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Original article

Awareness of Academic Staff Physicians with Principles of Evidence-Based Medicine and its Application in Daily Practice

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Abstract

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Introduction: Evidence-based medicine (EBM) has received more attention in recent years. The purpose of this study was to evaluate familiarity of academic staff physicians with EBM and its application in daily practice.

Methods: This cross-sectional study was conducted in 2022 with the participation of academic staff physicians of Hamadan University of Medical Sciences in Iran. Data were collected using CEBM questionnaire and were analyzed with SPSS 20 software, using T-test and Spearman correlation statistical tests

Results: Out of 156 academic staff physicians, 97 (62.2%) completed the questionnaire. Of these, 62 (63.9%) were male, and 33 (34%) had participated in EBM workshops. Mean score of knowledge and attitude questions were 14.7 ± 3.9 and 3.8 ± 0.5 respectively. There was no significant difference between males and females in knowledge and attitudes ($P > 0.05$). Physicians who participated in EBM workshops had higher scores in knowledge ($P < 0.05$) but not in attitude ($P = 0.06$). Positive and significant correlation between age ($r = 0.32$, $P = 0.001$) and teaching experience ($r = 0.28$, $P = 0.005$) was observed with knowledge and attitude about EBM. 69.1% of participants used very little or not at all EBM in their daily practice. The most important obstacles were lack of time (49.5%) and specific information (22.7%). More than 65% of physicians tended to use EBM in their daily practice.

Conclusion: The academic staff physicians of Hamadan, Iran had a positive attitude towards evidence-based medicine, but did not have enough information in this regard and few of them had participated in training workshops. Accordingly, its application in daily clinical work was relatively low. Holding EBM workshops is essential to increase awareness about EBM.

Introduction

It has been more than 30 years since evidence-based medicine was announced as a new approach to clinical medicine. The term Evidence Based

Medicine (EBM) was first proposed by Dr. David Sackett and his colleagues in 1996 at McMasters University in Canada and defined as follows:



“Integrating the best recent research evidence with clinical experience and patient values and beliefs to inform decisions about care for each individual patient” (1, 2). The use of evidence in daily decision-making is one of the essentials of correct decision-making. In fact, evidence-based medicine is a new and reliable method for the careful, accurate and scientific use of the best evidence in clinical decision-making which is done using evidence, mainly high-quality randomized clinical trials, along with clinical skills and paying attention to the needs and wishes of patients (3, 4). Evidence-based medicine has greatly influenced medical education and has led to the formation of the Cochrane collaboration, in which evidence from clinical trials has been compiled for use by physicians (5-8). However, it is unclear to what extent physicians have been able to apply evidence-based medicine to decision-making in their daily practice (9-13). Despite more than two decades since the introduction of EBM to the medical world, this topic has not yet found its place among doctors and medical universities in Iran and still a large number of physicians are not familiar with this term or refuse to do it in their daily practice for various reasons (14-19).

The purpose of this research is to investigate the level of awareness of academic staff physicians of Hamadan University of Medical Sciences of Hamadan, Iran with the principles of evidence-based medicine and its application in daily practice to find out how familiar the academic staff physicians are with this category or use it in their routine daily practice.

Methods

This study is a cross-sectional study that was conducted in Hamedan University of Medical Sciences in 2022. The study population included all physicians who were members of the academic staff of Hamedan University of Medical Sciences, and were included in the study by census sampling. Those physicians who did not agree to participate in the study or were not available at the time of the study were excluded from the study. Data collection was done by a self-administered questionnaire measuring the knowledge, attitude and practice of physicians regarding EBM.

