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Original Research

The Effect of Clinical Librarian Services on Improving Medical Students' Access to Health Information: Iranian Experience

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Abstract

For physicians, choosing the correct and up-to-date health information is one of the most important challenges. Therefore, they need to acquire information retrieval skills. The present study examines clinical librarian's educational role in improving medical students' accessing health information skills. This study is a quasi-experimental applied survey. The study participants were senior medical students of BPUMS[1] taking the clinical course in 2013 (n=52). They were divided into two groups, test and control groups, each containing 21 (test group) and 23 (control group). Subsequently, a two-month workshop program besides training sessions was held with the participation of a clinical librarian at the clinic and a scenario by a physician present in the test group. The data collection tool was a self-administered questionnaire used before and after intervention (two months later) to both test and control groups. Data was analyzed using descriptive statistics and an independent T-Test. The findings of this study show that, in total, there is an increase in mean scores of familiarity with medical databases, their use, and the need for clinical librarian services after an educational intervention. This increase was revealed in (37.33 ± 9.61), (36.85 ± 10.1), and (42.85 ± 3.5) respectively; and the difference was significant ($p<0.001$). The lack of use of updated medical evidence and resources by medical students was due to the lack of knowledge of specialized medical databases. One of the useful strategies in this regard is the inclusion of clinical librarians in the treatment teams and different hospital units.

Keywords: Clinical Librarian, Accessing Skills, Information Retrieval Skills, Health Information, Medical Databases, BPUMS.

Introduction

Correct selection of scientific and up-to-date information from the vast amount available in databases is one of the most important challenges for different groups of society and on this occasion physicians. Physicians play an important role in people's health, so they need to have access to reliable and up-to-date health information. Studies show that physicians, because of their busy work, have neither enough time to search for information nor have the necessary skills (Swiatek-Kelley, 2010). In this regard, the employment of clinical librarians is considered a way to help this group overcome all the limitations and challenges in accessing health information. According to Davidoff and Florance (2000), clinical librarian or "informationist" is a new health profession. They can provide clinical counseling and updated accurate information for physicians which can undoubtedly improve the patient's condition (Stumpff, 2003). Clinical librarians, due to specific knowledge and skills such as familiarity with medical information databases, specialized medical terminology, and the search for medical backgrounds as well as familiarity with diverse medical resources (printed or online), can play the role of educator in providing information needs to physicians (Demas & Ludwig, 1991; Alpi, 2005; Esparza, Shi, McLarty, Comegys & Banks, 2013; Federer, 2013). They work in academic and healthcare settings performing diverse functions related to the needs of clinicians, trainees, residents, and researchers (Perrier et al., 2014). A clinical librarian can serve as an evidence user, a disseminator of information, or an infomediary between patients and physicians (Homan & McGowan, 2002). The main goal of employing clinical librarian services is to overcome the time, cost, and expertise barriers that clinicians face when they attempt to incorporate the best current evidence from the literature into their patient care decisions (Wagner & Byrd, 2004). The most outstanding result of clinical librarians' presence in medical settings is the reduction of patients' death rate due to medical errors during treatment (Anderson, Jay, Anderson & Hunt, 2003; (Brettle et al., 2011). By the way, clinical librarians can help medical students improve their working quality by teaching them how to search and retrieve information (Wagner & Byrd, 2004; Coats, Sutton, Vorwek & Cooke, 2009). The use of clinical librarians as mediators and their presence in hospitals, in addition to learning, can increase medical students' confidence (Ilic, Tepper & Misso, 2012).

