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Comparison of Evidence Based Medicine resources on Responses to Clinical Questions on Diabetes

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Abstract

Among the large volume of information existed in the more important fields such as diabetes, the evidence-based resources offer timely the information to the physicians who do not have enough time to study.While the selection of validated sources face challenges in the field of diabetes, this study compare the sources recovered from the evidence-based databases.The design of this research is cross-sectional, survey, descriptive and is an applied type. Preparing a list on clinical questions here was done as referring to the Diabetes Center in Semirom for 5 months. The following keywords were searched on databases: Up To Date, Clinical Key, Embase, Cochrane, Ovid, and PubMed Tool. The data were analyzed using the descriptive and inferential statistics in terms of tables, diagrams, chi-square test. The findings showed that both Ovid and Clinical Key databases recovered more relevant documents in contrast to other databases. According to the most relevant documents. According to the relevant and relatively relevant documents, Clinical Key, Embase, Ovid and Up To Date databases had the highest recall in contrast to the PubMed and Cochrane databases which possessed the lowest recall. According to the most relevant documents, the Ovid Database has the highest precision while the PubMed Database had the lowest precision. Among the databases, up to date had retrieved the relevant documents.Ovid possesses more recall and precision among the databases analyzed, But evidence-based resources are generally well-suited to clinical questions in the field of diabetes

Keywords: Evidence-Based Medicine, resources, recall, precision

Introduction

Doctors and members of caretakers and treatment groups belong to one of the most important classes of society. Their access to valid and up-to-date information means the provision of health and hygiene in society, and in innumerable cases it means saving of patient's life. By the growth of information technology and unlimited increase of the resources, doctors encounter problems such as low skills in searching internet, information retrieval and shortage of time opportunity in applying these skills(Ansari ,M.,2016). Nowadays, due to rapid growth and specialization of medical science, it is impossible for every doctor to study all published texts. Davidoff and his colleagues believe that in order to keep his/her information up-to-dated, every general practitioner should read 17 articles every day. This will prevent him from going to the office (Davidoff ,F, etal,1995). The information growth era demands refined and valid information. Given this range of medical information, obtaining the information required by the physicians seems to be difficult. The so called "evidence-based medicine "proposes that instead of spending time to read all of the texts, it is possible to search and study valid information in order to provide answers to clinical questions when required and in case fashion. The evidence-based medicine refers to a confident, precise and contriving use of the best existing information for every one of the patients. In order to promote more the qualities of the clinical care for the patients, during recent years, clinical experience has been combined with empirical evidences. In fact, the evidence-based medicine is the best use of empirical evidences in clinical decision making (Sackett DL , etal,1996). According to the definition, the evidence-based medicine refers to finding and applying the results of the new studies systematically and based on the clinical evidences (Rosenberg W and etal). In order to search and retrieve the medical information, provide medical care, diagnosis and treatment, accurate recoding of the clinical information of the patients, and publication of medical texts, doctors require specific and specialized evidence based medical web sites(Zarea, V,2006), but, due to the limited skills in searching and retrieving the information, and shortage of time for the practitioners, existence and presence of a person with searching skills and expertise can have important role in supplying the informational requirements of the

care and treatment   group, thus it leads to improved medical and treatment service quality. Bookkeepers, who have medical knowledge and required information finding skills, are among these people (Schacher, LF,2001). Doctors, clinical experts, and book keepers, and informers of the hospital libraries and universities of medical science of the iran face some challenges in evaluating and selecting valid information resources of clinical medicine(Azadeh Tafaroshi, F , etal,2012). The diversity and growth of evidence based medical information resources, the differences they hold in easy access and, subject coverage, validity, accuracy, being up to date, structure, the advantages of accessibility, cost, etc, further reveals the necessity to study and evaluate them (Beydokhti, H, Haji Zeinolabedini, M,2011.).

