An Assessment of Electronic Information Searching Trend of Medical Postgraduate Trainees at Postgraduate Institute of Medicine, University of Colombo

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Abstract

The present electronic era is significant for all types of libraries with regard to their electronic information services. The Library of Postgraduate Institute of Medicine (PGIM), University of Colombo provides enormous services to the medical professionals in Sri Lanka. Annually a considerable amount of money is allocated to PGIM to purchase electronic health information resources. Anyhow it was observed that most often many postgraduate medical trainees who are engaged in medical postgraduate training have expressed their dissatisfaction over the inaccessibility of electronic information resources of the library of PGIM, University of Colombo. Therefore, this study assesses the information searching trend of medical postgraduate trainees in an electronic environment. Total number of 815 medical postgraduate trainees, from 32 medical specialties was selected as the study population. Sample was proportionately selected among these specialties. Using Lwanga and Lemeshow (1991) method 427 trainees were selected as study sample and the response rate was 89% (380). Collected data was analyzed using SPSS ver. 23. According to the findings, the electronic environment has created a positive hope in the information seeking trend and

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training sessions to enhance information literacy was highly-appreciated by the trainees as a means of improving the digital information literacy skill, and to downsize their ability to access the appropriate resources and to save their time. Further, the topmost information need was for exam preparation. HINARI and PUBMED were the widely used electronic resources by the majority of trainees. Most of the trainees did not attend the orientations or workshops conducted by PGIM and a major reason for not participating was that time has not been allocated for orientations. Study concluded that availability of electronic information resources was directly affecting the information searching trend of trainees following postgraduate medical education. This study recommends that the library of the PGIM should provide more digital resources, proper training on digital information literacy skills and efficient Internet services in the library.

Keywords: Information literacy skills, Electronic resources, Postgraduate medical trainees, Electronic environment

Introduction

Libraries in higher education institutes make concerted efforts to prove the peculiarity of their electronic information services to satisfy the information requirements of their user community. The Library of PGIM, University of Colombo provides enormous services to the health professionals by allocating a considerable amount of funds to purchase electronic information materials (Postgraduate Institute of Medicine, 2015).

It was observed that more often many postgraduate medical trainees who are engaged in research studies have expressed their dissatisfaction over the inaccessibility of digital information resources of the library. Due to the rapid growth of the knowledge-base in the field of medical sciences, a depth and entanglement of knowledge is compulsory in postgraduate medical education. In this context, library professionals in the health science field are urged to change and shift their role and modernize or reconstruct their information services to satisfy the needs of their readers who are medical professionals. In addressing this timely issue, it is important to assess the trend of information searching of these groups of clients. Inaccessibility of electronic resources has been identified as the bane of effective research in higher education institutes in Sri Lanka (Wijetunge & Sivasanthiran, 2020). Hence, it is imperative to assess the information searching trend of medical postgraduate trainees in an electronic environment. In view of this, the following questions should be answered. "What are their information needs"? "How do they search for information?" "What are the resources they use most?" "What is the level of digital information literacy skills of postgraduate medical trainees?" "What are the strategies to improve information literacy skills in order to access electronic resources in meeting their information needs?"

Electronic resources in the field of Medicine are very expensive when compared to other disciplines. Despite this, postgraduate medical trainees are essentially expected to utilize these resources. Therefore, to the cost effectiveness of the electronic information services and thereby to improve the provision of these services, it is requisite to study the trend of information searching behavior of the users. Students with high levels of electronic information literacy are known to succeed in their goals, stretch their distances, and to take on a variety of roles in this electronic era. A study conducted by Kuruppu (2010) revealed that the majority of the readers did not express a high level of satisfaction with regard to the PGIM library services. Also, the study by Rodrigo et al., (2015) revealed that the usage of digital resources for academic purposes by medical interns was at a less than satisfactory level with many indicating that they had never used some of the popular online indexing services. Therefore, it is imperative to assess the trend of information searching of postgraduate medical trainees in a digital information environment.

Objectives of the study

The main objective of this study was to assess the electronic information searching trend of medical postgraduate trainees at Postgraduate Institute of Medicine, in the electronic environment.

Specific objectives

- To identify the information needs of the medical postgraduate trainees.
- To identify the electronic resources widely used by medical postgraduate trainees.
- To assess the digital information literacy skills of medical postgraduate trainees.

