The education of medical librarians in evidence-based information services: a model of active learning[*]

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Abstract

Evidence-based practice stems from clinical approaches which are used in the late 18th and early 19th centuries' medical practices. This area is new in Turkey, too. Turkey needs some lessons about evidence-based practice in Departments of Information and Records Management. This paper, examining the examples in various other countries, presents a model for including the evidence-based information services, which are based on research done in the fields of health and medicine and especially of dentistry, within the contents of the already existing courses in education of librarianship in Turkey. The paper depicts the aims and fields of use of evidence-based information services and their contribution to active learning; examines the education of this subject in various other countries and shows its place in Turkey, and presents a model for the improvement of this education. It is proved that the education of the librarians who will give evidence-based information services both with special practices within the already existing courses or with optional courses given especially for this aim in education of librarianship will contribute considerably to active learning in dentistry.

Keywords: Evidence-based Dentistry, evidence-based information services, library science education, active learning

1. Introduction

Evidence-based practice stems from clinical, pathophysiological and epidemiological approaches which are used in the late 18th and early 19th centuries' medical practices. (1) Evidence-based medicine (EBM) helps at patient diagnosis, preparation of treatment plan, determination of treatment principles and methods, maintaining physical and mental health and laboratory studies. In addition, this way will provide the environment that is needed to do new observations and that will find answers for clinical problems. In order to practice all these, medical libraries need evidence-based information practices.

Researchers, doctors, and professionals that work in the field of health sciences with a high desire for qualified information, can benefit from evidence-based libraries and information centers. According to this, evidence-based information service, which will hold light on the developments in the field of health, needs librarians that are very well trained. One of the studies on this subject is a model in the field of dentistry. It is an essential need to practice this model in medical field and make it to take place as a subject or course sections within the chapters.

The roles of librarians in the evidence-based dentistry (EBD) process are to find out where and how to get the answers, to find the most appropriate evidence, to find out their validity, to present them, and to create the essence of the model. The development of new technologies and increased expectations of patients together have increased the need of evidence-based practice. In this respect, there shouldn't be any doubts about searching technological support in the given education.

Evidence-based dentistry is related approach to oral and health services. It is an integrated logical manner of systematic evaluation of clinical relevant scientific evidence of the patient's mouth, teeth and general health status and their stories, the dentist's clinical experiences and the patient's treatment needs and preferences. Evidence-based dentistry helps dentists reducing the diagnostic errors to minimum and deciding about best treatments and therapies for their patients. (2)

EBD includes clinical studies. Especially, finding solutions for the study of the clinic problems with systematical and meta-analysis studies. (3)

2. Discussion

a. What is Evidence?

The concept 'evidence' has many meanings. It means specific research findings basically. The term given has many meanings at Canada's National Report as well. In this report, 'evidence' defined as the evaluation of the application that is historical and scientific based information. (4) The meaning of 'evidence' that is acceptable in health and medical sciences continue as Experimental Evidence: randomized clinical trials, meta-analysis and analytical studies, Non-Experimental: Observations, semi-experimental studies, Expert Opinion: Consensus, commission reports and finally as historical process or experience. (5)

Evidence level of classification should define, Systematic review that are evidence-based- collected, organized and application-generated recommendations- for clinical use as a guide- a systematic review of research studies, Qualified research that are identified by individual sources and Expert opinion or the result of qualified improvement programs. (4, 6, 7, 8)

This classification has seen to be more systematic research based. However, literature studies have more examples of quantitative data.

Another example of classification that is accepted and foregrounded quantitative data is given below:

- Quantitative data and other level of opinions that are accepted as pre-assessments
- The studies that use the same form for two or more groups
- Large scale of research projects that carried out outside (ex. Government supported projects)
- Adapting the same research questions and similar data to works that are issued by authorities
- Researches that are carried out by students and thesises that are advice taken (PhD thesis)
- Expertise and research supported reviews. (Textbooks, vision documents). (4, 9)

These definitions are still subject of discussion among health professionals and there is still no union about the definition of 'evidence'.

b. Evidence Pyramid and Its importance in Dentistry

Health and medical resources are not all equal in terms of reliability of evidence. Randomized controlled trials and case series provide more reliable evidences for human and animal studies. Evidence-based applications, different degrees of hierarchies were created evidence level of reliability. There are different levels of value at decision-making process. There are hierarchies of research design and they are considered to have equal values. The research methodology, meta-analysis, systematic review, randomized controlled trials and concepts that are used in the evaluation of evidence-based research are briefly described. (10)

Levels of evidence;

- Category I: Evidence from at least one properly randomized controlled trial.
- Category II-1: Evidence from well-designed controlled trials without randomization.
- Category II-2: Evidence from well-designed cohort or case-control analytic studies, preferably from more than one center or research group.
- Category II-3: Evidence from multiple times series with or without intervention or dramatic results in uncontrolled experiments such as the results of the introduction of penicillin treatment in the 1940s.