The effectiveness and impact of clinical librarian-provided services have been evaluated in so many studies worldwide (e.g. Wagner & Byrd, 2004; Brettle et al., 2011; Cooper & Crum, 2013; Perrier et al., 2014). There has been a recent related study (Aitken, Powelson, Reaume, and Ghali, 2011) that investigated the effect of a clinical librarian's presence in a health care team on medical residents and clinical clerks of a hospital in Calgary, Canada. The results showed that clinical librarian intervention had a significant positive effect on medical trainees' self-reported ability to independently locate and evaluate evidence resources to support patient care decisions. 88% of reports showed that the treatment plan should have changed based on skills taught by the clinical librarian. Brettle, Maden and Payne (2016) measured clinical librarian impact on organizational and patient outcomes using a robust approach. In the research, a questionnaire and some interviews were put. The results showed that clinical librarians contribute to a wide range of outcomes including choice of intervention, diagnosis, and life quality, increased patient involvement in decision making, cost savings, and risk management. These include test avoiding, referrals, readmissions, and reducing the length of stay. Herrmann, Winer, Kern, Keller and Pavuluri (2017) investigated integrating a clinical librarian to increase trainee application of evidence-based medicine on patient family-centered

rounds (PFCR) which provides an opportunity to improve communication, encourage shared decision-making, and promote new trainee learning opportunities. The data collection tool was (PFCR) clinical question tracker and implemented interventions with Plan-Do-Study-Act (Brian, Orlov, Werner, Martin, Arora & Alkureishi, 2018). Results had shown the significant impact of a clinical librarian on inpatient team clinical questioning quality and quantity, learner self-reported literature searching skills, and use of evidence-based medicine. The study site was located at the University of Chicago. Clinical questioning had been done among inpatient pediatric and internal medicine attending rounds. The Fresno tool was used to test competence in evidence-based medicine. They found out that those teams with clinical librarians were associated with more and improved clinical questioning and subjectively perceived to improve clinicians' evidence-based medicine skills. Focusing on geographical peculiarities, there are some attempts to identify librarians' capabilities and determine the feasibility of clinical librarian services in reducing medical errors, providing quick access to health information, and giving services to physicians in Iran. Motamedi, AleTaha and Bahaadinim (2014) studied the role of clinical librarians in telemedicine in Kerman, south-east, Iran. They found out that clinical librarians were able to provide reliable information to physicians who work in rural and remote settings; however, they need to improve their English language skills and knowledge about online search strategies and basic medication.

No local study was found on the effect of clinical librarians on teaching medical information accessing skills to medical students. Medical students in Iran especially in BPUMS usually are not given enough training to search and access health information. Therefore, a clinical librarian must be included to accompany them. Regarding this, in this study an attempt was made in order to not only assess the familiarity of Iranian medical students with the clinical librarian services and show the necessity of using clinical librarians as a member of hospital team, but also to measure their effect on improving health information accessing skills of medical students. This led to a set of recommendations which holding the design of this study.

Materials and Methods

Study design and setting

This applied study with a quasi-experimental design was conducted in 2017 on senior medical students at Persian Gulf Martyrs Hospital administered by BPUMS in Iran taking the medical course in 2013. Initially, to select study subjects, a list of all medical students who enrolled in 2013 was extracted by referring to the education department of the faculty (n=52). The reference which had the exact information about the student was the education department which plays the coordinating role to hold up the workshop in a clinical research center located at Persian Gulf Martyrs Hospital. Following this, the students were divided into four groups of pediatric, gynecologic, surgical, and internal medicine groups of 13 members by the educational department. To begin the clinical course, the two groups of pediatrics and gynecologic were randomly selected as test groups (n=26) and two groups of surgical and internal medicine as a control group (n=26). After that, the training workshops were set up for two months. Besides, the training sessions with the presence of a clinical librarian at the clinic for the test group were held teaching how to search medical databases. The next step will be for students of the control and intervention groups to complete the questionnaire with the help of the clinical librarian to omit any misunderstandings. Five students (who were unwilling to participate in the study or did not answer questions) from the intervention group and three from the control group were

excluded from the study. Finally, 44 subjects were selected for the study (21 in the test group and 23 in the control group).

