



Knowledge of accessing the most accessed Bio-medical database – PubMed

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Abstract

Background: There is a need for academicians and researchers to keep up with the latest developments. PubMed is a virtual place most commonly accessed by users for biomedical literature. Knowledge in navigating PubMed makes the search easier and relatively more specific.

Aims and objectives: Determine faculty's knowledge in navigating through PubMed for searching bio-medical literature.

Material and Methods: An 11-item closed ended questionnaire was distributed among the faculties of dental, medical and nursing college. Data was elicited for items related to basic information, about MeSH and other tools used for literature search in PubMed database. In addition, other variables like specialty, area of interest at work, access to computer and internet at work was also collected. The questionnaire was not validated. Data was analyzed for descriptive statistics and frequency distribution.

Results: Response rate was 92 percent. Seventy two percent of the participants had scores < 5. The proportion of correct responses was less than 50 percent for all items in questionnaire.

Participation was lowest from the dental faculties. About thirty three percent had accessed PubMed tutorials. Fifty percent of the participants focused into teaching followed by research.

Conclusion: Knowledge of accessing PubMed was found to be unsatisfactory among the participants in present study setting. Nursing faculty had access to other databases also. PubMed was the most accessed database across all disciplines. Given that majority of participants are into teaching followed by research, adequate knowledge to access PubMed for literature search should be acquired.

Keywords: PubMed, MEDLINE, Apathy, Faculty, cross sectional study

Introduction

The past decade has been marked by an unprecedented growth in both the production of biomedical data and the amount of published literature discussing it. Much biomedical information is reported in the vast amount of literature. The ability to rapidly and effectively survey the literature is necessary for both the design and the interpretation of large-scale experiments, and for curation of structured biomedical knowledge in public databases. (Shatkay H, 2005). PubMed, is a biomedical literature retrieval tool that is available to the public making it the most popular and most commonly accessed biomedical database (Joseph *et al*, 2012) With PubMed providing millions of citations, abstract and link to full articles, at times, it becomes confusing and difficult for the user to exactly retrieve what they want. Navigating through PubMed is another challenge altogether. Familiarity with search tools in PubMed helps users perform efficient citation retrieval. In view of the above statement, a study was undertaken with the objective to determine faculty's knowledge of navigating PubMed.

Methodology

Study design and setting

A cross sectional questionnaire study was conducted in November 2015 among faculties of randomly selected dental, nursing and medical colleges in Puducherry. Prior permission and ethical clearance was obtained from the concerned authorities of the Indira Gandhi Institute of Dental Sciences (IGIDS), Puducherry. A letter seeking permission to conduct the study was obtained from the dean of IGIDS.

Knowledge required to navigate through PubMed was assessed using a, 11 item, pre-tested, closed ended questionnaire. The questions for the present study were selected from the quiz maintained by United States National Library of Medicine (USNLM) to assess the knowledge gained after accessing PubMed tutorial. Permission was obtained from the concerned department of USNLM to include them as questionnaire in the study. The PubMed tutorial is meant to provide first- hand information to researches, clinicians and academicians about accessing PubMed. The questionnaire was not validated. Each question irrespective of number of options had one right answer. The right answers were coded as “1” (one) and wrong answers were coded as “0” (zero). The number of correct answers were added and the score obtained was then used to categorise the participants as good (scores > 6), average (score 5) and poor (scores < 5). The questionnaire consisted of four items on general aspects of PubMed like, “what is PubMed and what is in PubMed”. Three items on “MeSH”, four items on the basic concept regarding the tool used like filters, search details and ‘how to save selected citations in PubMed’. In addition to the 11 items, academic information like their specialty, area of interest at work, access to computer with internet and have they ever accessed pubmed tutorial was also obtained from study participants.

Participants

The dean/s of Dental, Nursing and Medical colleges were approached and permission was obtained to approach all departments. This was followed by obtaining permission from heads of all departments (of respective institutes), later the faculties were approached to be included as participants. The faculties were approached; the nature of the study explained and questionnaire was handed only after obtaining the written informed consent. Those included were requested to fill the questionnaire in the presence of an investigator. Not more than 20 minutes was given to each participant. No incentives were provided to any of the participants. Confidentiality and anonymity was assured to all the participants. The answers to the questionnaires were not revealed throughout data collection. Incomplete questionnaires, questionnaires with more than one response for an item and those not present on the day of the study were excluded.

The data obtained was entered in Microsoft Excel spread sheet (Windows 8.1, Microsoft Corporation) and then analysed using SPSS version 15.0 (SPSS Inc., Chicago, IL, USA) for descriptive analysis.