The first part of the questionnaire was related to demographic information such as gender, specialty, age and year of graduation. In the second part, the respondents were asked to indicate their level of knowledge about the 4 stages of EBM (asking questions using the PICO method, searching for sources, criticizing sources, and applying) based on yes-no options. Next, with 4 attitudinal questions, the attitude of physicians towards the EBM was measured and in the last part of the questionnaire, the role of EBM in the diagnosis and daily practice of physicians was investigated using a 5-part Likert scale (appendix 1) and the physicians were asked to mention the most important problems in the application of evidence-based medicine. Before starting the main phase of the research, the questionnaires were sent to the university EBM team members and 5 other experts in the field of EBM to confirm face and content validity, after that by using Cronbach's alpha coefficient, the reliability of the questions was confirmed (Cronbach's alpha 0.73). All research data were analyzed with SPSS 20 software, using T-test and Spearman correlation statistical tests. A significance level of 0.05 was considered in all comparisons.

Results

Out of 156 physicians who are academic staff of Hamadan University of Medical Sciences, 97 (62.2%) answered the questionnaires. Almost half (49.5%) of the physicians participating in the research were pediatrics (18 people), internal medicine specialists (12 people), gynecologists (10 people) and cardiologists (8 people). Of the 97 academic staff physicians, 62 (63.9%) were men and 35 (36.1%) were women. The average age of the physicians participating in the study was 47 years (range 32-63 years) and the median age was 44 years. On average, the participants in the study had 11.4 years of faculty membership experience (range 1 to 35 years). Only 33 (34%) of the physicians had a history of participating in EBM workshops. The frequency of participation in EBM workshops according to the specialty of physicians is shown in Table 1. The highest rate of participation in the workshops was related to community medicine and pediatrics, and the lowest rate of participation was related to the fields of urology and pathology (Table 1).

Table 1. The frequency of participation in EBM workshops among physicians participating in the study based on specialization

Specialty	Participate in the workshop	Not participate in the workshop	Total
	N (%)	N (%)	N (%)
Community medicine	5 (100)	-	5 (100)
Pediatrics	8 (44.5)	10 (55.5)	18 (100)
Internal medicine	5 (41.5)	7 (58.3)	12 (100)
Gynecology	3 (30)	7 (70)	10 (100)
Cardiology	3 (37.5)	5 (62.5)	8 (100)
Dermatology	1 (33.3)	2 (66.7)	3 (100)
Orthopedic	1 (33.3)	2 (66.7)	3 (100)
ENT	1 (33.3)	2 (66.7)	3 (100)
Ophthalmology	1 (33.3)	2 (66.7)	3 (100)
Psychiatry	1 (25)	3 (75)	4 (100)
Infectious diseases	1 (20)	4 (80)	5 (100)
General surgery	1 (20)	4 (80)	5 (100)
Emergency medicine	1 (20)	4 (80)	5 (100)
Anesthesiology	1 (20)	4 (80)	5 (100)
Pathology	0 (0.00)	4 (100)	4 (100)
Urology	0 (0.00)	4 (100)	4 (100)

In order to measure the knowledge and attitude of physicians regarding EBM, 21 questions in the field of knowledge (with answers of yes no and range 0 to 21) and 4 questions in the field of attitude (with answers yes no and range 0 to 4) were asked respectively that the average score of awareness domain was 14.7 ± 3.9 and attitude domain was 3.8 ± 0.5 . The average scores of the questions on the knowledge and attitude regarding different questions are given in Table 2.

There was no statistically significant difference between male and female physicians in terms of knowledge and attitude ($P > 0.05$). Physicians who participated in EBM training workshops obtained higher scores in terms of awareness and its different areas ($P = 0.001$), but there was no significant difference in the level of attitude with the other group ($P > 0.05$) (Table 2).

Table 2. Comparison of the average scores of physicians participating in the study by gender and history of participating in the EBM workshop