Data Collection Tool

The self-administered questionnaire used for gathering data from students before and after the intervention is a 57-item inventory (in Persian) consisting of eight sections of students' characteristics including sex, age, the field of study, and the year of school entry (4 items), the use of information resources (7 items), familiarity with how to search in medical databases including Clinical Key, Ovid, Cochrane Library, PubMed, Web of Science, Scopus, Science Direct, and ProQuest and Up To Date (9 items), the use of medical databases (9 items), the time required for each search in medical databases (9 items), the role of a clinical librarian (4 items), the skills that a clinical librarian is required (6 items), and the need for clinical services in hospital (9 items). It was based on 5-point Likert scale scoring as 5= Very high, 4= High, 3= low, 2= Very Low, and 1= Never. To examine the content validity of the instrument, ten experts in the fields of Knowledge and Information Science, Medical Library and Information Sciences evaluated the contents during 3 months. After improvement, its validity was confirmed. The reliability of the tool was evaluated using Cronbach's alpha. It was obtained as 0.93 which is acceptable.

Intervention

Medical students in a test group received intervention by a clinical librarian as follows: three sessions of workshop training on medical information accessing skills for 3 hours, two sessions of morning rounds for students in pediatric clinical courses, and three sessions of participation at the clinical research center located at Persian Gulf Martyrs Hospital and receiving related educational materials, and one session in hospital skill lab for students in gynecologic clinical courses. They were taught how to access the medical databases and how to search databases. Basic and advanced search strategies were taught to access medical guidelines, Evidence Base Medicine (EBM) resources, and educational and drug interactions databases. Also, scenarios that rose in the skill lab by physicians were answered by helping clinical librarians. The control group did not participate in any educational workshops. They only received educational material about accessing skills after the test group had finished its activity. Almost two months after teaching, holding workshops, and rounding, the questionnaires were distributed among participants and collected after completion.

Data Analysis

Collected data were analyzed in SPSS v.19 application by using descriptive statistics such as frequency, percentage, mean and standard deviation, and by performing statistical tests including Independent t-test, paired t-test, and degrees of freedom (Control Group: 23, Test Group: 21). The significance level was set at $\alpha = 0.05$.

Results

Characteristics of participants

Of 44 medical students who participated in the study, 30 were females (68.2%) and 14 were males (31.8%) with an average age of 23 years studying general medicine. Their entry school year was 2013.

The use of information resources

Subjects before and after intervention were asked to answer how often they use information resources. Table 1 presents descriptive statistics for both study groups. Results indicated that there was a statistically significant difference before and after intervention in test group mean scores. Increasing mean scores show that the student's approach to using specialized medical databases and referring to students who have access to resources has changed after the intervention. For other methods using information resources, no significant differences were found in the mean scores before and after the intervention.

Table 1

Mean and Standard Deviation of Score before and after Intervention for the Use of Information Resources by Participants

Items	Control group (N=23)			Test group(N=21)		
	Mean ± SD		Sig.	Mean ± SD		Sig.
	Before	After		Before	After	
Printed & electronic books	3.6±0.92	3.56±1.03	0.525	4.09±0.83	3.80±0.81	0.186
Printed & electronic journals	2.17±1.02	2.47±1.27	0.259	2.7±1.1	3±0.83	0.267
Social media	2.91±1.12	3.04±1.18	0.503	3.19±1.47	3.28±1.18	0.766
Online search engines	3.73±1.38	3.73±1.17	0.100	4±0.94	3.95±1.02	0.825
Lecture notes or asking questions from professors	3.95±0.97	3.91±0.99	0.825	4.47±0.67	4.28±0.64	0.329
Referring to M.A. Students who have access to resources	3.69±0.97	3.65±1.07	0.833	3.52±1.36	4.38±1.02	0.012
Medical databases	3.26±1.13	3.04±1.22	0.328	2.76±1.09	4.42±0.74	0.001

Familiarity with searching techniques in medical databases

Medical students were asked to specify their familiarity and availability and how much they are familiar with the techniques of searching in medical databases including Clinical Key, Ovid, Cochrane Library, PubMed, Web of Science, Scopus, Science Direct, ProQuest, and Up To Date. Based on the results presented in Table 2, before intervention in the test group, they were familiar with PubMed but they were not familiar with how to search in Clinical Key, Ovid, Cochrane Library, Web of Science, Scopus, Science Direct, ProQuest and Up To Date and there was a significant difference between the mean scores in the test group, before and after the intervention ($p<0.05$). The participant's knowledge grows. In the control group, the item knowledge stays the same as before.