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• To examine the attendance in orientations / workshops / seminars by trainees

Review of the literature

Information needs of medical professionals

Through the literature review, it was observed that medical professionals have different information needs which motivate information seeking. Some of the identifiable information needs were patient care, answering patients' questions, updating the current trends in medical field (Singh & Gupta, 2020), pharmaceutical information, clinical trials, and medical education (Chanda, 2021).

Information seeking process starts when the information need arises. Many authors stated that defining the concept of information need was not an easy task (Wilson, 2006). According to the model of Leckie et al., (1996), it is paramount to find the information needs pertaining to the key work roles and associated tasks.

Using this model, the information requirement of health professionals was studied by several authors. Maggio et al. (2014) studied the information needs of doctors in the USA and the Netherlands and identified six categories of information needs of medical professionals which included refreshing, confirming, logistics, teaching, generating ideas, and personal learning. The World Health Organization (2004) pointed out that "equitable and universal access to health information is the best strategy to minimize global gaps in health and to achieve the health-related millennium goals" (p.33). It is apparent that information has an important role in the lives of medical professionals for the betterment of any country's health goals.

Many studies identified the information requirements of medical professionals by examining the triggers of information needs. Fourie (2009) revealed that healthcare professionals in South Africa consulted information sources and they were willing to refer to treatment protocols, books, and research reports for their information needs.

A qualitative study conducted by Pyne et al., (1999) revealed that many health professionals used digital information to update their knowledge specialty. In the study of Bryant (2004) medical professionals needed information for clinical care and updating knowledge. Through the literature review and work experience it was found that medical professionals have different information needs.

Electronic information environment

The fast progress in the information and communication technology has provided the current library users multiple opportunities to retrieve their needed resources in different formats. The innovation of information technology and the explosion of digital information resources are threatening and challenging for information professionals as well as for readers. This change of the electronic information environment and its implications were examined by several authors (Gobbin, 1998; Nicholas & Fentan, 1997). Collaboration with electronic devices has increased in all aspects of knowledge-based activities including information seeking behavior (Marchionini, 1995). The information centers in higher education institutes spend a certain amount of their allocated budget on subscriptions of online resources. Thus, the impact of electronic resources and services and the allocated amount for subscribing to or purchasing of electronic information resources have motivated the information professionals to

analyze or investigate the information seeking behavior of library users in the electronic environment. This cannot be seen in any other field where information is not needed.

The process of accessing information varies worldwide as information resources take different electronic formats. Kadli and Kumbar (2013) say that "electronic information services offered by libraries have dramatically changed the information seeking trend of readers in recent years". Definitely, digital information has brought major changes to human behavior, library services and their usage. These changes are very significant, so that the library professionals are now studying information seeking trend in the digital environment. Proficiency in acquiring information literacy skills will serve as the groundwork for effective retrieval of information from electronic resources among health professionals.

Digital information literacy skills of medical professionals

Health professionals should continue to advance their skills in finding the relevant evidence to treat their patients effectively. Cobus (2008) confirmed and declared the importance of librarians and health educators in the process of improving information literacy. Further, it has been extended that digital information literacy skills and proficiencies are integrated into public health curricula. Also, the author confirmed that these technological issues require further assessment on curriculum and research. In the same way Simons et al., (2012) concluded that acquiring information literacy takes place in contexts using measurable outcomes that is more meaningful, is enduring, and likely contributing to patient care.

The study done by Kaper et al., (2019) focused on assessing the impact of an information literacy training program of students who are following a medical degree programme, on their preparation and usage of the information for their clinical practice in case of emergencies. The impact of a proper information literacy training program was emphasized through this study. Authors assessed and confirmed that if such training is made available for medical professionals then they will be better equipped to treat the patients and more positive outcomes would be achieved in patient care.

Kuek and Hakkennes (2020) examined the digital information literacy level of the health professions as well as their trend of using advents of technological era. In this regard, a detailed survey was conducted to assess the level of confidence and trends in information seeking behavior of healthcare professionals in the modern technological era. Sample population was 407 staff members. Results indicated that the majority of the staff members were familiar with the modern technology and they use it with more confidence. However, few of them were struggling with it and they got depressed and uncomfortable when exposed to modern technology. Hence the author recommended arranging sufficient training programs for those health professionals. Inadequate information and communication skills were reported by Mercy et al., (2019) as one of the impediments to access electronic resources in South Nigerian medical libraries.