Standard clinical inquiries are required for evaluating and comparing the databases. Since among different clinical questions, questions about diabetes are noticed a lot, and it is because the diabetes is one of the chronic prevalent diseases in the world that differently spreads in all ethnicities (larijan ,B, Zahedi ,F,2001). This disease is considered as the most prevalent metabolic disease which brings about debilitating optic, Nephrogenic, neural, cardiovascular side-effects (Shabbidar ,S, Fathi, B,2007). It is worth noting that the cost related to the treatment of diabetes reaches annually up to 132 billion dollars (Crosson, JC ,etal, 2010). According to the official report of the world health organization, at the moment, 190 million are suffering from this disease around the world. It is estimated that by the year 2025, it will be 330 million. It is estimated that, by 2030, the developing countries will constituted 77.6 % of all patients suffering from diabetes (Yarahmadi ,A,2014). At the moment, diabetes is the fifth cause of mortality in the world (Rakhshandero ,S, Hedarnea ,A, Rajab, A,2006). Its prevalence in Iran during 2010 was about 8 %9(Golozar, A , etal,2011). Its prevalence has been reported to be 7.8% in Isfahan province (Larejani ,B, Zahedi, F,2001) and among towns of Isfahan province; Semirom has a large number of diabetic patients. According to the information mentioned above, in order to resolve the various challenges such as generality, ambiguities and hindrance of retrieved recourses, up to dated resources in

responding to clinical inquiries through evidence based data basis and due to the effects of this immediate training of the diabetic patients and reduction of costs spent for treatment of diabetes, this study is conducted to compare evidence based medical databases including, Up To Date, Clinical key, Embase, Cochrane library, Ovid, PubMed (Clinical Queries), in order to provide answers to clinical inquiries in the field of diabetes in 2018.

Statement of the Problem

Evidence-based medicine can be defined using the best evidence available in decision-making on patient care. The development of technology and the emergence of evidence-based bases provide a good environment for the development of evidence-based medicine. These clinical information tools, among the large volumes of information available on important medical issues, such as diabetes, which are growing rapidly in today's society, provide timely and easy information to physicians who do not have enough time to study all published medical literature. And their information needs. Diabetes is one of the main causes of mortality in Iran, as statistics show, diabetes is one of the six mortality factors in Iran. . On the other hand, the disease has a lot of therapeutic costs, so paying close attention to the clinical questions in this area is very important. Since physicians and clinicians and librarians and hospital informants face challenges in evaluating and selecting reliable sources of clinical information, especially in specific areas such as diabetes, and given the costs involved in accessing these resources, and given that research is still under way in this area, In particular, the results of this study can help the Diabetes Specialist to retrieve the best answer for clinical questions in this area by selecting the best evidence-based medical information source in the shortest time.

Purpose of study

Comparison of Evidence Based Medical Databases Based on the Response to Clinical Questions in the Field of Diabetes

Research Questions

1. Is there a significant difference between the frequency of resources retrieved from each of the databases of up to date, Clinical key, Embase, Cochrane, Ovid, and pubmed?

2.Is there a significant difference between the day-to-day resources of the diabetes domain in each of the databases of up to date, Clinical key, Embase, Cochrane, Ovid, and pubmed?

3. Is there any significant difference between the rate of responding to each of the clinical questions in the field of diabetes in the databases of up to date, Clinical key, Embase, Cochrane, Ovid, and pubmed?

4.Is there any significant difference between the Relative generality of information retrieval in the field of diabetes in the Clinical Databases of up to date, Clinical key, Embase, Cochrane, Ovid, and pubmed?

5.Is there a significant difference between the Hindrance or precision to information retrieval in the field of diabetes in Clinical Information Tools up to date, Clinical key, Embase, Cochrane, Ovid, and pubmed?