Results

A total of 200 questionnaires were distributed, and the responses of 184 questionnaires were included in the present study. The response rate was 92 percent. Medical faculty constituted about 51 percent followed by Nursing and dental faculties with proportion of females more than the males. Only 33.7 percent had previously accessed PubMed tutorials and 50 percent of the participants concentrated on teaching only. [Table 1]

Table 1: Distribution of participants according to variables

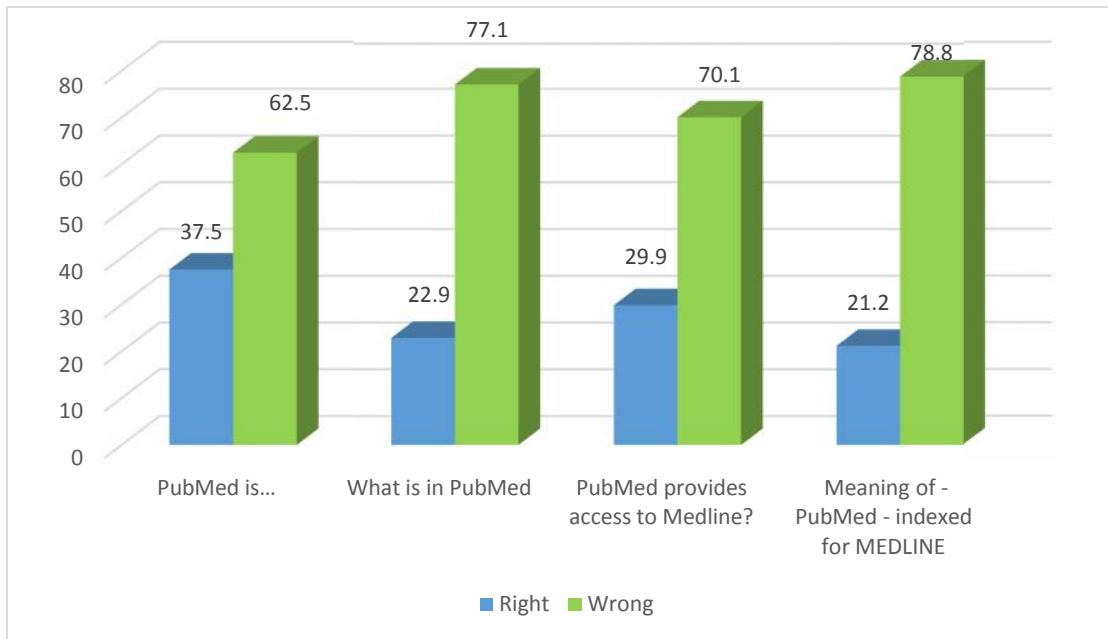
		Number	Percentage
Gender	Males	86	46.7
	Females	98	53.3
Specialty	Dentistry	30	16.3
	Medical	94	51.1
	Nursing	60	32.6
Activities	Teaching	92	50
	Research	32	17.4
	Clinical practice	43	23.4
	all of above	17	9.2
Accessing PubMed tutorial	Yes	62	33.7
	No	122	66.3
Access to Computer with internet	Everyday	129	70.1
	2 -3 times a week	43	23.3
	Once a week or less	7	3.8
	Once in two week/twice a month	5	2.7

Table 2. Distribution of participants based on their preferences for literature search

		Dental	Medical	Nursing
		% (N)	% (N)	% (N)
Online Database	PubMed	96.6 (29)	89.3 (84)	75 (45)
	EMBASE	33. (1)	7.4 (7)	20 (12)
	EBSCO	0	2.12 (2)	2.1 (2)
	ScopeMed	0	1.06 (1)	1.6 (1)
Online Journals	SAGE	83.3 (25)	90.4 (85)	73.3 (44)
	Quintessence	13.3 (4)	5.3 (5)	10 (6)
	Wiley	3.3 (1)	2.1 (2)	8.3 (5)
	Others	0	2.1 (2)	8.3 (5)
Search Engines	Google	93.3 (28)	91.4 (86)	68.3 (41)
	Rediff	6.6 (2)	2.12 (2)	11.6 (7)
	Yahoo	0	5.3 (5)	18.3 (11)
	Others	0	1.06 (1)	1.6 (1)