Table 2

Mean and standard deviation of scores before and after intervention for the familiarity of medical students with searching techniques in medical databases

Items	Control group (N=23)			Test group(N=21)		
	Mean ± SD		Sig.	Mean ± SD		Sig.
	Before	After		Before	After	
Clinical Key	2.30±1.36	2.21±1.12	0.665	1.76±0.99	3.95±0.74	0.001
Ovid	1.91±0.99	1.86±1.01	0.814	1.61±0.97	3.23±1.30	0.001
Cochrane Library	1.95±1.1	2.08±1.41	0.589	1.76±1.13	3.52±1.47	0.001
PubMed	2.82±1.33	2.82±1.37	1	2.95±1.46	4±1.18	0.024
Web of Science	2.04±1.18	2.26±1.42	0.233	2.42±1.39	3.66±1.19	0.003
Scopus	2.56±1.40	2.60±1.33	0.814	2.33±1.46	3.90±0.94	0.001

Items	Control group (N=23)			Test group(N=21)		
	Mean ± SD		Sig.	Mean ± SD		Sig.
	Before	After		Before	After	
Science Direct	2.43±1.40	2.65±1.40	0.423	2.52±1.50	4.14±0.96	0.001
ProQuest	1.91±1.20	2.04±1.22	0.451	2.23±1.37	3.61±1.32	0.008
Up to Date	2.47±1.41	2.52±1.53	0.803	2.38±1.53	4.09±1.04	0.001

The Use of Medical Databases

Subjects were surveyed about how often they use the above-mentioned medical databases. Table 3 presents the mean and standard deviation of scores. A significant difference was found before and after the intervention in the mean scores of the test group ($p<0.05$). Before the intervention, and due to a lack of familiarity with the databases, there was no use of some medical databases. After the intervention, the usage level increased and the willingness to use them too. There was no significant difference in mean scores in the control group before and after intervention in each section ($p>0.05$).

Table 3

Mean and standard deviation of scores before and after intervention for the use of medical databases

Items	Control group (N=23)			Test group(N=21)		
	Mean ± SD		Sig.	Mean ± SD		Sig.
	Before	After		Before	After	
Clinical Key	1.82±0.19	1.86±1.12	0.847	1.95±1.20	3.95±1.02	0.001
Ovid	1.69±1.01	1.60±0.89	0.648	1.76±1.09	3.28±1.30	0.001
Cochrane Library	1.60±0.89	1.78±1.12	0.406	1.52±0.81	3.33±1.31	0.001
PubMed	2.39±1.23	2.60±1.30	0.260	2.85±1.62	4.28±0.90	0.002
Web of Science	1.73±1.09	2±1.27	0.228	2.04±1.39	3.23±1.33	0.001
Scopus	2.08±1.22	2.26±1.28	0.257	2.42±1.59	3.80±1.12	0.003
Science Direct	2.04±1.18	2.34±1.40	0.231	2.57±1.66	4.23±0.88	0.001
ProQuest	1.86±1.25	1.86±1.21	1	1.76±1.17	3.57±1.24	0.001
Up to Date	2.21±1.34	2.47±1.50	0.266	2.28±1.64	4.04±1.20	0.001

The Time Required for Searching in Medical Databases

Subjects were also asked about how much time they needed to search for specialized information in the above-mentioned medical databases. The mean and standard deviation of scores are shown in Table 4. By comparing the mean scores in control and intervention groups, it can be found that the time that subjects are required for searching information in medical databases is mostly reduced after the intervention. It indicates that most subjects improved their search skills after intervention and shows the fact that they did not require a long time for their searches. So, a significant difference was found between mean scores before and after intervention ($p>0.05$).