Domain	Participating in the workshop (Mean ± SD)		PV*	Sex (Mean ± SD)		Total (Mean ± SD)	PV*
	Yes	No		Female	Male		
	Awareness questions (first step: designing clinical questions)	3.4±0.6		2.6±0.9	0.001		
Awareness questions (second step: finding evidence)	6.3±0.8	5.3±1.8	0.002	6.1±0.8	5.4±1.8	5.6±1.6	0.06
Awareness questions (third step: critical appraising)	2.6±1.1	1.6±1.1	0.001	1.9±1.1	1.9±1.3	1.9±1.2	0.973
Awareness questions (Phase 4: application)	5.1±1.3	3.7±1.4	0.001	4.3±1.2	6/1±1/4	4.2±1.6	0.58
A total of awareness level questions	17.4±3.1	13.3±3.6	0.001	15.2±2.7	14.4±4.5	14.7±3.9	0.369
Attitudinal questions	3.8±0.3	3.6±0.5	0.06	3.9±0.4	3.8±0.4	3.8±0.4	0.529



The frequency of responses to each of the questions is shown in Table 3. Based on this, most of the questions in the areas of awareness and attitude were answered yes, but in relation to the criticism of articles and the use of evidence, most of the answers were no (Table 3).

Table 3. Frequency of answers to the questions of knowledge and attitude about EBM by question in the physicians participating in the research

Row	Question	Yes	No
		N (%)	N (%)
1	I am able to design appropriate clinical questions based on the PICO format	75 (77.3)	22 (22.7)
2	I can differentiate between different clinical questions (prognosis, etiology, treatment, etc.)	97 (100)	-
3	Various clinical questions are constantly asked to me in my daily work	74 (76.3)	23 (23.7)
4	Write down the questions that are asked to me so that I can find their answers at the right time	34 (35.1)	63 (64.9)
5	I can create suitable searchable keywords in databases	95 (97.9)	2 (2.1)
6	I know the best specialized sources for finding new evidence in my field of work	86 (88.7)	11 (11.3)
7	I can find the best evidence to answer my clinical questions	72 (74.2)	25 (25.8)
8	Find the best evidence for my questions from databases within 15 minutes at most	63 (64.9)	34 (35.1)
9	I can use more than one database to expand my search scope	92 (94.8)	5 (5.1)
10	I can use advanced search facilities in databases	74 (76.3)	23 (23.7)
11	I can save my keywords and search strategy for later use	67 (69.1)	30 (30.9)
12	I know the common terms used in evidence-based approach articles	81 (83.5)	16 (16.5)
13	I am able to determine the level of evidence of an article	42 (43.3)	55 (56.7)
14	I can critically appraise an article based on EBP principles	23 (23.7)	74 (76.3)
15	I can make a critiqued summary (e.g.CAT*) of the article for my own work	43 (44.3)	54 (55.7)
16	I use evidence obtained from articles in daily clinical work	66 (68)	31 (32)
17	I explain the evidence obtained from the articles to my patients in simple language	85 (87.6)	12 (12.4)
18	I am able to make the right decision when clinical experiences have different results with the evidence of articles	85 (87.6)	12 (12.4)
19	I can evaluate the clinical outcomes of my patients with evidence-based indicators	33 (34)	64 (66)
20	I can use 3E (for clinical decisions of my patients).	62 (63.9)	35 (36.1)
21	I use clinical guidelines in my specialty to care for patients	79 (84.1)	18 (18.6)
22	I think the nature of evidence-based practice is primarily focused on clinical work	79 (84.1)	18 (18.6)
23	I believe that knowledge and skills of evidence-based practice should be acquired for clinical professionalism	95 (97.9)	2 (2.1)
24	I believe that evidence-based practice can prevent incorrect care of patients	97 (100)	-
25	I believe that the ability to practice based on evidence will significantly help me in my clinical work	97 (100)	-

CAT: Critically Appraised Topic*

A significant relationship was observed between age and teaching experience with the general score of knowledge and attitude in the field of EBM. In other words, with the increase in the years of teaching and the age of the participants, the amount of knowledge

and attitude in the field of evidence-based medicine also increased significantly. ($r=0.32$, $P=0.001$ for age and $r=0.28$, $P=0.005$ for teaching experience respectively). (Table 4)

Table 4. Correlation between age and teaching experience with the general score of knowledge and attitude in the field of EBM

Variable	Spearman correlation coefficient	PV
Age	0.32	0.001
Teaching experience	0.28	0.005

The most important problems of using reliable information sources in the daily practice of physicians were lack of time and lack of information (Table 5).