- Category III: Opinions of respected authorities, based on clinical experience, descriptive studies and case reports, or reports of expert committees. (11)

In the layer of the evidence pyramid, reliability of evidence (the lower layer of the pyramid) is from low to high (RCT ¼ randomized controlled trial). Reliable evidences are obtained from 3 upper level systematic experiments. ''RCT'' and ''Cohort'' studies are considered the most reliable ones. (12) Even though expert opinion and randomized controlled trials are low-level, they contribute to the science of medicine and health. For example, a gynecologist from New York has found that estrogen and hormone therapies are effective in menopause. Randomized controlled trials support that using powerful antioxidants prevent cancer. (12)

c. What is Evidence-Based Practice?

Evidence-based practice (EBP) means physicians to diagnose the patients' illness and to determine the most appropriate treatment and best care methods for their patients by using the most accurate information together with their knowledge and experiences.

Evidence-based medicine, evidence-based dentistry, evidence-based nursing, evidence-based research, evidence-based decision-making, evidence-based health cares are the other concepts that are used with evidence-based practice (Figure 1):

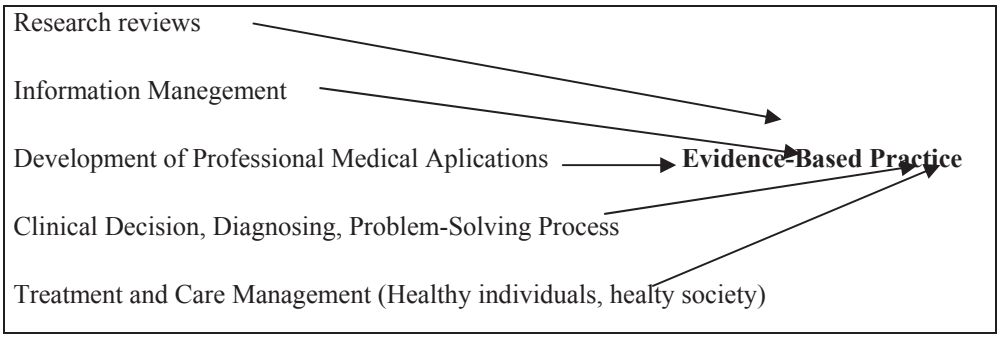

Fig. 1. Evidence-based practices

Source: Yurtsever S, Altıok M. Kanıta dayalı uygulamalar ve hemşirelik. *Fırat Üniversitesi Sağlık Bilimleri Dergisi* 2006, 20(2), 159-66; Sackett DL, Rosenberg WMC, Gray JAM et al. Evidence-based medicine: what is it and what it isn't. *BMJ* 1996, 312(7023), 71-72.

- Research-based practice as an evidence-based practice (evaluation of research findings and results)
- Knowledge management as a process of evidence-based practice (collection of evidence-based information and literature review)
- Developments of professional applications as evidence-based practice
- Clinical decision, diagnosing and problem-solving process as evidence-based practice
- Treatment and care management as evidence-based practice. (4, 13)

As we have seen, evidence-based practice can be used in many different ways. According to Sackett and his colleagues evidence-based practice consist of five processes. These processes are:

1. Answering clinical questions (the best answer will be the answer)
2. Determining the best evidence (Is this evidence reliable?)
3. What is the right meaning of the evidence?
4. Applying the evidence to clinical problem
5. Evaluating the effects of the application. (4, 14)

Evidence-based practice of dentistry contains the dentist to develop him constantly, to access the dental and medical literature information, and to reduce the gaps between research and the application.

d. The Role of the Librarian

Evidence-based practice prepares examination and research environment to find out solutions to clinical problems. It is needed to access medical libraries' electronic books and journals, quickly. Medical librarians help health care professionals in evidence collection, literature review, and meta-analysis studies. Librarians have a major role in finding the necessary resources, accessing systematic reviews, and teaching how to use evidence-based electronic data (Figure 2).