Table 4

Mean and standard deviation of scores before and after intervention for the time required for searching in medical databases

Items	Control group (N=23)			Test group(N=21)		
	Mean±SD		Sig.	Mean±SD		Sig.
	Before	After		Before	After	
Clinical Key	2.73±1.62	2.60±1.52	0.650	3.61±1.35	3±1.04	0.085
Ovid	2.73±1.62	2.69±1.60	0.866	3.66±1.42	2.66±1.01	0.007
Cochrane Library	2.65±1.61	2.69±1.60	0.847	3.47±1.43	2.61±0.97	0.018
PubMed	2.86±1.54	2.91±1.53	0.874	3.57±1.28	2.90±0.94	0.059
Web of Science	2.52±1.47	2.69±1.57	0.558	3.47±1.47	2.71±0.90	0.029
Scopus	2.86±1.51	2.73±1.51	0.623	3.61±1.43	2.71±0.90	0.020
Science Direct	2.82±1.49	2.60±1.33	0.628	3.61±1.35	3.90±0.94	0.040
ProQuest	2.52±1.47	2.65±1.55	0.558	3.47±1.47	2.76±0.94	0.029
Up to Date	2.73±1.54	2.73±1.57	1	3.61±1.32	2.90±1.09	0.056

The Role of a Clinical Librarian

Subjects were asked if they expect a clinical librarian to play the following roles: 1) Increasing the ability of the medical team to provide medical information at the patient's bedside; 2) Accelerating clinical decisions; 3) Updating the medical team information in patients' records, and 4) Teaching how to access specialized resources and databases. Table 5 presents the mean and standard deviation of scores. According to the results, there was a significant difference between mean scores in the test group before and after intervention ($p<0.05$). All the participants believed that the roles listed for clinical librarian improved their access to medical information.

Table 5

Mean and standard deviation of scores before and after intervention for the role of a clinical librarian

Item		Control group (N=23)			Test group(N=21)		
		Mean±SD		Sig.	Mean±SD		Sig.
		Before	After		Before	After	
1	Increasing the ability of the medical team to provide medical information at the patient's bedside	4.26±0.91	4.39±0.72	0.266	4.19±0.74	4.8±0.40	0.001
2	Accelerating clinical decisions	4±1.16	4.34±0.77	0.017	4.23±0.76	4.80±0.40	0.001
3	Updating the medical team information in patients' records	4.08±1.12	4.26±0.91	0.295	4.14±0.96	4.80±0.40	0.002
4	Teaching how to access specialized resources and databases	4.26±0.86	4.37±0.83	0.692	4.42±0.67	4.76±0.53	0.090*

The skills and knowledge of a clinical librarian are required to meet the information needs

Participants were also asked about the skills and knowledge that a clinical librarian needs to meet. In this section, six items were surveyed: 1) Familiarity with the up-to-date medical resources; 2) Familiarity with medical databases; 3) Familiarity with Library and Information

Sciences; 4) Familiarity with how texts are evaluated; 5) Familiarity with basic medical sciences, and 6) Ability to search and retrieve information. Results presented in Table 6 indicated that there was no significant difference between mean scores in any groups before and after intervention ($p>0.05$). Because the participants believed that clinical librarians should possess some sets of skills, therefore, it is not bearable for them to accomplish their work with the minimum basic skills.

Table 6

Mean and standard deviation of scores before and after intervention for the skills and knowledge of a clinical librarian is required

Item		Control group (N=23)			Test group(N=21)		
		Mean±SD		Sig.	Mean±SD		Sig.
		Before	After		Before	After	
1	Familiarity with the up-to-dated medical resources	4.65±0.57	4.56±0.50	0.426	4.52±0.67	4.85±0.35	0.016
2	Familiarity with medical databases	4.56±0.50	4.56±0.50	1	4.57±0.59	4.85±0.35	0.055
3	Familiarity with Library and Information Sciences	4.39±0.83	4.52±0.66	0.328	4.33±1.11	4.61±0.80	0.162
4	Familiarity with how texts are evaluated	4.43±0.89	4.39±0.78	0.833	4.23±1.13	4.76±0.43	0.053
5	Familiarity with basic medical sciences	4.21±1.08	4.39±0.78	0.517	4.42±0.92	4.71±0.46	0.083
6	Ability to search and retrieve information	4.56±0.78	4.43±0.72	0.418	4.57±0.74	4.8±0.4	0.204

