International Journal of Life Sciences, Biotechnology and Pharma Research Vol. 13, No. 7, July 2024 Online ISSN: 2250-3137
Print ISSN: 2977-0122

DOI: 10.69605/ijlbpr_13.7.2024.69

ORIGINAL RESEARCH

Perception of undergraduate first year medical students towards web-based literature retrieval

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Received Date: 22 May, 2024 Accepted Date: 28 June, 2024

ABSTRACT

Introduction: In the medical field the electronic research is mostly confined to the postgraduate students. The incidence of literature retrieval has been scarcely reported in Indian undergraduate MBBS students. The knowledge attitude and practices towards web-based literature retrieval was studied here. **Methods:** This cross-sectional study was done in the undergraduate first year medical students of a government tertiary level teaching institute over a period of four years. The pre-validated questionnaire containing nine closed ended questions were distributed to the students. The answers given by the students were analyzed using the standard statistical methods. Comparison between the pre and post covid-19 batches was performed. **Results:** Out of 415 analysed students, majority (59.5%) of the students spent less than thirty minutes per day for searching the medical literature. 92.7% students were never trained for medical literature search on internet. Google (95.9%) was the most favored website used by the students for the medical literature search followed by PubMed. The most common source of information the students used was Wikipedia (73.5%) followed by the individual blogs and views. eBooks and Journals were rarely searched by the students. The Post Covid-19 batches had been using internet for the medical literature search earlier than the Pre-Covid batches (19(10.7% vs 67(28.15%), p value <0.05), spent more time during the day in all categories (p value < 0.05), had got more training (161(90.1%) vs 224(94.1%), p <0.05) and were more trained by the parents. They searched more medical journals and eBooks (17(9.6%) vs 39(16.38%), p value < 0.05). Post Covid-19 students also felt that literature search would be more useful in expanding knowledge, preparing class presentation (40(22.6%) vs 91(38.24%) and 37(20.9%) vs 58(24.37%); p value <0.05). **Conclusion:** The undergraduate medical students despite using internet, do not frequently do web based medical literature search. Self and peer training are the major factors to acquaint oneself for this research. The journal articles and ebooks are less commonly accessed. The post Covid-19 students use the internet for medical literature search more commonly.

Keywords: Covid-19, Internet, Medical literature, Undergraduate

INTRODUCTION

With the advent of the World Wide Web, the information has virtually come to the thumbs of the common man. Never has been information retrieval so easy. But in the medical field the electronic research is mostly confined to the postgraduate students. They are the ones who perform more frequent and extensive computer-based literature search it most likely is because of curricular demand, infrastructure and training. The incidence of literature retrieval has been scarcely reported in Indian undergraduate MBBS students.

Kalita et al found that the motivation for computer-based literature search was for presentation in 90%, research in 65% and patient management in 60.3% in post graduate students(1). In one study done on undergraduate medical students it was found that The majority indicated that they preferred to first consult another individual (colleagues, lecturers, hospital staff) for their clinical queries (60.9% in the initial survey and 61.9% in the follow-up survey), with no change in their overall preference following the EBM curriculum six months later(2).

This study was undertaken to understand the behaviour of the web-based medical literature search in the undergraduate medical students. In addition, the comparison of the pre Covid-19 and Post Covid-19 behaviour in the students was also analyzed.

DOI: 10.69605/ijlbpr_13.7.2024.69

METHODS

This cross-sectional study was done in the undergraduate medical students of a government tertiary level teaching institute over a period of four years after getting approval from the Institutional Ethical Committee. The medical students of first professional MBBSwere eligible to be included in the study after they gave informed consent. Two batches of students(2018, 2019) were admitted in the pre-covid time and two(2020, 2021) were from post covid era.The students who refused to provide consent, did not give back the answered questionnaire or replied to < 25 % of total questions were excluded from the study. The participation in this study was voluntary and no identifying information was collected at any time during the survey. Full privacy and confidentiality of the subjects was maintained. Informed consent was taken at the beginning of the questionnaire explaining the exact purpose of the study.

The pre-validated questionnaire containing nineclosed ended questions were distributed to the students. They were explained the nature of the study and were asked to give the filled questionnaire after 30 minutes. Nine closed ended questions were there which tested the practices and behaviour about the web-based literature search.

The answers given by the students were analyzedusing the standard statistical methods. The results were compiled in Microsoft excel. Descriptive statistics were used to analyze the results.Categorical analysis was done using the chi square test. SPSS version 23 software was used for the statistical analysis.