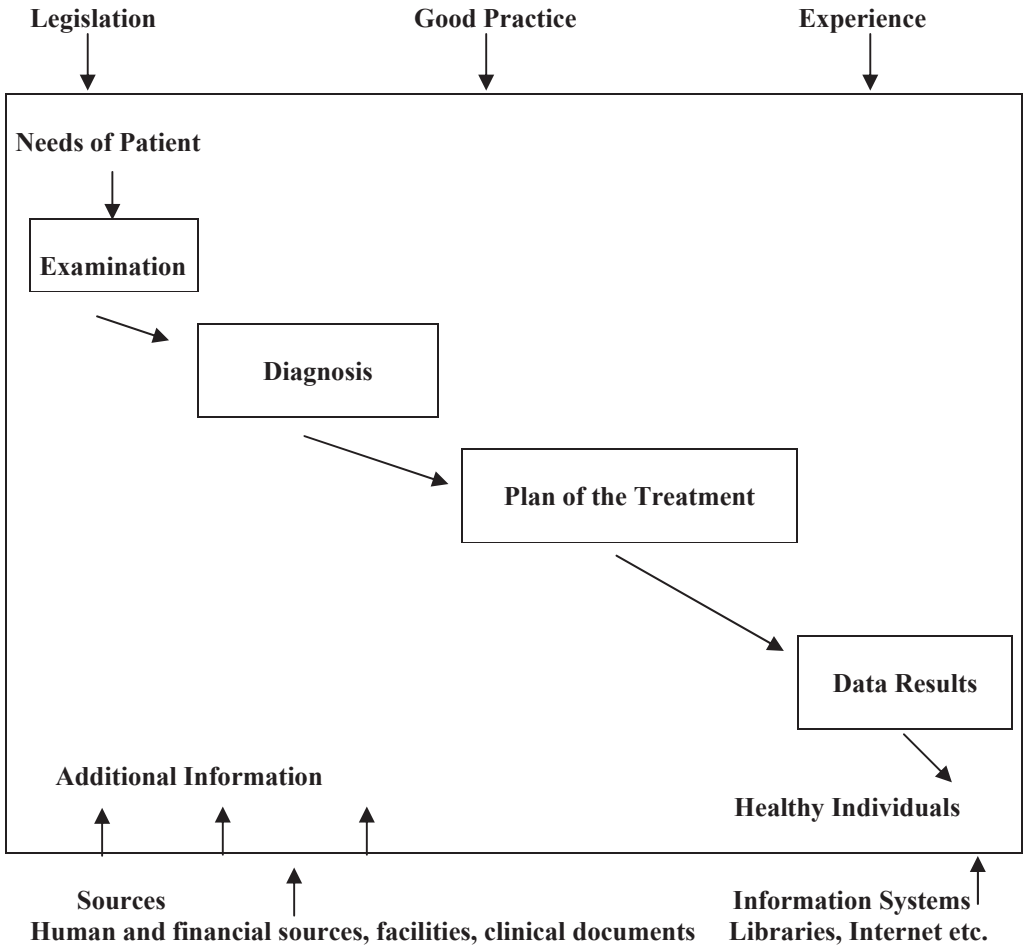

Fig. 2. Clinical application process

Source: Çolaklar, H. Kanıta dayalı diş hekimliği ve internette bilgiye erişim. *ÜNAK'04: Bilgide Kaybolmamak İçin Bilgiyi Yönetmek ve III. Tıbbi Bilgi Yönetimi ve Teknolojileri Sempozyumu 22-25 Eylül 2004, Maltepe Üniversitesi, İstanbul*. Accessible at: http://kaynak.unak.org.tr/bildiri/unak04/u04-6.pdf.

The roles of librarians in the process of EBM and EBD are to know how and where to find the answers, to find the most appropriate evidence, to evaluate the validity of the evidence and to offer them. To find out the most suitable evidences for clinical cases, librarians first scan the data-bases that are specifically improved for EBM and EBD. These data-bases are 'review' type secondary sources that review the clinical cases systematically, evaluate them critically and summarize them. (15)

