

Evidence based medicine: Teaching, learning and practice: Results of a cross-sectional study from Turkey

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Abstract

Objective: To assess the level of understanding related to the significance of evidence-based medicine among physicians.

Methods: The cross-sectional study was conducted between March and October 2012 using an online questionnaire that was sent out to physicians and academics working as faculty at training hospitals across Turkey. The questionnaire consisted of questions about the knowledge, attitude and behaviour towards evidence-based medicine. Seven of the questions pertained to the learning of evidence-based medicine, six were about teaching evidence-based medicine, and six were about its practice. SPSS 20 was used for statistical analyses.

Results: The questionnaire was returned duly filled by 79 physicians. Of them, 41 (51.9%) were males; and 57 (72.2%) were part of the faculty. Only 1 (1.2%) participant had attended a course about evidence-based medicine during undergraduate education, while 19 (24.05%) had attended one after graduation. Besides, 26 (32.9%) academics were teaching some concepts of evidence-based medicine, and 21 (26.6%) were giving some information about clinical guidelines.

Conclusion: The study found that levels of learning and teaching of evidence-based medicine among physicians were inadequate. They should be emphasised at both pre- and post-graduate tiers.

Keywords: Evidence-based medicine, Teaching, Learning. (JPMA 64: 762; 2014)

Introduction

Evidence-based medicine (EBM) is an approach to decision making in which a physician combines the best scientific evidence about a medical issue with his/her experience, while also taking the patient's interests into consideration.¹ In other words, it is the logical use of the best evidence when making decisions during the patient's diagnosis and treatment.² "Producing and expanding knowledge for evidence-based policy and implementation" is listed among the health goals of the World Health Organisation (WHO) for the 21st century.³ Physicians need to have adequate knowledge about EBM to achieve this goal. EBM is based on the principle of lifelong learning. This is unavoidable in order to keep up with the ever-evolving scientific advances. Critical thinking, formulating a clinical question, and investigating the answer in relevant literature sources are highly important for EBM.⁴

EBM is a subject that can be learnt and taught, and is being taught at various medical facilities throughout the world using different methods. There is a Master's

programme on clinical studies at the University of California.⁵ There are training programmes on effective evidence-based research that include both Master's and PhD programmes at Tufts University.⁶ The University of Northern California has organised a 5-day course on evidence-based research and how to disseminate these practices.⁶ EBM is included in the undergraduate curricula of certain medical faculties in Turkey.⁷ However, EBM still does not have enough coverage in medical faculty curricula.

To date, relevant studies have examined approaches to different cases and applications in the light of EBM. However, there is no study that examined learning, teaching and application of EBM among physicians. The current study aimed to explore that area.

Subjects and Methods

The cross-sectional study was carried out at the Department of Medical Education, Medical Faculty of Ataturk University, Turkey, between March and October 2012. After due permission by the institutional review committee, and using convenience sampling, the study aimed at reaching all physicians active as a member of medical faculty at training hospitals by using an internet-based questionnaire. The questionnaire consisted of 3 sections: The first section included 7 questions related to EBM learning; the second section

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included 6 questions related to teaching; and the final section included 6 questions related to utilisation. The questionnaire asked the participants about their age, areas of expertise, current city of residence, experience as a physician, and academic degree. The questions regarding learning EBM asked the participants about their undergraduate and postgraduate instruction about EBM, whether EBM was included in the undergraduate curriculum, and, if so, how it was taught. The questions regarding teaching practices were related to whether the participant was teaching EBM or not; if yes, which methods were being used, and whether EBM was included in the curriculum. The questions regarding utilisation related to access to resources, evaluation of all parts of an article, and an understanding of the EBM vocabulary, such as sensitivity, predictive value etc.

The data was analysed using SPSS 20.0.

The link of the questionnaire is: <https://docs.google.com/spreadsheets/viewform?formkey=dDgzblEld0U0XORndVRRMDixVnJzaVE6MQ>

Results

A total of 140 questionnaires, were sent. Of these 79 (56%) physicians completed the questionnaire, 41(51.9%) were male; and 57(72.2%) were academics. The mean age of the participants was 40.4±6.4 years, and they belonged to 19 different cities and 27 different specialties. Only 1(1.2%) participant had attended an EBM-related course during undergraduate study, whereas 19(24.05%) had attended an EBM-related course after graduation. Besides, 26(32.9%) academics were teaching certain components of EBM and 21(26.6%) gave out certain information about clinical guidelines. Overall, 41(51.89%) indicated that when reviewing a scientific article, they experienced the most difficulties in understanding and evaluating the Methodology section.

Among the participants, 36(45.5%) had received

Table-2: The evaluation of a study according to evidence-based medicine.

	N	%
I trust myself in the evaluation of all study types	15	18.98
I need various guidelines in the evaluation of the study	14	17.8
I do not have a clue about critical evaluation	9	11.3
I only trust myself in the evaluation of specific study types	41	51.89
Total	79	100

previous education about clinical guidelines prior to graduation. As reported by 18(22.78%) participants, the method for teaching EBM were theoretical lectures and group studies.