RESULTS

Out of 497 eligible undergraduate medical students from four separate batches, data from 487 students was collected yielding a response rate of 97.98%. Ten students were excludedfrom the study as fiveof them were absent, two refused to give consent andthree students did not return questionnaire. The batch-wise distribution of the students is depicted in Table 1. Majority of the students were girls (54.2%). Around 15% of the students were not aware that the medical literature can be searched using internet and their responses were not analyzed further. Data from 415 students was analyzed, as others had not done any medical literature search.

The knowledge of the undergraduate students about the usage of medical literature is being described in Table 2. Nearly half of them(50.6%) have been using internet for searching medical literature only for less than 6 months and 21% of them had used it for at least one year. It was found that majority (59.5%) of the students spent less than thirty minutes per day for searching the medical literature. Only few students (6.5%) spent more than two hours per day for searching the medical literature.92.7% students were never trained for literature search on internet. The major source of training in the students who received training was from the peer group (37.8%) and internet (47.2%).

The attitude and practices in the undergraduate medical students regarding literature search is being shown in Table 3. Google (95.9%) was the most favored website used by the students for the medical literature search followed by PubMed. The most common source of information the students used was Wikipedia (73.5%) followed by the individual blogs and views. eBooks and Journals were rarely searched by the students. The students felt that by using the medical literature on the internet, they will be benefitted in exam preparation (40.96%) and expansion of their knowledge (31.57%). The peer pressure (50.1%) among the students was the major reason for indulging in the literature search.

The comparison of parameters of Pre covid batches versus Post covid batches is being shown in Table 4 and 5. It was seen that there was significant difference in the knowledge, attitude and practices between the Pre and Post Covid-19 undergraduate batches. The Post Covid-19 batches had been using internet for the medical literature search earlier than the Pre-Covid batches(19(10.7% vs 67(28.15%), p value <0.05), spent more time during the day in all categories(p value < 0.05), had got more training(161(90.1%) vs 224(94.1%), p <0.05) and were more trained by the parents.

In the attitudes and Practices, the students who were enrolled in the Post Covid-19 times, searched more medical journals and eBooks as compared to the pre covid students (17(9.6%) vs 39(16.38%), p value < 0.05). Post Covid-19 students also felt that literature search would be more useful in expanding knowledge, preparing class presentation (40(22.6%) vs 91(38.24%) and 37(20.9%) vs 58(24.37%); p value <0.05). The Post covid students had lesser peer pressure to do literature search (102(57.63% vs 106(44.54%), p value <0.05), higher own interest (67(37.85%) vs 110(46.22%), p < 0.05) and got more marks in tests (2(1.13%) vs 14(5.88%), p<0.05).

Table 1: General Characteristics of the medical students taking part in the survey

Batch	Boys n(%)	Girls n(%)	Students knowing that medical literature can be searched using internet n(%)	Total n(%)
2019	58(48.33%)	62(51.67%)	86(71.66%)	120
2020	47(38.84%)	74(61.16%)	91(75.2%)	121
2021	62(50%)	62(50%)	118(98.3%)	124
2022	56(45.9%)	66(54.1%)	120(98.36%)	122
Total	223(45.8%)	264(54.2%)	415(85.2%)	487

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Table 2: Knowledge of the undergraduate medical students about medical literature search							
S No	**Question Asked**	**Variable**	**Batch**				
			2019 N=86	**2020 N=91**	**2021 N=118**	**2022 N=120**	**Overall N=415**
1.	How long have you been using internet for searching medical literature	<6 months	49(56.98%)	55(60.44%)	53(44.92%)	53(44.17%)	210(50.6%)
		6-12 months	26(30.23%)	28(30.77%)	34(28.81%)	31(25.83%)	119(28.67%)
		12-24 months	7(8.14%)	5(5.49%)	25(21.19%)	26(21.67%)	63(15.18%)
		> 24 months	4(4.65%)	3(3.3%)	6(5.08%)	10(8.33%)	23(5.54%)
2.	Time per day spent while searching literature on internet	<30 min	65(75.58%)	67(73.63%)	61(51.69%)	54(45%)	247(59.52%)
		30-60 min	13(15.12%)	12(13.19%)	33(27.97%)	38(31.67%)	96(23.13%)
		60-120 min	5(5.81%)	7(7.69%)	14(11.86%)	19(15.83%)	45(10.84%)
		>120 min	3(3.49%)	5(5.49%)	10(8.47%)	9(7.5%)	27(6.51%)
3.	Ever been trained for literature search on internet	Yes	77(89.53%)	84(92.31%)	110(93.22%)	114(95%)	385(92.77%)
		No	9(10.47%)	7(7.69%)	8(6.78%)	6(5%)	30(7.23%)
4.	Source of training	Peer group	31(36.05%)	34(37.36%)	46(38.98%)	46(38.33%)	157(37.83%)
		Experts	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
		Internet	39(45.35%)	45(49.45%)	53(44.92%)	59(49.17%)	196(47.23%)
		Parents	7(8.14%)	5(5.49%)	11(9.32%)	9(7.5%)	32(7.71%)
		No Training	9(10.47%)	7(7.69%)	8(6.78%)	6(5%)	30(7.23%)