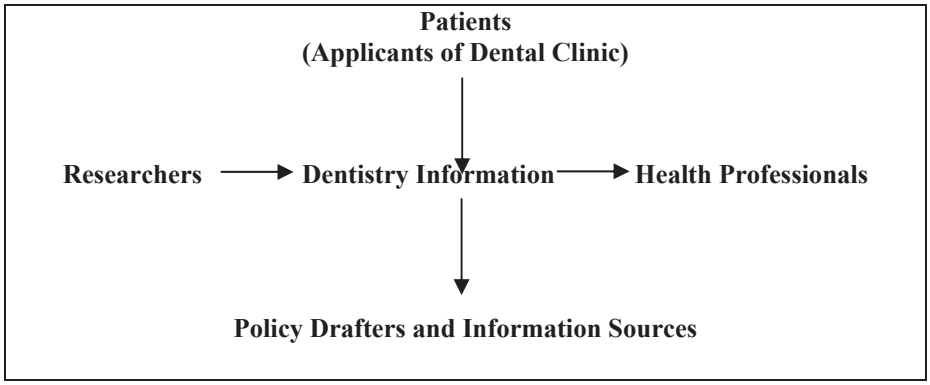

Fig. 3. Evidence-based dentistry information
Source: Çolaklar, H. Kanıta dayalı diş hekimliği ve internette bilgiye erişim. *ÜNAK'04: Bilgide Kaybolmamak İçin Bilgiyi Yönetmek ve III. Tıbbi Bilgi Yönetimi ve Teknolojileri Sempozyumu 22-25 Eylül 2004, Maltepe Üniversitesi, İstanbul*. Accessible at: http://kaynak.unak.org.tr/bildiri/unak04/u04-6.pdf.

After determining the evidence, librarians, read the publication containing the evidence and by using critical evaluating techniques, they describe its significances in clinical aspects and the value of the method (Figure 3). Critical evaluation is a type of method that takes into account of the type of article according to the defined criteria, and determines its validity. The last stage of the process is presenting the scanned and evaluated information to physician. (16)

To benefit from alternatives of EBM in electronic serials publication management, it is essential to provide "electronic information" or "electronic journal" that users can access, transfer, store and protect. (17)

e. Evidence-Based Education Models

There are 35 universities that have dentistry faculty, in Turkey. There are 5 dentistry faculties use the evidence-based education model. There are studies in EBD education model at Yeditepe, Ankara, Cukurova, Gazi and Istanbul Universities. Yeditepe University has started using the EBD based education model and each department's one subject is EBD operated. During the five years of dental training, EBD will be taught in research methodology courses. (18) EBD is taught in Ankara University senior students. (19) In Çukurova University, it is taught in Institute of Health Sciences PhD curriculum. The EBD course subjects are "Principle of evidence-based health services, evidence-based dentistry sources and

evaluation of these sources, methods of evaluation of clinical trials and discussion of principles of describing clinical studies". (20)

EBD course at Gazi University taught in PhD curriculum as elective half-semester course that is 1 credit. The aim of this course is to teach how to practice EBD. (21) Subject areas of the course are "Introduction to principles of EB application hierarchy, EB data-bases, scanning the PubMed, evidence-based case analysis, literature review and discussion of the assignments (Table 1).

At the Faculty of Dentistry in Istanbul University, the EBD based-education is given as a subject in the course, entitled 'society and mouth – dental health'. The systematic review, meta-analysis and guides are hold in this lecture. Determination of clinical problems, selection of the key word, literature review in Pubmed, and systematic and meta-analysis studies which are high degree evidences, access to information by using Pubmed are subject areas. The clinical guide that is searched by specific centers and continuously updated, and protocol access methods are also taught. In the meantime, literature review in biomaterials class to clinical training groups and how to scan evidence-based data-bases are also subject areas for seniors.

Table 1. Gazi University Institute of Health Sciences evidence-based Phd. dentistry course content

Course Name/Code ADC 3160 Evidence-based Dentistry	**Gazi University Institute of Health Sciences**
Subject Areas	Evidence-based Applications
Aim of the Course	To teach how to practice evidence-based application
Learning Outcomes and Competences	To learn how to find reliable evidences regarding the diagnosis and treatment options in the literature How to get top-level evidence from PubMed
Course textbooks/Sources	www.cochrane.org Clarkson J, Harrison JE, İsmail A, Needleman I, Evidence Based Dentistry for Effective Practice. Taylor & Francis, 2002.
Evaluation Criteria	Assignments Literature review Finals
Week	**Subjects**
1	Principles of EB application
2	Evidence Hierarchy
3	Evidence-based Dentistry Principles
4	How to use evidence-based sources
5	Cochrane data-base

6	Principles of scanning evidence-based sources in PubMed
7	Discussion of the assignments
8	Evidence-based analysis of a case
9	Discussion of the assignments
10	Discussion of the assignments
11	Discussion of the assignments
12	Literature review
13	Literature review
14	Literature review

The EBD education is a new application as it is seen. During the education of evidence-based dentistry Information, searching methodology or methods and community mouth – dental health and preventive medicine measures are instructed.

f. Collaboration of Evidence- Based Dentistry and Librarian

Important sources of information that are used for systematic review:

- Multi bibliographical and the full text electronic data-bases
- Data –bases that reports are scanned and important texts are cited such as SCI (Science Citation Index)
- Electronic data bases that give evidence-based information and edit indexes
- The sources relevant to subject
- Personal activities for communicating with other authors and organizations (expert opinion). (22)

Evidence-based dentistry brings information together with reliable research methods and evaluates them with high level statistics, and then practices these applications that their effectiveness is proven. The International Institutes were settled such as, The Cochrane Oral Health Group, Centre for Evidence Based Dentistry, Oxford Centre for Evidence Based Medicine, American Dental Association Evidence Based Dentistry for this field. The works of systematic and meta-analysis which are high degreed evidence are in progress at this institutes.