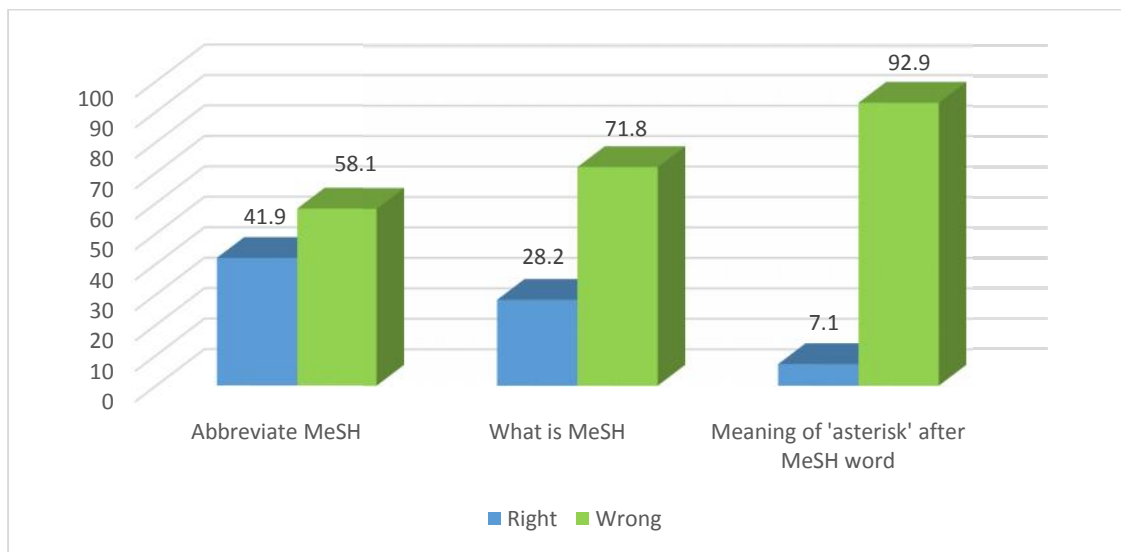
A vast majority of the participants accessed PubMed (85.8 percent), SAGE journals and Google respectively. [Table 2] About 70 percent of the participants accessed computer with internet every day.

Figure 1: Participants knowledge about PubMed in general (percentages)



More than 62 percent of the respondents were wrong for the item, “what is PubMed”. 77 percent of them were wrong for “what is in PubMed”, and 70 percent did not know that PubMed provides access to MEDLINE. (Figure 1) Ninety two percent of respondents did not know the meaning/significance of MeSH followed by “*” (asterisk). Fifty eight percent could not abbreviate MeSH.

Figure 2: Participants knowledge regarding Medical Subject Headings (percentages)



(Figure 2) Seventy seven did not know the concept of filters in PubMed and 71 percent did not know that citations selected could be temporarily saved by clicking on 'Send to Clipboard'. (Figure 3) Of the 11 items in the questionnaire, 88 percent scored less than 5 (poor) and 9.2 percent scored more than 6. The remaining 2.8 percent had all their responses wrong. (Figure 4)

Figure 3: Participants knowledge regarding the working of PubMed, managing filters and results (percentages)

