing and other paramedical students were excluded from the study. A Structured questionnaire was used for collecting required data from the students. A total of 157 questionnaires were distributed and 132 questionnaires were received back showing an 84 percentage of response rate. The results are as follows.

5. ANALYSIS

The data were analysed to understand the electronic media used for accessing and using e-health information, sources of e-health information, databases of e-health information used, purpose of using health information, method of search used, different search logics available, format preferred for downloading and problems in accessing and using e-health information on the web. They are discussed below.

5.1 Electronic Media Used

Medical students are using different devices or gadgets for accessing internet. It may be a desktop computer, laptop, I-Pad, mobile or a tablet. It is found that the medical students use desktops, laptops, I-Pads, mobile phones and tablets for accessing internet (see Table 1).

Table 1
Electronic Media used

User Category	Desktop Computer	I-pad	Television	Laptop	Mobile Phone	Other Electronic Media
Total Sample (N=132)	16 (12.12%)	3 (2.27%)	2 (1.51%)	51 (38.63%)	58 (43.93%)	2 (1.51%)
Male (n=67)	8 (11.94%)	3 (4.47%)	1 (1.49%)	23 (34.32%)	32 (47.76%)	-
Female (n=65)	8 (12.30%)	-	1 (1.53%)	28 (43.07%)	26 (40%)	2 (3.07%)
MBBS (n=69)	7 (10.14%)	2 (2.89%)	2 (2.89%)	19 (27.53%)	37 (53.62%)	2 (2.89%)
MD (n=29)	7 (24.13%)	1 (3.44%)	-	10 (34.48%)	11 (37.93%)	-

MS (n=15)	2 (13.33%)	-	-	9 (60%)	4 (26.66%)	-
DNB (n=19)	-	-	-	13 (68.42%)	6 (31.57%)	-

The table shows that 43.93 percentage of medical students prefer mobile phones and 38.63 percentage prefer laptops for accessing e-health information. Only 12.12 percentage of medical students prefer desktop computers for accessing e-health information.

The gender wise analysis shows that majority of male students (47.76 percentage) use mobile phones and 43.07 percentage of female students prefer laptops for accessing e-health information.

The course wise analysis shows that 53.62 percentage of MBBS students 37.93 percentage M.D. students prefer mobile phones. At the same time 60 percentage of MS students and 68.42 percentage of DNB students prefer laptops for accessing e-health information.

5.2 Sources of E-health Information
Medical students access various sources of e-health information for collecting required information for their academic activities. There are many sources like e-journals, e-zines, e-newspapers, websites, television, etc. The study made an attempt to know which electronic source is most preferred by the medical students for accessing e-health information. It is found that majority of the students prefer web site/web portals the most compared to other sources of e-health information (see Table 2).

Table 2
Sources of E-health Information

User Category	E-Journals	E-Magazines	E-mail	E- Newspaper	Websites/ Web portals	Television	Others
Total Sample (N=132)	34 (25.75%)	19 (14.39%)	19 (14.39%)	10 (7.57%)	48 (36.36%)	1 (0.75%)	1 (0.75%)
Male (n=67)	19 (28.35%)	10 (14.92%)	9 (13.43%)	5 (7.46%)	23 (34.32%)	1 (1.49%)	-
Female (n=65)	15 (23.07%)	9 (13.84%)	10 (15.38%)	5 (7.69%)	25 (38.46%)	-	1 (1.53%)
MBBS (n=69)	11 (15.94%)	14 (20.28%)	8 (11.59%)	8 (11.59%)	26 (37.68%)	1 (1.44%)	1 (1.44)
MD (n= 29)	13 (44.82%)	2 (6.89%)	6 (20.68%)	1 (3.44%)	7 (24.13%)	-	-
MS (n=15)	5 (33.33%)	3 (20%)	1 (6.66%)	-	6 (40%)	-	-
DNB (n=19)	5 (26.31%)	-	4 (21.05%)	1 (5.26%)	9 (47.36%)	-	-

The table shows that 34.32 percentage of male students and 38.46 percentage of female students mostly prefer websites/ web portals for getting e-health information. There is no change in the preference to MBBS, MS and DNB students, but 44.82 percentage of MD students prefer e-journals the most.