Table 3: Attitude and Practices in the undergraduate medical students regarding literature search							
S No	**Question Asked**	**Variable**	**Batch**				
			2019 N=86	**2020 N=91**	**2021 N=118**	**2022 N=120**	**Overall N=415**
1.	Websites used for searching literature	Yahoo	0(0%)	0(0%)	1(0.85%)	0(0%)	1(0.24%)
		Google	84(97.67%)	88(96.7%)	113(95.76%)	113(94.17%)	398(95.9%)
		PubMed	2(2.33%)	3(3.3%)	4(3.39%)	7(5.83%)	16(3.86%)
		Scopus	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
2.	Category of literature accessed the most	Wikipedia	62(72.09%)	65(71.43%)	89(75.42%)	89(74.17%)	305(73.49%)
		Blogs and views	15(17.44%)	18(19.78%)	12(10.17%)	9(7.5%)	54(13.01%)
		Journal articles	2(2.33%)	2(2.2%)	5(4.24%)	6(5%)	15(3.61%)
		ebooks	7(8.14%)	6(6.59%)	12(10.17%)	16(13.33%)	41(9.88%)
3.	Field which will be maximally benefited by doing literature search	Patient related queries	4(4.65%)	4(4.4%)	6(5.08%)	5(4.17%)	19(4.58%)
		Expanding Knowledge	18(20.93%)	22(24.18%)	46(38.98%)	45(37.5%)	131(31.57%)
		Presentation in class	17(19.77%)	20(21.98%)	28(23.73%)	30(25%)	95(22.89%)
		Exam preparation	47(54.65%)	45(49.45%)	38(32.2%)	40(33.33%)	170(40.96%)
4.	Your motivating factor for doing literature search	Part of the curriculum	2(2.33%)	4(4.4%)	3(2.54%)	5(4.17%)	14(3.37%)
		Peer pressure	49(56.98%)	53(58.24%)	53(44.92%)	53(44.17%)	208(50.12%)
		Own interest	34(39.53%)	33(36.26%)	55(46.61%)	55(45.83%)	177(42.65%)
		Incentive provided	1(1.16%)	1(1.1%)	7(5.93%)	7(5.83%)	16(3.86%)

Table 4: Pre Covid-19 and Post Covid-19 Comparison of Knowledge of the undergraduate medical students about medical literature search					
S No	**Question Asked**	**Variable**	**Batch**		**P Value**
			Pre Covid N=177	**Post Covid N=238**	
1.	How long have you been using	<6 months	104(58.76%)	106(44.54%)	<0.05

DOI: 10.69605/ijlbpr_13.7.2024.69

	internet for searching medical literature	6-12 months	54(30.51%)	65(27.31%)	>0.05
		12-24 months	12(6.78%)	51(21.43%)	<0.05
		> 24 months	7(3.95%)	16(6.72%)	<0.05
2.	Time per day spent while searching literature on internet	<30 min	132(74.58%)	115(48.32%)	<0.05
		30-60 min	25(14.12%)	71(29.83%)	<0.05
		60-120 min	12(6.78%)	33(13.87%)	<0.05
		>120 min	8(4.52%)	19(7.98%)	<0.05
3.	Ever been trained for literature search on internet	Yes	161(90.96%)	224(94.12%)	<0.05
		No	16(9.04%)	14(5.88%)	<0.05
4.	Source of training	Peer group	65(36.72%)	92(38.66%)	>0.05
		Experts	0(0%)	0(0%)	>0.05
		Internet	84(47.46%)	112(47.06%)	>0.05
		Parents	12(6.78%)	20(8.4%)	<0.05
		No Training	16(9.04%)	14(5.88%)	<0.05