Literature Review

So far, there has not been much research on the accountability of evidence-based bases in a specific area. But we mention a number of studies that are relatively related. Farhadpour and Bahmei, in 1395, investigated the effectiveness of Web search engines in retrieving information and knowledge information in terms of seven indicators by descriptive survey method. The results indicate that the search engines have a wide range of integrity and orientation.Azadeh et al., In 1394, in their study of the degree of adaptation of evidence-based medical resources based on Ovid's benchmark, concluded that the sources studied were less than Ovid's benchmark score. Despite the fact that evidence-based medical resources have been developed to achieve rapid medical evidence, they are weak in some respects. Rahmani and Hajizin Al Abedini in their

research have compared the generality and functioning of Science Direct & Springer database. The results indicate that there is a significant difference between the universality of the bases. Malikizadeh, hazeri and Kaykhahi also studied the thematic structure of the documents related to the type 2 diabetes treatment at the Pubmed Base in 2014. During the study, they found that the growth of scientific production in the field of treatment was on the trend during the time period examined. During the study, they found that the growth of scientific production in the field of treatment was on the rise during the time period examined. Bidokhti and Hajizin Al Abedini have done research in 2011 that are more consistent with the present study. In this research, evidence-based information sources have been evaluated based on the extent to which clinical questions are answered. According to the results, apodeditis was a good source for clinical questions. In 2016, Ratbon and etal compared the performance of seven key bibliographic databases in identifying all systematic studies of hypertension interventions. Among the sites under review, Cochrane has a unique record. In 2009, Kumaru and Perkash reviewed the relative importance of Google and Yahoo search engines. There is a significant difference between the generality and precision of search engines. In 2008 Faryl reviewed the evidence-based tools available at the Canadian Health Library, up to date was a good answer to clinical questions. Fenton and Badjet compared the health information content of the two databases of apoded and annihilation in 2007. The findings showed that apododitis has a broader thematic scope.

Methodology

This is a kind of applied, analytical survey study. Population of this study include evidence based databases such as Up To Date, Clinical key, Embase, Cochrane library, Ovid and PubMed tools . In order to prepare a list of clinical inquiries, some questions were used for 5 moths selected among the set of clinical inquiries designed by specialist and experienced physicians in the field of diabetes in diabetics center of Semirom region. The clinical questions presented by the expert physicians have been designed according to their real needs in facing the patients and

their information and treatment requirements. After preparing the desired list, the frequency and the percentage of different clinical questions was determined to locate the domain of each question (treatment, intermediary, diagnostic, scale/quantity, pre-consciousness/ prediction, finding the cause, …. etc), then, some key words about medical subjects were extracted from databases. Finally, the key words were searched using simple search in each one of the six previously mentioned information databases through the terminals connoted to internet in the information provider base of Hamadan University of medical sciences. Through analysis of the evidences containing the answers by the physicians the correlation between retrieved resources and clinical questions of diabetes was determined.

Given the time limits for the clinical specialist and the physicians of this field , it seems difficult to review the large number of documents and answers to the clinical inquiries .Thus, among the retrieved answers, the first ten retrieved answers in each one of the information databases were given to the specialists to determine the correlation of the retrieved resources with the answers provided to the clinical inquiries (Mirhosseni, Z, Babae, E,2013).

The amount of generality and hindrance of the resources was reviewed by the use of following formula:

$$\text{Relative generality} = \frac{total\ number\ of\ related\ douments\ retrieved\ by\ a\ base}{total\ number\ of\ related\ documet\ revewed\ by\ all\ of\ the\ studied\ bases}$$

$$\text{Hindrance or precision} = \frac{the\ number\ of\ retrieved\ douments\ related\ to\ a\ base}{total\ number\ of\ related\ documet\ reviewed\ from\ the\ same\ base}$$

After determining the degree of coefficient of the retrieved documents, generality, and hindrance were calculated in two ways. At first, totally related document were place on the formula, and then the set of totally related documents and relatively related

documents were placed over the detraction formula of generality and hindrance. Finally, the data was analyzed using descriptive statistics in the form of tables and charts and chi square and tests in SPSS software . In order to find out about the up to date features of the retrieved resources, the freshness and newness of 10 information bases were investigated. The up to date nature of the information is measured using the publication date of the resources (Hedari, G,2006).