5.3 Database of E-health Information used
Every medical students use various databases to find the recent developments and research activities in patient care. It is found that majority of the medical students use Medline and PubMed database for accessing e-health information (see Table 3).

Table 3
Databases used

Users category	PubMed	EBSCO	Medline	Other Databases
Total Sample (N=132)	55 (41.66%)	10 (7.57%)	55 (41.66%)	12 (9.09%)
Male (n=67)	26 (38.80%)	7 (10.44%)	26 (38.80%)	8 (11.94%)
Female (n=65)	29 (44.61%)	3 (4.61%)	29 (44.61%)	4 (6.15%)
MBBS (n=69)	30 (43.47%)	2 (2.89%)	29 (42.02%)	8 (11.59%)
MD (n=29)	13 (44.82%)	2 (6.89%)	11 (37.93%)	3 (10.34%)
MS (n=15)	6 (40%)	4 (26.66%)	5 (33.33%)	-
DNB (n=19)	6 (31.57%)	2 (10.52%)	10 (52.63%)	1 (5.26%)

The table shows that all different groups (male, female, MBBS, MD, MS or DNB) of medical students use PubMed and Medline for accessing e-health information.

5.4 Purpose of Use of E-health Information

E-health information is accessed for different purposes. It may be for general information about drugs, rational prescribing, research work, writing articles, clinical information, therapeutic guidelines etc. Medical students are largely using e-health information sources for accessing clinical information. Table-4 shows the different purposes of using e-health information by students.

Table 4

Purpose of Using E-health Information

User Category	To get general information	To know about drugs	Research work	Writing articles	To get clinical information	To get therapeutic guideline	Carrier information	Preparing project/ Practical
Total Sample (N=132)	35 (26.51%)	6 (4.54%)	14 (10.60%)	3 (2.27%)	40 (30.30%)	11 (8.33%)	18 (13.63%)	5 (3.78%)
Male (n=67)	13 (19.40%)	3 (4.47%)	9 (13.43%)	2 (2.98%)	18 (26.86%)	8 (11.94%)	11 (16.41%)	3. (4.47%)
Female (n=65)	22 (33.84%)	3 (4.61%)	5 (7.69%)	3 (4.61%)	22 (33.84%)	3 (4.61%)	7 (10.76%)	-
MBBS (n=69)	19 (27.53%)	4 (5.79%)	6 (8.69%)	-	27 (39.13%)	4 (5.79%)	6 (8.69%)	2 (2.89%)
MD (n=29)	8 (27.58%)	1 (3.44%)	4 (13.79%)	1 (3.44%)	6 (20.68%)	4 (13.79%)	4 (13.79%)	1 (3.44%)
MS (n=15)	2 (13.33%)	-	3 (20%)		4 (26.66%)	2 (13.33%)	3 (20%)	1 (6.66%)
DNB (n=19)	6 (31.57%)	1 (5.26%)	1 (5.26%)	1 (5.26%)	3 (15.78%)	2 (10.52%)	5 (26.31%)	-

The table shows that majority of the male students use e-health information for clinical purposes. But the female students use it for both getting general information and for clinical information. The course wise analysis shows that majority of the MBBS and MS students use e-health information for clinical purposes, but the MD and DNB students use it for accessing general information.

5.5 Search Methods

The medical students use different search methods for retrieving e-health information. It is found that majority of the medical students use simple search method for accessing e-health information.