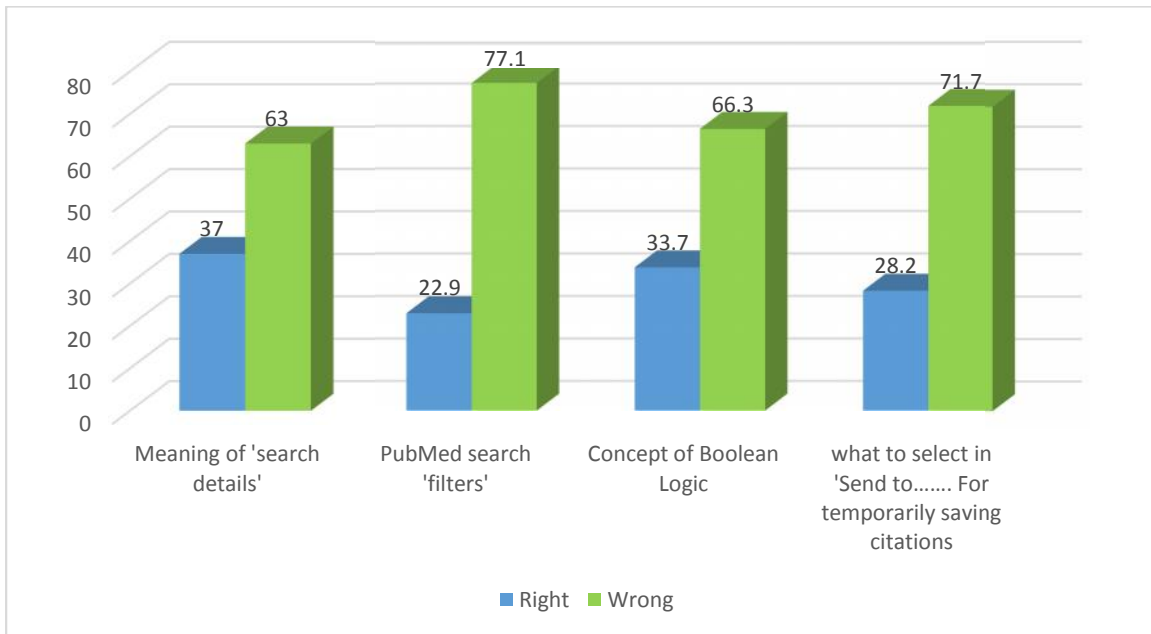
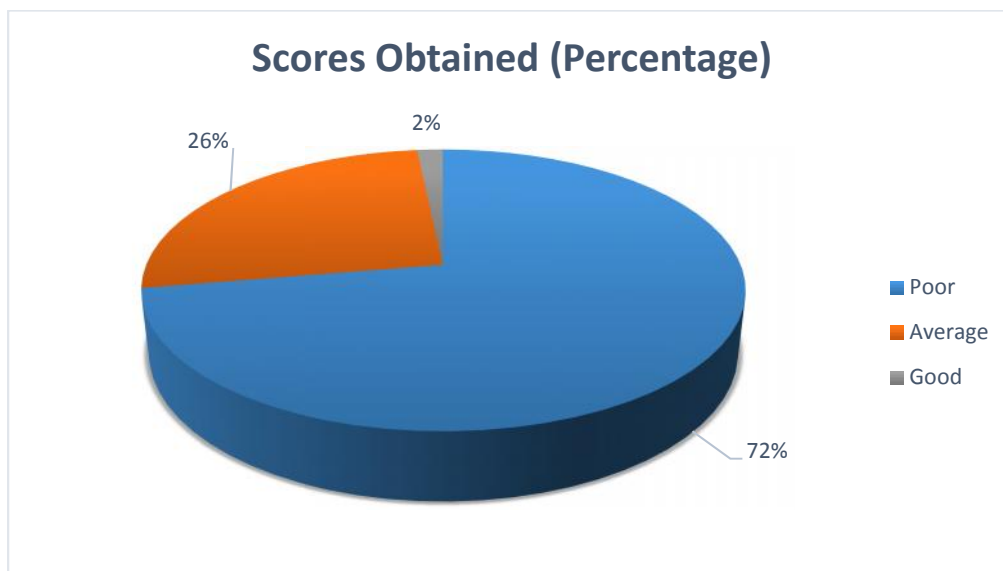


Figure 4: distribution of scores obtained according to questionnaire used (percentages)



Discussion

The present survey was conducted to determine basic knowledge when using PubMed for searching bio-medical literature. To our knowledge not many studies have been conducted to determine the knowledge possessed by the faculties of dental, nursing and medical institutes which can be used when navigating PubMed. It was observed that maximum participation in the present study was from the medical faculties and least from the dental faculties. Non participation by dental faculties indirectly points to what Mehta and Young described in 1995 as their 'apathy' towards the main purpose of the study. (Momani HA, 2003) On a positive note, exposure of participants to such items in questionnaire should hopefully create an interest in literature searching (PubMed) and tread ahead with a greater quest for knowledge.

Considering the familiarity and use of different databases by the faculties, it was found that PubMed was the most accessed database. PubMed focuses mainly on medical and bio-medical sciences and also permits quick free search using numerous keywords. (Momani HA, 2003) This easy to perform search exercise may have unknowingly encouraged the participants to use PubMed. Regulation by both Medical and Dental Council of India also mandate the faculties to publish in indexed journals, which in turn could be another reason for such higher proportion. Access to computer with internet in the respective department and colleges was reported by about 70 percent of the participants, similar findings were also reported by authors where faculty members had access to computer with internet. (Falagas et al, 2008; Mehta and Young, 1995)

It was observed from Table 1 that half of the study participants preferred teaching over other activities. Faculties, due to the nature of their work—teaching, research, and, in some cases, clinical practice—should have ready access to biomedical information. Computer literate students and clients (patients) could also accentuate the usage of e-resources among faculties. The latter is essential, since clients often like to keep themselves updated with information that is related to their health (Majid and Abazova, 1998).