Data Analysis, Interpretation and Discussion

The Ovid data base has the most research result and Up to Date data base has the least number of research results(table 1).

Table 1: Frequency of retrieved results in each one of the studied bases

database	Min
Clinical key	162187
Cochrane	31498
Embase	172450
Ovid	355629
Up to date	3400
PubMed	166985

After Ovid base, the Embase, PubMed clinical Queries, clinical key and Cochrane library bases reviewed more documents compared to Up to date, and after conducting required searches, the results obtained from six evidence based medical data base were studied separately from the answering perspective.

Table 2: comparison of the amount of responding

of evidence based medical data bases to clinical questions

database	Relative		
	Quite relevant	Relatively related	Totally irrelevant
cochrane	4	3/29	2.703
embase	4/20	2/57	2/83
pubmed	3/25	3/573	3/29
ovid	8	1/58	0/416
Up to date	4/416	4/417	2/083
clinicalkey	6/54	2/54	1

According to Table 2, Fisher's exact test was retrieved from the evidence-based databases investigated in diabetes and the response to clinical questions in the field of diabetes, both Ovid (80%) and Clinicalkey (60%) databases compared to other databases. (Based on fully relevant sources). With regard to the totally relevant resources, after the two sites mentioned, embase, Cochrane, up to date and pubmed bases are located respectively. According to related and relatively relevant documents, Ovid, Clinicalkey, up to date, Cochrane, embase and pubmed databases were respectively responsive. There is a significant difference between the evidence-based bases in responding to clinical questions in the field of diabetes. In responding to the question of the extent to which resources are answered in terms of the content of the

questions, there are more questions in the field of epidemiology of the two clinicalkey and up to date. In the field of diagnosis, prognosis and affiliation, Ovid's base has responded to all the questions.

Table3: Generality of retrieved data in diabetes domain in the studied databases

database	Generality1	Generality2
Clinical key	0/2	0/3
Cochrane	0/1	0/03
Embase	0/1	0/34
Ovid	0/2	0/34
Up to date	0/1	0/34
PubMed	0/1	0/33

According to totally related documents Ovid data base had the most generality of 27.5% and pub med data base the least amount of 0/11%. Based on the related and relatively related documents of data bases, clinical key, Embase, Ovid, Up To Date databases had the most generality and Cochrane and Pub Med had the least generality , but, generally, there is no significant difference in the amount generality between resources. The number 1 generality is achieved based on totally related document and the number 2 generality were achieved based on totally related and relatively related documents.

Table 4: Hindrance of retrieved data in diabetes domain in the studied databases

database	Hindrance1	Hindrance2

Clinical key	0/6	1
Cochrane	0/3	0/9
Embase	0/4	1
Ovid	0/8	1
Up to date	0/3	1
PubMed	0/3	0/9

According to the results of table 4, the Ovid database has the greatest hindrance and Pub Med has the least hindrance based on totally related documents. Based on the relatively related and related documents of the Clinical key, Embase, Up To Date and Ovid data bases have the greatest hindrance and the Cochrane and PubMed data bases have the least hindrance but, generally, there is no significant difference in hindrance between resources. The number 1 hindrance is achieved based on totally related document and the number 2 hindrance were achieved based on totally related and relatively related documents. Among the databases, up to date had retrieved the relevant documents.