Table 5: Pre Covid-19 and Post Covid-19 Comparison of Attitude and Practices of the undergraduate medical students about medical literature search

S No	Question Asked	Variable	Batch		
			Pre Covid N=177	Post Covid N=238	P Value
1.	Websites used for searching literature	Yahoo	0(0%)	1(0.42%)	>0.05
		Google	172(97.18%)	226(94.96%)	>0.05
		PubMed	5(2.82%)	11(4.62%)	>0.05
		Scopus	0(0%)	0(0%)	NA
2.	Category of literature searched the most	Wikipedia	127(71.75%)	178(74.79%)	>0.05
		Blogs and views	33(18.64%)	21(8.82%)	>0.05
		Journal articles	4(2.26%)	11(4.62%)	<0.05
		ebooks	13(7.34%)	28(11.76%)	<0.05
3.	Field which will be maximally benefited by doing literature search	Patient related queries	8(4.52%)	11(4.62%)	>0.05
		Expanding Knowledge	40(22.6%)	91(38.24%)	<0.05
		Presentation in class	37(20.9%)	58(24.37%)	<0.05
		Exam preparation	92(51.98%)	78(32.77%)	<0.05
4.	Your motivating factor for doing literature search	Part of the curriculum	6(3.39%)	8(3.36%)	>0.05
		Peer pressure	102(57.63%)	106(44.54%)	<0.05
		Own interest	67(37.85%)	110(46.22%)	<0.05
		More marks in test	2(1.13%)	14(5.88%)	<0.05

DISCUSSION

In this study, medical literature retrieval practices were studied in 415 first year undergraduate medical students. It was found that majority of the students spend less than an hour per day on internet for the searching of literature, a finding also reported by Maroof et al and Gour et al(3,4). Although, the students knew that the medical literature can be accessed via the internet, yet the time spent on the computer to do so was very less; the findings were also similar to a study by Mansoor and Maroof et al, which showed that only 15% and 23% of the students searched the medical literature regularly(3,5). This less duration of use in our study could be due to the fact that survey was conducted near the starting of the teaching session and the students were still in the early phases of the learning.

In our study, some training to use internet was present in 92%, which was higher than the results shown in the study by Maroof et al(57.4%) and Bello et a(35%)(3,6).The reason of higher usage could be because of the evolving technology and wider usage of internet in our daily use now a days. The inclusion of computer and internet training in the school now a days could also be cited as a reason for increasing training. The data by Maroofet al and Bello et al was published more than a decade earlier. Majority of the students had used internet itself as one of the major means of learning the browsing on the internet. Earlier studies have shown that the students prefer to follow their peers for using the literature search practices.

Google was the most common website being used in our study. The results are in tandem with the earlier studies done by Judd and Eliottwhich showed Google to be the most common search engine(7). The use of the medical search engines like PubMed and Scopus in our study was infrequent, which was similar to the study by Judd and Eliott(7). In other review done by Ryan et al on 20 studies, Aakre et al on 305 studies, and Egle et al, UpTo Date was the most common online resource used(8–10). This could be due to non-availability of UpTo Date in our college campus and the paid nature of the program. In comparison Google is free and easily accessible to all. Similar to our

DOI: 10.69605/ijlbpr_13.7.2024.69

study, Judd and Eliottalso showed that wikipedia was also one of the common sources of the internet information(7).The percentage of the students accessing the journal articles and books is very less. This finding has also been reported from earlier authors as well(3,4,11).

Our students found that the searching of the medical literature would lead to increased learning and hence would help in better academic preparation for exams. Similar results were also reported by Maroof et al, Tashkandi and Dhir et al(3,12,13). Doing the same thing by the friends and peers, and more academic marks in the test would have led to the more usage of the web-based literature search.

The significant difference in the Pre and Post Covid-19 cohorts in terms of the web-based literature search could be explained by the exponential increase in the eLearning technologies being followed by students, lack of physical classes, more availability of mobile phones and laptops. Similar findings have been reported by other authors as well(14–17).

The limitations of our study are small sample size, usage of close ended questions and taking survey very early before the students are aware of various resources. However, this study would give an actual data of the baseline perceptions of the undergraduate students before any confounding factors set in. The findings of this study can be validated in the subsequent batches. Thematic analysis using the inductive approach could have also been added to get a clearer perspective of the students.