Suroothiya and Sahu (2020) measured the influence of digital literacy skills in the learning progression of MBBS students. According to their study, digital information literacy programs in the modern information centers acts as a supporter for improving the information literacy skills of MBBS students. According to them, there should be practical sessions and workshops organized for the training of information professionals as well as

students who are using libraries for their information needs. Additional surveys should be conducted by the library, PGIM to assess on the efficiency of information literacy programmes. Association among the faculty and librarians is important for the effectiveness of electronic information literacy programmes. Further, information professionals and librarians should be encouraged to attend seminars and workshops to enhance their digital information literacy skills. Also, there should be good financial and administrative support from their parent institutions in developing their digital resources and library infrastructure to comply with the users' information requirements.

As per the literature, the digital information literacy skills plays a vital role in the electronic information environment. Also the medical postgraduate trainees are highly impressed about the training programmes.

Need for training

Training in use of electronic resources is an important aspect of the process of education. According to the review of literature number of authors disclosed that those who have knowledge in modern information technology, searching techniques and who have skills on usage of computer and the Internet are more likely to use electronic resources (Bhatti & Javed, 2014; Bowden et al., 1994). In the same way, Anyaoku (2015) confirmed that the medical students in Nnamdi Azikiwe University, Nigeria would like to take part in training programs on how to use library resources and how to find information on the Internet. According to these studies it is imperative to assess the training needs of postgraduate medical trainees.

Wanja, Namande and Awuor (2022) assessed and concluded that introducing different types of user education practices is better for the KRA

library in Kenya. They further concluded that user education practices were supportive to ensure extensive and active use of information resources. Also, it offers different variety of search options to users and information professionals. Therefore, according to the literature, training and user education programs would enhance the usage and influence the trend of electronic information seeking behavior.

Research methods

Total number of 815 medical postgraduate trainees in thirty two (32) specialties who were registered at the PGIM, University of Colombo were selected for this study and 427 trainees were selected as the sample using Lwanga and Lemeshow (1991) method. A questionnaire was administered as the research instrument to collect data. In order to develop, adopt and check the validity and reliability of the selected research techniques, the questionnaire was designed after the literature review of empirical and theoretical studies on information literacy from different specialties. Confidentiality was assured to all PG medical trainees before the data collection.

Reviews of social science studies agreed that the sample is representative of a study which should be a good proportion of the study population. The accuracy of the study results is determined by the sample size. The proportion of aspects which are to be estimated using these objectives was chosen as 50% to enable the maximum possible sample size using stratified random sampling (Lwanga & Lemeshow, 1991). The sample was distributed among the different study programs according to the proportion of number of trainees in the study programme. Data from the questionnaires was analyzed using SPSS ver. 23.

In order to develop, adopt and check the validity and reliability of the selected research techniques, a pilot study was conducted with the aim of increasing validity of the questionnaire. The postgraduate medical trainees consisting of 35 individuals from 32 specialties were used for the pilot study. It helped measuring the reliability and validity. The reliability of information-seeking trend scales was determined by Cronbach's alpha. Table 1 shows the standardized alpha for each measure featured in the pilot survey; a value of 0.70 or greater is considered acceptable for the current research (Fornell & Larcker, 1981).

Table 1

Items	Cronbach Alpha values		
Information Needs	.898		
Information seeking behavior	.759		
Skills in accessing electronic resources	.707		
Attending workshops and orientations	. 801		

Cronbach alpha values for the items of the questionnaire

427 questionnaires were distributed and 380 completed questionnaires were returned at the rate of 89%.

Data analysis

Demographic information of the respondents

Findings revealed that male and female were 72.6% and 27.4% respectively. Among them 52.9% was in the age group of 28 -38 years. 42.9%

of them were in the age group of 39-49 years age group and 4.2% of them were more than or equal to 50 years. Regarding the work experience 38.4% of them had 11-15 years of experience, 42.1% of them had 6-10 years' experience and 19.5% of them had 1-5 years' experience.

Information needs of medical postgraduate trainees

Different information needs expressed by the trainees are presented in the following Figure 1. Information needs of PG trainees vary according to the purposes. According to figure 1, the majority of respondents (74.5%) required information for examination preparation and 58.7% for research publications. Meanwhile, 35.8% of trainees looked for information for research.