A closer look at table 2 shows that nursing faculties were also accustomed to accessing other databases and online journals apart from commonly accessed ones. This points out that nursing faculties also had access to those journals which are not covered by MEDLINE and probably

have an edge over medical and dental counterparts when it comes to bio-medical literature search. Nevertheless possessing additional knowledge is always an asset.

More than 70 percent of the respondents could not score more than 5 and were categorized as having poor knowledge. Among the poor scorers there was a section of respondents (2.7 percent) who scored zero '0'.indicating that they had no knowledge whatsoever regarding any terms among the items which can help them navigate through PubMed. A critical view for the sentence framed in previous lines is essential since, not scoring for any items in the questionnaire does not imply absolute lack of knowledge. Most of the researchers might not be familiar with the search process involved since their focus is only on getting their respective manuscript published in PubMed indexed journal/s.

Only 37.5 percent (68) of the respondents knew that PubMed is a part of a vast information retrieval system which provides abstracts and link to full articles. Among the 37.5 percent, medical faculties had the highest correct answers followed by Nursing and dental faculties. PubMed also provides access to Medline, was not known by 78 percent of the participant. Even though this item may not necessarily help users to navigate, we assume a brief knowledge about PubMed should not be an extra burden.

Medical Subject Headings (MeSH) is a database and part of Entrez Retrieval System which includes information about the NLM-controlled vocabulary thesaurus used for indexing PubMed citations. The main purpose of MeSH term is to behave like a thesaurus which facilitates searching. It is clear from the results that about 70 percent of the study participants lacked the scientific knowledge behind using MeSH terms. It also implies that these percentage of faculties could be having wrong perception about MeSH. Though MeSH is a database also maintained by National Library of Medicine (NLM), and our focus was on PubMed, it was still included in the present questionnaire since MeSH terms aid in searching appropriate citation, and the MeSH thesaurus is used by NLM for indexing articles from 5,400 of the world's leading biomedical journals for the MEDLINE®/PubMed® database. (MeSH, National Library of Medicine, 2015)

A large proportion among study population also lacked the importance of 'asterisk' near MeSH term which usually indicates one of the main topics discussed in the article. User's inability to identify main topics relevant to the article, will eventually result in spending more time 'beating

around the bush' than retrieve specific information. 'PUBMED – Indexed for MEDLINE' is a common one liner often encountered when searching, which provides information about the citation. Unfortunately only about 21 percent in the present study knew the importance of phrase mentioned above.

Usage of other relevant features like search details and search filters were not known and/or implemented by about 63 percent and 77 percent of the study participation respectively. Knowledge behind applying Boolean logic like AND, OR, NOT was limited to 33 percent of population. Awareness of these logic can reasonably reduce the time spent on searching and/or retrieving information. The fact that citations required by user can also be temporarily saved for printing or ordering was known by less than 30 percent of the study population. Overall from the present study we observe that the basic knowledge about PubMed, the importance of MeSH and common working of PubMed like use of filters, search details etc. was found to be in less than 50 percent of all the participants in the present study setting. This prompts us to realize the fact that with ever expanding information in PubMed database, there is a need to provide the participants with latest updates which may enable them to be better academicians and clinicians.

The present study has certain limitations, like, a) the questionnaire was not validated for its psychometric properties, b) the results cannot be generalized to all teaching medical, dental and nursing faculties, and c) this was a questionnaire based research, even though participants might be aware of the items used in questionnaire when they are practically navigating PubMed, chances are they may not be able to remember the steps theoretically. Hence, a questionnaire needs to be designed which requires responses taking into consideration the cognitive responses of a participant

Conclusion

From the present study, it is clear that, the knowledge required to access/navigate PubMed was not satisfactory. We are now aware of the lacunae, but from the present study we cannot comment on the impact of this reduced knowledge among faculties on their academic performance. This would require a prospective study of faculties along with other factors which may or may not influence the impact. Over a period of time, faculties are expected to mentor and guide post-graduate students and PhD scholars, hence it is imperative that faculties have a

thorough knowledge and understanding of the most commonly accessed bio-medical databases among others present.

We recommend utilizing the platform of continuing dental/medical education in enriching healthcare professions' knowledge to disseminate valuable information in literature search, which is an inseparable component of research. This study also provides an opportunity to determine other factors like time spent by faculty to search literature, update their existing knowledge among other things, which may require further research. Since majority of the study participants have access to computer with internet, plan can be formulated by the human resource making it compulsory for the faculty to enrich their knowledge regarding the same via university website.

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