CONCLUSION

The undergraduate medical students despite using internet, do not frequently do web based medical literature search. Self and peer training are the major factors to acquaint oneself for this research. The journal articles and ebooks are less commonly accessed. The post Covid-19 students use the internet for medical literature search more commonly.

REFERENCES

1. Kalita J, Misra UK, Kumar G. Computer-based literature search in medical institutions in India. Ann Indian Acad Neurol. 2007 Mar;10(1):44.
2. Lai NM, Nalliah S. Information-seeking practices of senior medical students: the impact of an evidence-based medicine training programme. Educ Health Abingdon Engl. 2010 Apr;23(1):151.
3. Maroof KA, Parashar P, Bansal R. How are our medical students using the computer and internet? A study from a medical college of north India. Niger Med J J Niger Med Assoc. 2012;53(2):89–93.
4. Gour N. Use and Need of Computer among Medical Students. J Community Med Health Educ [Internet]. 2011 [cited 2024 Jan 30];01(01). Available from: https://www.omicsonline.org/use-and-need-of-computer-among-medical-students-2161-0711.1000104.php?aid=2493
5. Mansoor I. Computer skills among medical learners: a survey at King Abdul Aziz University, Jeddah. J Ayub Med Coll Abbottabad JAMC. 2002;14(3):13–5.
6. Bello IS, Arogundade FA, Sanusi AA, Ezeoma IT, Abioye-Kuteyi EA, Akinsola A. Knowledge and utilization of Information Technology among health care professionals and students in Ile-Ife, Nigeria: a case study of a university teaching hospital. J Med Internet Res. 2004 Dec 17;6(4):e45.
7. Judd T, Elliott K. Selection and Use of Online Learning Resources by First-Year Medical Students: Cross-Sectional Study. JMIR Med Educ. 2017 Oct 2;3(2):e17.
8. Ryan L, Sheehan K, Marion MI, Harbison J. Online Resources Used by Medical Students, a Literature Review. MedEdPublish 2016. 2020;9:136.
9. Aakre CA, Pencille LJ, Sorensen KJ, Shellum JL, Del Fiol G, Maggio LA, et al. Electronic Knowledge Resources and Point-of-Care Learning: A Scoping Review. Acad Med J Assoc Am Med Coll. 2018 Nov;93(11S Association of American Medical Colleges Learn Serve Lead: Proceedings of the 57th Annual Research in Medical Education Sessions):S60–7.
10. Egle JP, Smeenge DM, Kassem KM, Mittal VK. The Internet School of Medicine: Use of Electronic Resources by Medical Trainees and the Reliability of those Resources. J Surg Educ. 2015 Mar 1;72(2):316–20.
11. Chatterjee S, Adhikari A, Haldar D, Biswas P. Perception, awareness and practice of research-oriented medical education among undergraduate students of a medical college in Kolkata, West Bengal. Natl Med J India. 2016;29(2):94–7.
12. Tashkandi E. E-Learning for Undergraduate Medical Students. Adv Med Educ Pract. 2021 Jun 15;12:665–74.
13. Dhir SK, Verma D, Batta M, Mishra D. E-learning in medical education in India. Indian Pediatr. 2017 Oct;54(10):871–7.
14. Ismail A, Ismail A, Alazar A, Saman M, Abu-Elqomboz A, Sharaf FK. E-Learning Medical Education in Gaza During COVID-19: Students' Experiences and Policy Recommendations. J Med Educ Curric Dev. 2023;10:23821205231164228.
15. Shabila NP, Alkhateeb NE, Dauod AS, Al-Dabbagh A. Exploring the perspectives of medical students on application of e-learning in medical education during the COVID-19 pandemic. Work Read Mass. 2021;70(3):751–62.
16. Kumar S, Singh B, Mahuli AV, Singh A, Mahadevan V, Ranjan M. E-learning during the COVID-19 Pandemic in Various Healthcare Institutes of India. J Pharm Bioallied Sci. 2022;14(4):196–200.
17. Dargahi H, Kooshkebaghi M, Mireshghollah M. Learner satisfaction with synchronous and asynchronous virtual learning systems during the COVID-19 pandemic in Tehran university of medical sciences: a comparative analysis. BMC Med Educ. 2023 Nov 21;23(1):886.