Table 5
Search method used

User category	Search Methods				
	Simple Search	**Boolean search**	**Field search**	**Truncation**	**Phrases**
Table Sample (N=132)	75 (56.81%)	14 (10.60%)	24 (18.18%)	1 (0.75%)	18 (13.63%)
Male (n=67)	38 (56.71%	9 (13.43%)	9 (13.43%)	1 (1.49%)	10 (14.92%)
Female (n=65)	37 (56.92%)	5 (7.69%)	15 (23.07%)	-	8 (12.30%)
MBBS (n=69)	44 (63.76%)	8 (11.59%)	16 (23.18%)	-	1 (1.44%)
MD (n=29)	18 (62.06%)	3 (10.34%)	2 (6.89%)	1 (3.44%)	5 (17.24%)
MS (n=15)	4 (26.66%)	3 (20%)	4 26.66%)	-	4 (26.66%)
DNB (n=19)	9 (47.36%)	-	2 (10.52%)	-	8 (42.10%)

The table shows that the male and female students as well as the MBBS, MD, MS and DNB students use simple search method for retrieving e-health information. However the MS students prefer phrase search as well.

5.6 Search Logic used

Medical students use different search logics for retrieving e-health information. Students use various search logics based on subjects, diseases, symptoms, drugs etc. It is found that majority of the students search on diseases for retrieving e-health information (see Table 6).

Table 6
Search logic used

User Category	Search Logics				
	Based on subject	**Based on Diseases**	**Based on symptoms**	**Based on drug**	**Others**
Total Sample (N=132)	46 (34.84%)	52 (39.39%)	27 (20.45%)	5 (3.78%)	2 (1.51%)
Male (n=67)	20 (29.85%)	31 (46.26%)	12 (17.91%)	2 (2.98%)	2 (2.98%)
Female (n=65)	26 (40%)	21 (32.30%)	15 (23.07%)	3 (4.61%)	-
MBBS (n=69)	22 (31.88%)	28 (40.57%)	17 (24.63%)	-	2 (2.89%)
MD (n=29)	14 (48.27%)	10 (34.48%)	3 (10.34%)	2 (6.89%)	-
MS (n=15)	5 (33.33%)	6 (40%)	2 (13.33%)	2 (13.33%)	-

DNB (n=19)	5 (26.31%)	8 (42.10%)	5 (26.31%)	1 (5.26%)	-

The table shows that there is no much difference in the opinions of male or female ane MBBS, MD, MS or DNB students regarding the search logic used for accessing e-health information on the web. It is either subject or name of disease to the majority.

5.7 Format used for downloading

E-health information can be downloaded in different formats. The analysis shows that majority of the students prefer PDF format for downloading e-health information.Table-7 gives the different formats used for downloading e-health information by medical students.

Table 7
Format used for Downloading

User Category	PDF	Video format	HTML	Image format	Other formats
Total sample (N=132)	86 (65.15%)	31 (23.48%)	1 (0.75%)	11 (8.33%)	3 (2.27%)
Male (n=67)	41 (61.19%)	19 (28.35%)	-	5 (7.46%)	2 (2.98%)
Female (n=65)	45 (69.23%)	12 (18.46%)	1 (1.53%)	6 (9.23%)	1 (1.53%)
MBBS (n=69)	41 (59.42%)	20 (28.98%)	1 (1.44%)	6 (8.69%)	1 (1.44%)
MD (n=29)	21 (72.41%)	4 (13.79%)	-	2 (6.89%)	2 (6.89%)
MS (n=15)	11 (73.33%)	1 (6.66%)	-	2 (13.33%)	1 (6.66%)
DNB (n=19)	14 (73.68%)	3 (15.78%)	-	1 (5.26%)	1 (5.26%)

Table 7 show that both male and female students as well as the MBBS, MD, MS and DNB students prefer PDF for downloading compared to other formats available on the web.

5.8 Problems

The students were asked to note their problems in accessing and using e-health information on the web. It is found that majority of the students face slow accessibility as the major problem of retrieving e-health information. Different problems of retrieving e-health information are given in table -8.