The Need for Clinical Librarian Services in Hospitals

In the questionnaire final section, subjects were questioned about the need for using clinical librarian services in hospitals. This section consists of 9 items, seven items are about the advice these services can give: 1) for choosing scientific journals, determining the validity of medical literature, and acquiring reading skills; 2) for physicians and researchers to learn, research and search for proper information; 3) to combine the best and most up-to-date information with the clinical experience of the physician and patients' expectations; 4) to enhance physicians' access to information needed for clinical decision makings; 5) to improve the role of education in health; 6) To increase and improve the quality of patients' treatment, and 7) Advice on accelerating the clinical decision making by physicians; Two other items ask the quality of clinical librarian services in hospitals: 8) Are you satisfied with the services provided by the clinical librarians? 9) Will you offer clinical librarians to others? The mean and standard deviation of scores are shown in Table 7. Significant differences were observed after intervention in the test group ($p<0.05$).

Table 7

Mean and standard deviation of scores before and after intervention for the Clinical librarian services needed for hospitals

Item		Control group (N=23)			Test group(N=21)		
		Mean±SD		Sig.	Mean±SD		Sig.
		Before	After		Before	After	
1	For choosing scientific journals, determining the validity of medical literature, and acquiring reading skills	4.13±0.75	4.13±0.62	1	4.33±0.65	4.71±0.46	0.057
2	For physicians and researchers to learn, research and search for proper information	4.04±0.76	4.17±0.57	0.328	4.33±0.65	4.76±0.43	0.025
3	To combine the best and most up-to-date information with the clinical experience of the physician and patients' expectations	4.17±0.77	4.21±0.59	0.665	4.14±0.65	4.76±0.43	0.002
4	To enhance physicians' access to information needed for clinical decision makings	4.04±1.02	4.04±0.87	1	4.09±0.62	4.76±0.43	0.001
5	To improve the role of education in the field of health	4.13±0.81	4.17±0.93	0.714	3.85±0.72	4.71±0.46	0.001
6	To increase and improve the quality of patients' treatment	3.86±1.09	4.08±0.99	0.135	3.90±0.76	4.76±0.43	0.001
7	Advice and guidance to accelerate the clinical decision making by physicians	3.91±1.04	3.95±0.97	0.824	3.76±0.99	4.76±0.53	0.001
8	Are you satisfied with the services provided by the clinical librarian?	3.21±1.12	3.56±1.03	0.162	3.95±0.80	4.80±0.40	0.001
9	Will you offer clinical librarians to others?	3.39±1.07	3.60±0.98	0.308	3.95±0.80	4.80±0.40	0.001

Discussion

Medical databases provide access to healthcare information in the shortest possible time. To make use of them, it is imperative to know them and learn how to use them. The new generation of physicians expects all search engines to be as easy to use as Google, however, their knowledge of medical databases and the literature searching techniques is at a low level and they do not have sufficient skill and time to use these databases (Swiatek-Kelley, 2010). This has faced them with serious challenges. One of the important ways to overcome this challenge is to increase the knowledge of physicians. This challenge has provided an opportunity for librarians and medical informationists to act as clinical librarians and help physicians and medical staff access the most up-to-date information. One of the skills of clinical librarians is teaching information-accessing techniques to medical students. To achieve this goal, librarians and clinical informationists should be employed as advisers and trainers near the treatment team. Many studies in this field have indicated the effective role of the clinical

librarian as a physician assistant in the diagnosis and treatment of diseases, providing accurate scientific information, storing and retrieving information, and their evaluation. Holding workshops and teaching information-seeking skills to medical students to increase their knowledge during clinical problem solving was the unique goal of this study.

The findings of this study revealed that according to the tests on senior medical students of BPUMS, the familiarity and use of specialized medical databases were not at a satisfactory level for solving the information needs. After performing and implementing the clinical librarian program, a significant improvement was observed and turned into a satisfactory level. The role of the clinical librarian in holding workshops providing knowledge of medical databases, introducing electronic books and journals, and searching for tips were reported important by medical students.