The clinical guides and clinical protocols are the result of evidence-based dentistry approach. The guidelines, that contain effectiveness-proven practices and that lead professionals to success in a short time and accurately, will facilitate clinical studies. There are approximately a hundred published guide -books and the numbers gradually increase. (23)

To find solutions to clinical problems with help of medical librarian, degree of evidence sources (the original published studies), systematic reviews (Cochrane and Bandolier data-bases), evidence-based dentistry journals (Such as the journal of Evidence-based Dental Practice), clinical guidelines and protocols (ADA guidelines, positions and statements-http://www.ada.org/) should be scanned (Figure 4).

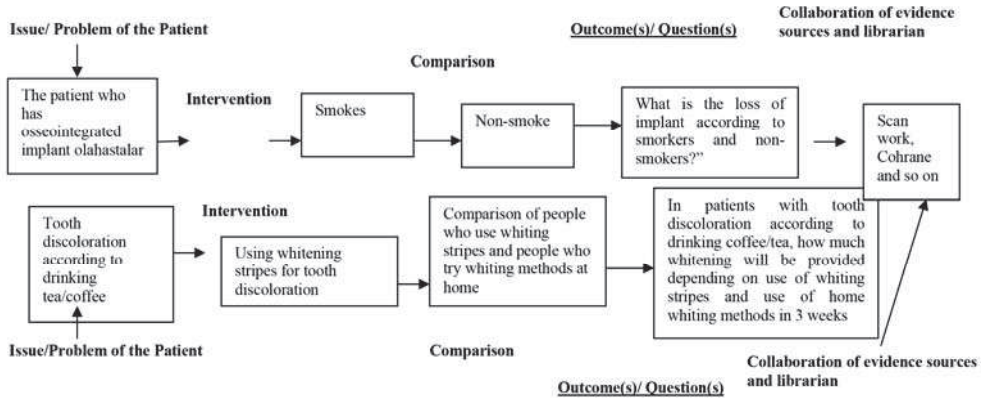

Fig. 4. An example of solving a clinical problem with collaboration of evidence-based sources and librarian.

g. Training Medical Librarian

In this study, how evidence-based education model should be the best guide for librarians that will give evidence-based information services will be explained. The results of this study will provide information in training qualified medical librarians and about their education model.

It is very new to use evidence-based practice in librarian training. In 2006, Koufogiannakis and Wiebe looked specifically at undergraduates, but their meta-analysis found that computer assisted instruction was just as effective as traditional classroom teaching. In 2008, Brettle, a health librarian, performed a systematic review of instructional training; she evaluated 24 studies measuring the effectiveness of workshops and teaching and whether this work had a positive impact on patient care. (24)

The education modules are being designed as stand-alone web-based units so they can be incorporated in existing LIS curricula or used by practitioners as part of their continuing education experience. Currently, two pilot modules are being designed for testing in Spring and Summer 2009. The first module will be designed for LIS students and will be tested as a

session in a course on information services taught at LSU and in a course on public library services taught at Drexel. The second module is designed for practitioners and will be tested as one of a Professional association's options for continuing education credit. Each module will include assigned readings, two or three case study scenarios, and either group or individual exercises in innovative information services design and implementation. Case studies will be taken from a range of library settings; for the practitioners, the case studies will be drawn from their own type of library setting. (25)

Today, when we observe international and domestic educations, evidence-based education models are taught as a subject in variety of courses. Particularly, medical librarians' education should be addressed as a whole and considered within master and doctoral level courses.

At University of Wisconsin, the course 'Information Sources and Services in the Health Sciences' is taught in the graduate program (26); At University of Washington Information School, the course entitled,' Health Informatics and Health Information Management' taught in a certificate program (27); at University of North Texas, there is a specialized education in 'Health Information Management'. (28) Especially at Pratt University, the course, 'Health Sciences: Services & Sources' consists "A methodical study of the organization, development and use of printed and web-based reference sources in the health sciences. Emphasis is on reference department activities and communication between librarian/information specialist and scientist". (29) It is the same almost in every university. Online sources are taught but the concept of evidence-based education is not drawn to the fore.