Table 8
Problems

User category	Lack of awareness	High cost of electronic devices	Restricted access	Slow accessibility	No internet connection	Lack of relevant information in your subject area	Limited time to use	Lack of electronic skills/ IT skills
Total Sample (N=132)	7 (5.30%)	7 (5.30%)	24 (18.18%)	41 (31.06%)	25 (18.93%)	4 (3.03%)	20 (15.15%)	4 (3.03%)
Male (n=67)	6 (8.95%)	-	16 (23.88%)	20 (29.85%)	13 (19.40%)	2 (2.98%)	8 (11.94%)	2 (2.98%)
Female (n=65)	1 (1.53%)	7 (10.76%)	8 (12.30%)	21 (32.30%)	12 (18.46%)	2 (3.07%)	12 (18.46%)	2 (3.07%)
MBBS (n=69)	8 (11.59%)	2 (2.89%)	15 (21.73%)	18 (26.08%)	11 (15.94%)	2 (2.89%)	10 (14.49%)	3 (4.34%)
MD (n=29)	-	2 (6.89%)	5 (17.24%)	11 (37.93%)	7 (24.13%)	-	3 (10.34%)	1 (3.44)

| **MS (n=15)** | 1 (6.66%) | 1 (6.60%) | 4 (26.66%) | 6 (40%) | 1 (6.66%) | - | 2 (13.33%) | - |
| **DNB (n=19)** | - | - | - | 6 (31.57%) | 6 (31.57%) | 2 (10.52%) | 5 (26.31%) | - |

The table shows that all male and female students, and MBBS, MD, MS and DNB students feels that slow accessibility is the major problem they face in accessing and retrieving required e-health information from the web.

6. FINDINGS

1. Majority of the students prefer mobile phones for accessing e-health information.
2. Majority of male students prefer mobile phones than female students for accessing e-health information.
3. Majority of MBBS and MD students prefer mobile phones for accessing e-health information.
4. Majority of MS and DNB students prefer laptops for accessing e-health information.
5. Majority of the students use websites /web portals as the most preferred source of getting e-health information.
6. Majority of female students use websites / web portals as the most preferred source of getting e-health information than male students.
7. Majority of MBBS, MS and DNB students use websites /web portals as the most preferred sources of getting e-health information.
8. Majority of MD students use e-journals as the most preferred source of getting e-health information.
9. Majority of the students use PubMed and Medline databases are prefer for accessing e-health information.
10. Majority of female students prefer PubMed and Medline database for accessing e-health information than male students.
11. Majority of MBBS, MD, MS students prefer PubMed database for accessing e-health information.
12. Majority of DNB students prefer Medline database for accessing e-health information.
13. Majority of the students use e-health information sources for accessing clinical information.
14. Majority of the female students use e-health information sources for accessing general and clinical information than male students.
15. Majority of the MBBS and MS students use e-health information sources for accessing clinical information.
16. Majority of the MD and DNB students use e-health information sources for accessing general information.
17. Majority of students use simple search method for accessing e-health information.
18. Majority of female students use simple search method for accessing e-health information than male students.
19. Majority of the MBBS, MD and DNB students use simple search method for accessing e-health information.
20. Majority of MS students use simple as well as field and phrase search methods for accessing e-health information.
21. Majority of the students search e-health information using name of diseases.
22. Majority of the male students search e-health information using name of diseases and female students use subject for the purpose.
23. Majority of the MBBS, MS and DNB students search on the basis of the name of diseases.
24. Majority of MD students do search on the basis of subject.
25. Majority of the medical students prefer PDF format for downloading e-health information.
26. Majority of the female students prefer PDF format for downloading e-health information than male students.
27. Majority of MBBS, MD, MS and DNB students prefer PDF format for downloading e-health information.
28. Majority of the students feel slow accessibility as the major problem of retrieving e-health information.
29. Majority of the female students faced slow accessibility as the major problem of retrieving e-health information than male students.
30. Majority of the MBBS, MD, MS and DNB students feel that slow accessibility is the major problem of retrieving e-health information than male students.

7. CONCLUSION

The results of the study reveals that the students' community prefer mobile phones for accessing e-health information and websites /web portals as the most preferred electronic source of getting e-health information and the study also reveals that PubMed and Medline databases are the most preferred database for accessing e-health information.

Slow accessibility is the major difficulty faced by the medical students in accessing and using e-health resources on the web. This has to be taken care of as the e-resources on the web are becoming the major source of information for study and learning and difficulty in getting access to these sources will adversely affect the academic performance of the students.

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