Conclusion

In a study by Campel et al, users evaluated 5 clinical data tools based on ease of use, and satisfaction. Users were content with the content quality of these information tools and they could answer more questions using up to date data base(Campbell, R, Ash, J,2006), while in the present study the up to date base has retrieved less documents but like two clinical key and Ovid bases, it has retrieved less unrelated documents . The results of the study by Azadeh et al entitled as compatibility of evidence base medical resources based on Ovid indicated that evidence based medical resources achieved less

than half of total criterion score of Ovid, generally, they were congruous with criterion of Ovid in a level of 36.92 percent and the total point of 391 from 864, therefore the amount of congruity of all evidence based medical resources based on Ovid criterion was in weak level. Generally, in studying the amount of congruity of the bases based on 20 Ovid research criterion, the Cochran base have achieved the highest point, consult nursing and clinical key bases had achieved the second score, MDconsult had the third score, evidence clinical bases had the fourth score, and the Up to date base had the fifth score(AZADEH, F , etal,2015). According to the findings of this study clinical key and Ovid data bases had responded better to the clinical questions in the field of diabetes. According to the obtained results, the two Ovid and clinical key bases have better search tool, so they are better tools for the people who do not have enough acquaintance with advanced searching in the web. Mojiri et al evaluated 7 incessant data bases in the web site of Isfahan university of medical science from input and output points of view, based on a list of international criteria including Maryland k-12, DBMS, Ovid and Gulliver criteria. According to their result, the features of Ovid data bases was 100 % congruous with the international criteria and MDconsult with 57.33 % was placed in the lowest level of coincidence with international criteria (Mojiri ,S,2012). In the present study, the Ovid base had large precision, generality and it has provided answers to most of the questions (table 3, 4). A study by Fahimnia and Goodarzian entitled as " review and comparison of user interface characteristics of springer, Elsevier, Ebbsco, ISI (WOS) and Ovid as perceived by university of Tehran users " the Ovid base has gained more scores than other bases which is consistent with the results of our study(Fahimnia, F, Goodarzian, P,2014). Findings of this study indicated that among the reviewed evidence based databases in the field of diabetes and responding to clinical questions in the field of diabetes, the two Ovid and clinical key databases retrieved more related documents than other databases (table 1). The results also indicated that Ovid database has also more generality and hindrance. As the previous studies showed, the features of Ovid database, is 100% congruous with the international criteria (Mojiri ,S,2012). Given the importance of evidence based databases

in the field of treatment, prevention, … etc., it is suggested that the doctors can find answers to most of their question visiting evidence based databases. Also, it is suggested to investigate the quality of the information presented by clinical databases in the future studies. Another suggestion is to investigate other features of these databases like; retrieval speed, etc .The findings showed that both Ovid and Clinical Key databases recovered more relevant documents in contrast to other databases. According to the most relevant documents, the Ovid Database has the highest recall by %27.5 and the PubMed Database had the lowest recall by %0/11. According to the relevant and relatively relevant documents, Clinical Key, Embase, Ovid and Up To Date databases had the highest recall in contrast to the PubMed and Cochrane databases which possessed the lowest recall. According to the most relevant documents, the Ovid Database has the highest precision while the PubMed Database had the lowest precision. Among the databases, up to date had retrieved the relevant documents. Ovid possesses more recall and precision among the databases analyzed, But evidence-based bases are generally well-suited to clinical questions in the field of diabetes.

Recommendations

According to the results of the research, it is recommended that users of the community, including librarians and medical informants, doctors and providers of health services, medical and educational services in the field of diabetes, students and especially researchers, in the first priority to search information in this field from the database Evidence-Based Evidence is based on the ability to use documented evidence of diabetes, and then use Clinical, Embryos, Aptodite and Pabdom databases.

Using the up to date Database to Provide More Responding to Clinical Questions in the Field of Diabetes

Diabetes care professionals and specialists can use Ovid's diagnosis, prognosis and dependence in the field of epidemiology from two up to date and clinical keys in the field of intervention / therapeutics from ovid and clinical key

On the other hand, given the importance of evidence-based bases for treatment, prevention, and ..., it is suggested that a larger number of evidence-based medicine-based bases be examined and compared.

In the present study, due to shortage of doctors, the number of questions was reduced, but considering the infinity of clinical questions in the field of diabetes, it is suggested that the direct relationship with diabetic patients should be checked for more questions.

And comparing evidence-based bases in responding to clinical questions in other areas other than diabetes.

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