Regarding the perception of EBM terms, the term sensitivity/specificity was understood by 47(59.5%) participants. The term "absolute risk reduction" was understood by 19(24%) (Table-1). Regarding the EBM-based evaluation of a study, 41(52%) participants stated that they trusted themselves in "the evaluation of only a specific type of study" (Table-2). Besides, 57(72%) spent less than 30 minutes when reading an abstract and only 2(2.5%) participants spent more than one hour.

Discussion

In the present study, which examined the learning, teaching and application of EBM together for the first time in Turkey, it was striking that the majority of the participants had a lack of knowledge and experience regarding EBM. Different countries teach EBM as part of their undergraduate education using different methods. In the United States, the Mayo Clinic teaches EBM by enrolling its sophomore students in didactic lectures and small group studies, and then integrates EBM education into the clinics in the junior year and gives the students certain assignments. The effectiveness of this instruction has been investigated by administering tests prior to and after the training sessions, and they have been found to be considerably

Table-1: Understanding the state of evidence-based medicine terms.

	Can explain		Understand		I'm not aware of		I heard something about	
	n	%	n	%	n	%	n	%
The sensitivity/specificity	47	60.3	24	30.8	4	5.1	3	3.8
Predictive value	35	44.9	20	25.6	5	6.4	18	23.1
Relative risk/odds ratio	29	37.2	25	32.1	3	3.8	21	26.9
Absolute risk reduction	19	24.4	21	26.9	8	10.3	30	38.5
Number needed to treat	29	37.2	27	34.6	9	11.5	13	16.7
Randomisation	45	57.7	20	25.6	3	3.8	10	12.8
Blinding	44	56.4	25	32.1	3	3.8	6	7.7
Meta-analysis	40	51.3	24	30.8	3	3.8	11	14.1

effective.⁸ An Objective Structured Clinical Examinations (OSCE) station with computers has been set up at the University of Michigan to determine whether students have learned EBM. Then, each student is assigned a scenario to create a critical question, perform relevant research for 20 minutes, and find an abstract that would give the relevant answer to the question. Thus, it is possible to evaluate the two cornerstones of EBM; critical thinking and effective research.⁹ The current study, on the other hand, showed that EBM was generally not a part of the curriculum, and in places where it was taught, this was done using theoretical lectures and group studies. EBM has begun to have increasing levels of coverage in the curricula in recent years. Many universities show an effort to bring their students to a suitable level to carry out research that is compatible with EBM. First, students are encouraged to become familiar with computers, and then they are given information about how to perform effective research using online EBM websites. Later on, the students are given lectures on statistics, and finally they are required to carry out a relevant project to put their knowledge into practice.¹⁰ Using similar applications, the Military Medical School of Mexico has also organised courses for undergraduate medical students to gain effective research practice.¹¹ Compared to attendance during undergraduate studies, the incidence of attending an EBM course is significantly higher after graduation. This situation results from the fact that physicians tend to fill their knowledge gaps on this topic by attending these courses. Physicians sense the need to access and utilise evidence-based information, especially once they have started practising medicine. According to a review which examined 15 articles published by Rutgers University between 1998 and 2011 by medical students and teaching assistants, the interactive nature of EBM education and its integration into the clinics increased its effectiveness.¹²

Conventional medicine used to benefit from reference books and institutional diagnosis-treatment guidelines to solve patient-related problems. In EBM, on the other hand, it is essential to access the most current and recent evidence within the shortest time. To achieve this, it is necessary to use large electronic databases.¹³

As a part of health reform in the United States, efforts are being made to transfer medical records into a large electronic database, which would make clinical observations and experimental studies easier. Thus, it would be possible to obtain the best evidence available regarding an individual patient's care.¹⁴ The finding that

the majority of physicians spent approximately less than half-an-hour reading abstracts indicated that they spent less time for scientific advances. Previous studies have also shown that half of physicians spend a maximum of 1 hour to follow current scientific articles.¹⁵ On the other hand, as a part of EBM practices, it is essential to evaluate research articles, guidelines and meta-analyses to follow the current information flow and to obtain the best possible evidence.

Regarding the perception of EBM-related terms, more than half of the participants were able to explain the terms sensitivity/specificity. This may result from the fact that these terms are frequently used in daily practice. One-fifth of the participants trusted themselves in the evidence-based evaluation of all types of studies, whereas only half of the participants trusted themselves in the evidence-based evaluation of a specific type of study. This indicates that the critical approach is not sufficient with respect to the study type when following the scientific studies.

Similar to other countries, physicians in Turkey can also benefit from EBM individually during the treatment period or while preparing diagnostic-treatment guidelines. However, currently there is no incentive to ensure the widespread use of EBM.¹⁶

Since the sample size was not calculated, it represents a limitation of the current study.

Conclusion

EBM constitutes an indispensable part of current modern medicine. It should be adequately covered, especially in the undergraduate curricula. Furthermore, EBM education should be supported by post-graduate training, and the barriers to access to the best and most current evidence should be removed to facilitate physicians.

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