Figure 1



Distribution of information needs of PG Trainees

Electronic information resources used by medical professionals

The summary of the frequency of using main electronic resources for their information needs is presented in Table 2. It is evident from the table that HINARI and PUBMED were used by the majority of trainees very often (87.6%) and more than half of the respondents (64.7%) and 53.2% used subscribed electronic journals and websites of colleges respectively very often. Further, it is clear that postgraduate medical trainees use different electronic resources to fulfill their information needs. HINARI/PUBMED, subscribed electronic resources and websites of colleges were the 3 electronic resources which are most popular among postgraduate trainees. In the meantime, databases subscribed by university grants commission were used by only 2.9% of the trainees.

Table 2

Sources	Very Often %	Often %	Sometimes %	Rarely %	Never %
Subscribed E-journals by library	64.7	16.3	12.2	6.8	-
Oxford Journals online	43.4	23.7	25.0	7.9	-
HINARI / PUBMED	87.6	7.9	1.6	2.9	-
Databases subscribed by University Grants Commission	2.9	2.4	3.7	86.8	4.2
Websites of Colleges	53.2	32.4	14.4	-	-
Open sources through Internet	44.7	37.9	10.8	6.6	
Digital repositories	13.7	27.4	26.3	23.4	9.2
Reference sources (Dictionaries/Encyclopedias	22.6	29.5	44.5	3.4	-

Frequency of using electronic Information resources by PG medical trainees

Skills on digital information literacy Computer and the Internet literacy skills of respondents

The computer and the Internet literacy skills of the respondents were summarized and presented in Figure 2. According to Figure 2, 16.6% and 60 15.8% respondents indicated that computer and the Internet literacy were poor and very poor respectively and 46.1% trainees were with very good knowledge in handling computer and the Internet. 12.8% respondents stated that their level of computer literacy is on average.

Figure 2

Computer and the Internet literacy skills of respondents



For the open ended question regarding the training need for enhancing electronic information literacy, the following suggestions were made by the respondents.

- Organization of training programs is very important for accessing electronic resources
- Module should be developed for information literacy skills and it should be incorporated with postgraduate medical curriculum.
- Short courses on ICT should be organized by PGIM as compulsory for all PG trainees.
- Separate IT labs should be organized for library users.
- Searching techniques should be included in the IT modules.
- Practical sessions should be organized at least once in six months

The majority of the respondents (87%) suggested organizing training programs on electronic information literacy skills and incorporating the module or lesson in the postgraduate medical curriculum.

Skills on accessing digital information resources of medical trainees

In order to assess the digital information skills, trainees were asked to comment on their skills on accessing electronic resources. The following Table 3 shows that 48.4% of them have enough skills and 42.9% of them requested training on accessing electronic resources. However, 22.4% PG trainees strongly agreed that they did not have required skills to access electronic resources and it affects their PG medical education.

Table 3

Skills on accessing digital information resources of the medical trainees

Variables	Strongly Agree (%)	Agree (%)	Undecided (%)	Disagree (%)	Strongly Disagree (%)	Total
I have enough skills on accessing electronic resources	48.4	36.8	11.4	3.4		100
Training on searching techniques will improve the PG trainees' performance	24.5	62.1	11.3	1.6	0.5	100
I need training on accessing electronic resources	42.9	29.5	14.5	11.8	1.3	100
I have no skills to access electronic resources and it affects my PG education)	22.4	49.7	10.0	15.8	2.1	100

Attending orientation sessions/ workshops/seminars

The frequency of attending orientation sessions / workshops / seminars by respondents, indicates that 31.3% trainees have participated in

those sessions organized by Staff of the PGIM library. The majority of respondents (68.7%) have not participated in any orientation sessions or workshops or seminars. The trainees who participated in those events were asked to comment on the event using the scales of "not satisfactory", "satisfactory", "less satisfactory" and "high satisfactory". Though there were 119 trainees who had participated in the orientation sessions/workshops/seminars, only 92 of them have responded to this question.

Table 4

Level of satisfaction with orientation sessions/workshops/seminars

Evaluation of orientation sessions / workshops / seminars	Frequency	Percentage
Not satisfactory	3	3.3
Less satisfactory	32	34.7
Satisfactory	50	54.3
High satisfactory	7	7.7
Total	92	100.0

Their response regarding satisfaction level about the orientation sessions/workshops/seminars (Table 4) indicates that only 54.3% (50) of the respondents were satisfied and 7.7% of them were highly satisfied with those

events.