When we observe three major universities in Turkey, at Hacettepe University Faculty of Letters, there is an 'Access to Medical Information' course which is taught for Information Management senior students. Course subject areas are " Medicine and medical fields' general properties, access to medical information, using printed and electronic sources, introduction to classification systems and networks of medical field'. In addition, bibliographic control in Turkey and around the world, existing problems and suggested solutions, and creation and evaluation of a medical collection and organized information services' features are taught. Subject matter sources are taught practically. (30) In 2011-2012, Hacettepe University Faculty of Letters, Department of Information Management will use new licence programme. In this programme a new lesson called "Medical Information Management" covers characteristics of users in medicine and health sciences, their information needs, sources of information and access

methods. Medicine libraries, types, collection, creation, open access resources, classification systems, MeSH, evidence-based medicine, etc. are included. Database applications (MEDLINE, PubMed, EMBASE, Cochrane Library, Uptodate, etc.); medical documentation, organizing of clinical data and the relevant standards are explained. (31)

There is a graduate course that is called, 'Access to Information of Medicine and Health Science' at Ankara University Faculty of Language, History, and Geography. (32) Also, at Istanbul University Faculty of Letters, Information and Records Management has a senior year elective course called 'Access to Information- Science and Health Sciences' which hasn't exposed yet. Course specifically covers content of medical science and its historical development, cataloging and classification of information sources in medical field. (33)

As we have seen there is no course content that give full information in training medical librarians that will provide evidence-based information services all around the world and in Turkey. However, it is taught for 1 or 2 hours as a subject of another course. Regarding the needs of these courses, especially recent years, there should be a course that contents only these subjects. The course can be entitled, 'Evidence-based Education and Medical Librarianship' and it will be very effective and useful.

In the light of given information, suggestions about evidence-based education model and the courses that will be taught can be like below (Table 2):

Table 2. Evidence-based education course areas

Course name-code: Evidence-Based Education and Medical Librarianship	**Departments of Information and Records Management**
Education Term	**Education Methods** Project of Theory Practice Work/Literature Review
	Other Total Credit
Language of the lesson	Turkish
Required	Elective (7th Semester-Fall) 4th Grade
Subject Areas	**Evidence-Based Information Services**
Aim of the course	To teach how to make evidence-based education and where to obtain evidence-based information
Learning Outcomes and Competences	Describing the clinical problem, determination of key-words, to learn how to find reliable evidences from literature review, understanding the hierarchy of evidence, to learn how to get top-level evidence from PubMed and meta-analysis studies

Course textbooks/Sources	Ed. By Daniel Moran, Richard Malott, Evidence-Based Educational Methods. Academic Press, 2004. www.cochrane.org http://clinicalevidence.bmj.com/ceweb/about/knowledge.jsp http://www.nlm.nih.gov/biomedical.html Clarkson J, Harrison JE, İsmail A, Needleman I, Evidence Based Dentistry for Effective Practice. Taylor & Francis, 2002.	
Evaluation Criteria	Midterms	No
	Assignments	%
	Literature Review	%
	Finals	%
Week	**Subjects**	
1	Principles of EB application	
2	Evidence Hierarchy	
3	Evidence-based Medical Principles	
4	How to use evidence-based sources	
5	Evidence based data-bases and information centers	
6	Principles of scanning evidence-based sources in PubMed	
7	Principles of Cochrane data-base	
8	Principles of scanning evidence-based sources in **BMJ Clinical Evidence**	
9	Principles of scanning evidence-based sources in **Dynamed**	
10	Principles of scanning evidence-based sources in **Uptodate**	
11	Principles of scanning evidence-based sources in **Best Evidence**	
12	Principles of scanning evidence-based sources in **Bandolier**	
13	Principles of scanning systematic review and case reports in **TÜBİTAK-National Medical Data-base**	
14	Discussion on assignments and literature review	
Lecturer/s		

3. Conclusions

Health professionals should be informed about journals, evidence-based data-bases, and internet access sources and they should be in lifelong learning process for their professional and personal developments also they should have ability to use sources in their clinical practice; they should have critical thinking and effective decision-making skills. All employees should be included in evidence-based practices as well. Also there should be training studies for health professionals to develop their research culture.

Evidence-based practices should include solving problems, diagnosing patient problems, reviewing literature, evaluating results of the applications and deciding about applications.

To form evidence-based practices, practitioners need more qualified medical and clinical research. Evidence-based practice provides high quality of cost effective treatment, health, care, protection for dentistry, medicine, and nursing.