Before the intervention, and among the various types of information-seeking behaviors, the use of lecture notes, asking questions of clinical professors, and using printed and electronic books were more popular among medical students. After the intervention, the specialized databases and those who had already familiar with these databases were referred to more by medical students. Besides, the results of this study revealed that, before the educational intervention, students' familiarity with the Clinical Key, Ovid, and Cochrane Library databases which are one of the main and most important specialized medical databases was “very poor”. PubMed database was used more than other databases and the familiarity of medical students with this database was at a “high” level. The level of familiarity with other databases including Up To Date, Science Direct, Scopus, Web of Science, and ProQuest was at a “poor” level. The physician’s opinion is consistent with the findings of Movahedi, Ashrafirizi and Sharifmoghadam (2014). The difference was in holding an educational workshop by an expert clinical librarian which improved information retrieval skills and increased the use of medical databases. Results of Amini, Sagheb, Moghadami and Shayegh (2007) in terms of lacking familiarity with medical databases among medical assistants and physicians, lacking the training to familiarize themselves with the databases, and the use of evidence-based medicine was consistent with the results of the present study.

Findings on searching time showed that medical students spent a lot of time on each search before the intervention. (Brassey, Elwyn, Price & Kinnersley, 2001; Tafreshi, Momenzadeh, Fayazbakhsh & Khodayi Ashan, 2010). It might be because of lacking any education or curriculum to teach them how to search for resources. After the intervention, this time was reduced due to the skill they gained in using databases and sharing information at that time by a clinical librarian.

The findings of this study showed that medical students considered clinical librarians as an advisor and agreed with the presence of a librarian in the hospital. They admitted the effective role of a clinical librarian in the availability of updated clinical information and strengthening their abilities. Their expectations of a clinical librarian were: to increase the medical team's ability to provide medical information, update the medical team's information, and in the end, teach them how to access the resources and databases in the specialized fields. The findings of Habibi, Farzi and Lotfollahzadeh, 2008; Aitken, et al., 2011, and Motamediet al. (2014) showed the physicians’ viewpoint on how they seek an answer to their clinical problems. In all research, the presence of a clinical librarian has been picked. The present study works on the gap between physicians and information. The CL for medical student assistant[2] program demonstrates a direct effect on patient care, improved quality, and time that has been saved.

Findings of this research regarding the educational role of a clinical librarian indicated that the skills are acquired mainly through practical training and participation to access and meet the medical information needs of medical students for using up-to-date medical resources and evidence-based medicine can be one of the goals of BPUMS. Also, considering the physicians' need for up-to-date and reliable health information at the clinic, information resources including specialized medical databases should be introduced in hospitals in line with the implementation of the clinical librarian program. Our goal in conducting this study explain how major changes in health care by a CL, which performs a broad range of responsibilities create a desirable context.

Conclusion

In this study, it was found that more than half of senior students at BPUMS, despite having access to specialized databases, refer to printed and electronic books and journals, their professors, and Google search engines to find answers to their questions and meet their information needs. The lack of updated medical evidence and resources used by medical students was due to the lack of specialized medical database knowledge. To empower students, educational workshops should be conducted on searching techniques by clinical librarians, because clinical librarians are highly skilled in this area and are familiar with the effective searching techniques. Results of this study revealed that BPUMS was feasible for a small-scale clinical librarian project implementation.

Future plan

This study examined how information resources are available among medical students. Initially, it is suggested to investigate the feasibility status of using clinical librarians among treatment teams and also to investigate the barriers Following this, and by assigning a course or curriculum to give students, more awareness of the use of specialized medical databases has been suggested. More studies are also recommended on investigating the barriers to using medical databases. The current study investigated four groups of pediatric, gynecologic, surgical, and internal medicine students at BPUMS. On the other side, assessing students' information-seeking behavior in other groups is recommended.

Limitations

Due to the coordination with the education department, and to make medical students participate in a workshop, a number of them had expressed their opinions due to lack of time and reluctance to respond and participate in this research. Suggested by the researchers' team, it was better to have these kinds of training, before they enrolled in the medical round in the first four years of university and become familiar with a medical librarian. This is due to the different courses they take in these years of studying.

Declarations of interest: None

Endnotes

1. We use BPUMS instead of Bushehr University of Medical Sciences in this paper.
2. Clinical Librarian for Medical Student's Assistant (MSA)

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