Respondents who stated "not satisfactory" or "less satisfactory" were asked for their suggestions to improve the orientation sessions/ workshops/ seminars conducted by PGIM library. Since this was an openended question, there were different kinds of suggestions received from 35 trainees who were "not satisfied" or "less satisfied" those sessions. Their suggestions are summarized below.

- Arrange resource persons who have sufficient knowledge in information literacy skills.
- Orientation sessions are different from workshops or seminars. Orientation programs are mostly an introduction about library resources and services. It does not cover instructions on accessing of electronic resources. Separate workshops and seminars should be conducted with the aim of supporting information literacy skills development.
- All workshops and seminars should be practically oriented.
- Proper handouts should be circulated during the workshops or seminars.
- Information literacy module should be included in the PG medical curriculum.
- Trainees should be evaluated on the information literacy skills by giving assignments or practical tests.

Since this was an open ended question, different suggestions and recommendations received but the majority claimed for proper training.

Respondents who believed that orientation sessions/workshops/seminars were satisfactory or highly satisfactory were

asked for their recommendations on better way/s of conducting such sessions. Among 57 trainees who have stated "satisfactory or high satisfactory" 56 of them recommended continuing with this kind of user-education sessions. Only one trainee did not recommend any. Trainees who did not participated in the orientation sessions/workshops/seminars were asked for the reasons for not participating in such activities. The reasons explained by the respondents are given in Table 5.

Table 5

Reasons	Frequency	Percentage
Not aware	106	41.4
No time to participate	23	09.0
Not interested	9	03.5
Not allocated in the time table	123	46.1
Total	261	100

Reasons for not participating in orientation sessions/ workshops/seminars

The majority of respondents 106 (41.4%) were not aware of the orientation sessions/ workshops/ seminars. Meanwhile, 23 (9%) indicated that they had no time to participate and 123 (46.1%) said that there was no time slot allocated for such sessions within their course schedules. No

response was received from 5 trainees.

Discussion, conclusion and recommendation

The objective of this study was to assess the information searching trend of medical postgraduate trainees in an electronic information environment. Findings revealed that the majority of the respondents were male 72.6% and 27.4% of them were female. This study revealed that information needs of PG trainees vary according to their purposes. The majority of responders required information for examination preparation and for research publications. Meanwhile, trainees looked for information for research.

The results of this study revealed that postgraduate medical trainees use an array of resources. Among these sources, HINARI /PUBMED database and journals subscribed by PGIM library are very often used by postgraduate medical trainees (87.6% and 64.7%). This finding is supported by the results of the study conducted by Bhatti and Javed (2014) in which medical postgraduate trainees at Nisheter Medical College, Pakistan where PUBMED database is more popular and, MedScape, PakMediNet and EBSCOhost is used occasionally. According to the present study information literacy skills highly influenced the use of electronic information resources. Therefore, the use of electronic information resources was mainly determined by the level of information literacy skills.

The study findings revealed that the majority of responders required information for examination preparation followed by research publications and research. HINARI and PUBMED were used by the majority of trainees very often and more than half of the respondents use subscribed electronic journals and websites of colleges. Regarding the digital literacy skills on

accessing electronic resources, less than half of them had enough skills and less than half of them requested for training on accessing electronic resources. However, 22.4% (85) PG trainees strongly agreed that they have no skills to access electronic resources and that it affects their PG medical education. Respondents suggested training on various aspects to help improve their digital literacy skills. Regarding the orientation sessions and workshops conducted by PGIM, very few of them responded and expressed satisfaction. More than half of them had not participated in the orientation programs and their major reason was not allocated time for such sessions.

According to the findings of this study, it highly recommends increasing the availability of electronic library materials according to the trainees need. Also it highly recommended continued access to the HINARI and PUBMED for trainees. Training workshops and orientation sessions should be organized properly. There should be a proper mechanism to make the trainees aware of such sessions conducted by PGIM. Findings also recommend that the library of the postgraduate institute of Medicine should provide suitable training in accessing of digital resources with effective Internet services and required computer facilities in the library. Also, it is recommended accommodating curricula on information literacy with the postgraduate medical education curriculum. Further, it recommends that postgraduate trainees be educated through appropriate digital information literacy programs that meet their information needs.

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