Turkey is very new in evidence-based education in the field of librarianship as dentistry and health sciences thence evidence-based practices should be developed for librarians in Turkey. Therefore, Information and Documentation Management departments should have evidence-based information services in the librarianship curriculum as an elective course. Active learning and life-long learning methods should be taught to medical librarians. Scientific research methods should be taught to medical librarians. Medical librarian should provide access to evidence-based information quickly and accurately when it is needed. Medical and Hospital libraries should create an environment based on researches and have the desired quality of evidence-based information services. There should be a sufficient number of qualified medical librarians trained and employed at medical and hospital libraries. Academic institutions and health care institutions should work in collaboration and develop projects. Medical librarians should be a guide to health professionals in evidence-based studies. Evidence-based information services help health professionals in clinical and research studies by information providers, the use of high technology, and review of literature. There should be a two half semester course in Department of Information and Documentation Management that teaches the areas, evidence-based medicine, dentistry, nursing, etc., that evidence-based practice intensely used and should explain evidence-based information services and library services. First semester can be introduction to medical libraries. Learning evidence –based applications, data-bases and analyzing questions can be taught in the second semester.

References

(1) COOPER, Marc B. The context of evidence-based dentistry. In: *Journal of Evidence Based Dental Practic*e, 1(2), 2001, pp. 83-86.

(2) PEKER, K. & BERMEK, G. Klinik uygulamalarda kanıta dayalı diş hekimliği yönteminin uygulanma aşamaları. In: *İstanbul Üniversitesi Diş Hekimliği Fakültesi Dergisi*, 43(3-4), 2009, pp. 123-132.

(3) CHIAPPELLI, F.; PROLO, P.; NEWMAN, M.; CRUZ, M.; SUNGA, E.; CONCEPCION, E. & EDGERTON, M. Evidence-based practice in dentistry: benefit or hindrance. In: *Journal of Dental Research*, 82(1), 2003, pp. 6-7.

(4) YURTSEVER, S. & ALTIOK, M. Kanıta dayalı uygulamalar ve hemşirelik. In: *Fırat Üniversitesi Sağlık Bilimleri Dergisi*, 20(2), 2006, pp. 159-166.
(5) TRAMMER, J.; SQUIRES, S.; BRAZIL, K.; GERLACH, J.; JOHNSON, J.; MUISINER, D. et al. Factors that influence evidence-based decision-making. In: *Canadian Health Action: Building on the Legacy: vol. 5. Making decisions: Evidence and information,* Multimondes and the National Forum on Health, Sainte-Foy, Quebec, 1998, pp. 3-92.
(6) MCCLAREY, M. & DUFF, L. Clinical effectiveness and evidence-based practice. In: *Nursing Standart*, 11(52), 1997, pp. 33-37.
(7) MORGAN, E. Clinical effectiveness. In: *Nursing Standart*, 11(34), 1997, pp. 43-50.
(8) FENNESSY, G. What's the evidence? Clinical effectiveness. In: *Nursing Standart*, 13(Suppl. 8), 1998, pp. 1-13; quiz 14-18.
(9) GROOTENHUIS, M.A. & LAST, B.F. Adjustment and coping by parents of children with cancer: a review of the literature. In: *Support Cancer Care*, 5(6), 1997, pp. 466-484.
(10) Suny Downstate Medical Center. Medical Research Library of Brooklyn. Evidence Based Medicine Course. *A Guide to Research Methods: The Evidence Pyramid*, http://servers.medlib.hscbklyn.edu/ebm/2100.htm; *Public Health Information & Data Tutorial, Hierarchy of Evidence*, 2012, http://phpartners.org/tutorial/04-ebph/2-keyConcepts/4.2.7.html
(11) HARRIS, R.P.; HELFAND, M.; WOOLF, S. H.; LOHR, K. N.; MULROW, C. D.; TEUTSCH, S.M. et al. Current methods of the U.S. preventive services task force: a review of the process. In: *American Journal of Preventive Medicine*, 20(3), Suppl. 1, 2001, pp. 21-35.
(12) HUJOEL, P. Grading the evidence: the core of EBD. In: *Journal of Evidence Based Dental Practic*e, 9(3), 2009, pp. 122-124.
(13) GOULD, M.; LEONARD, C.T.; WEINACKER, A. B. & RAFFIN, T.A. Systematic reviews and evidence-based critical care medicine: a step in the right direction. In: *American Journal of Medicine*, 105(6), 1998, pp. 551-553.
(14) SACKETT, D.L.; ROSENBERG, W. M. C.; GRAY, J. A. M.; HAYNES, R. B. & RICHARDSON, W. S. Evidence-based medicine: what is it and what it isn't? In: *British Medical Journal*, 312(7023), 1996, pp. 71-72.
(15) DAVIDOFF, F. & FLORANCE, V. The informationist: a new health profession? In: *Annals of Internal Medicine*, 132(12), 2000, pp. 996-998.
(16) ALKAN, N. Klinik tıp kütüphaneciliği. In: *Bilgi Dünyası*, 9(2), 2008, pp. 315-347.
(17) ÇOLAKLAR, H. *Türkiye'de tıp kütüphanelerinde elektronik süreli yayın hizmetleri yönetimi [PhD dissertation]*. İstanbul Üniversitesi Sosyal Bilimler Enstitüsü Bilgi ve Belge Yönetimi Anabilim Dalı, İstanbul, 2008.
(18) Yeditepe Üniversitesi Diş Hekimliği Fakültesi. [Online] [Accessed: May 02, 2012]. Available at: http://www.7tepedis.com/genelbilgi.aspx
(19) Ankara Üniversitesi, *Ankara Üniversitesi Diş Hekimliği Fakültesi*. [Online] [Accessed: May 02, 2012]. Available at: http://www.dentistry.ankara.edu.tr/egitim.html
(20) Çukurova Üniversitesi Sağlik Bilimleri Enstitüsü. [Online] [Accessed: May 02, 2012]. Available at: http://sbe.cu.edu.tr/dersicerik.asp?id
(21) Gazi Üniversitesi Sağlik Bilimleri Enstitüsü Kanıta Dayalı Diş Hekimliği Ders İçeriği. [Online] [Accessed: May 25, 2012]. Available at:

www.saglikb.gazi.edu.tr/.../adc-3160___kanita_dayali_dis_hekimligi.doc -

(22) ÇOLAKLAR, H. Kanıta dayalı diş hekimliği ve internette bilgiye erişim. *ÜNAK'04: Bilgide Kaybolmamak İçin Bilgiyi Yönetmek ve III. Tıbbi Bilgi Yönetimi ve Teknolojileri Sempozyumu 22-25 Eylül 2004, Maltepe Üniversitesi, İstanbul*. [Online] [Accessed: June 01, 2012]. Available at: http://kaynak.unak.org.tr/bildiri/unak04/u04-6.pdf

(23) OKTAY, İ. *Diş hekimliği uygulamalarında başarıyı etkileyen yeni yaklaşımlar*. [Online] [Accessed: May 03, 2012]. Available at: http://www.mutlutunc.com/files/makale_1.pdf

(24) GIUSTINI, D. Evidence-based teaching (EBT) and health librarians: some questions and considerations. In: *Journal of the Canadian Health Libraries Association (JCHLA / JABSC)*, 31(1), 2010, pp. 7-10.

(25) ZACH, L. & McKNIGHT, M. Innovative services improvised during disasters: Evidence-based education modules to prepare students and practitioners for shifts in community information needs. In: *Journal of Education for Library & Information Science (JELIS)*, 51(2), 2010, pp. 76-85.

(26) University of Wisconsin Graduate School. *Library and information science*. [Online] [Accessed: April 01, 2012]. Available at: http://www.graduateschool.uwm.edu/students/prospective/areas-of-study/library-and-information-science/#courses

(27) University of Washington Professional & Continuing Education. *Certificate in health informatics and health information management*. [Online] [Accessed: April 01, 2012]. Available at: http://www.pce.uw.edu/certificates/health-informatics.html

(28) University of North Texas at Dallas. *Health information management*. [Online] [Accessed: April 01, 2012]. Available at: http://www.unt.edu/unt-dallas/brochures/himsd.htm

(29) Pratt University. [Online] [Accessed: April 01, 2012]. Available at: http://www.pratt.edu/academics/academic_resources/course_catalog/

(30) Hacettepe Üniversitesi Bilgi Ve Belge Yönetimi Bölümü. [Online] [Accessed: April 01, 2012]. Available at: www.hacettepe.edu.tr; http://www.bby.hacettepe.edu.tr/

(31) Hacettepe Üniversitesi Bilgi Ve Belge Yönetimi Bölümü 2011-2012 lisans ders programı. [Online] [Accessed: April 01, 2012]. Available at: http://www.bby.hacettepe.edu.tr/lisansdersprogrami.pdf

(32) Ankara Üniversitesi, *Ankara Üniversitesi Dil ve Tarih-Coğrafya Fakültesi Bilgi ve Belge Yönetimi Bölümü*. [Online] [Accessed: April 01, 2012]. Available at: http://bilgibelge.humanity.ankara.edu.tr/

(33) İstanbul Üniversitesi Edebiyat Fakültesi Bilgi ve Belge Yönetimi Bölümü. [Online] [Accessed: April 01, 2012]. Available at: www.istanbul.edu.tr; http://www.istanbul.edu.tr/edebiyat/bolum_sayfasi/bilgi_belge_yonetimi_bolumu.htm