Table 5. Frequency of problems in using reliable information sources for use in daily practice

Type of problem	Frequency	Percentage
Lack of time	48	49.5
Lack of information	22	22.7
Infrastructure and utilities	20	20.6
Other	7	7.2
Total	97	100

All the physicians participating in the research were willing to use EBM in their daily practice, of them 64 people (65.9%) expressed a high and very high desire and 33 people (34%) expressed some desire to use EBM in their daily practice. Regarding the practical use of EBM in daily practice, 67 doctors (69%) used

EBM very little or not at all in their daily practice (teaching students, diagnosing and treating patients) and only 30 people (30.9 percent) declared that they use EBM to a great extent in their daily practice. (Table 6)

Table 6. Practical use of EBM in daily practice by physicians participated in the study

EBM use in daily practice	Frequency	Percentage
Not at all	14	14.4
Very little	53	54.6
Often	19	19.6
Very often	11	11.3
Total	97	100

Discussion

Evidence-based medicine is a new attitude to improve clinical decisions, treatment and care of patients (13). The findings of the present study showed that almost one third (34%) of academic staff physicians had a history of participating in EBM workshops and these people had more knowledge about this than other physicians. Most of the participating physicians had a positive

attitude towards EBM, but almost 70% (69.1%) used evidence-based medicine very little or to some extent in their daily practice. Lack of time and lack of specialized knowledge of EBM were the most important barriers to its use among the studied physicians. The positive attitude towards EBM in the current study was high (70%), which is consistent with the study of T worku et al. in Ethiopia (88.7% positive attitude) (13), Sadeghi et al. in Kerman



(88.3% interest in using EBM by medical assistants) (14) and also Salehi Far et al. in Alborz University of Medical Sciences (90% positive attitude in clinical doctors) (15). The participation rate of clinical doctors in EBM workshops in our study was lower than the study of Salehifar et al., in which about half of the doctors participated in the evidence-based medicine workshop (15). The findings of the Safari study among the faculty members of Kermanshah Medical School also showed that most of the participants are not scientifically familiar with the concept of evidence-based medicine (16). Based on the findings of the study by Ebadifard et al. (17) on 2800 health care providers (doctors, nurses, midwives and paramedical personnel) in active hospitals in Iran, only 12.7% and 15.8% of the participants were fully aware of databases and EBM terms, respectively. In the study of Salehi Far et al., about 37.5% of clinical doctors had little familiarity with the subject of EBM (15). In the study of Kalvani et al., among the post graduate medical students of Shahid Beheshti University of Medical Sciences, the level of awareness and use of databases was reported as average (18). In the study of Sadeghi et al., only about 19.2% of the post graduate medical students of Kerman University of Medical Sciences used authoritative articles as a source of information (14). According to the findings of the study by Moeintaqvi et al. among the post graduate medical students of Mashhad Dental School, despite the positive attitude towards evidence-based dentistry and access to the Internet, evidence-based medicine was not used in practice and the level of awareness of specialized evidence-based sites was low (19). In the study of Baikady et al. in India, 44.4% of physicians had access to EBM resources (20). According to the results of Hay et al.'s study, when making treatment decisions and performing clinical care, physicians rely more on clinical experiences, colleagues' opinions, and summaries of electronic articles than direct reference to evidence-based medical articles and databases (21). Several barriers to EBM implementation have been reported. The findings of the present study showed that the lack of time and specialized knowledge are the most important obstacles for physicians in using evidence-based medicine. In line with the present study, the study by N.J Al kubaisi et al. in Qatar (22), the review study by Sadeghi-Bazargani et al. (23) and the systematic review study by Barzkar et al. (24) the most common

barriers to using EBM in daily practice were Lack of resources and time, insufficient skills, lack of knowledge and shortages of financial resources. Similarly, in Moosavi et al.'s study (25), the most important obstacles to implementing EBM were lack of familiarity with research methods, lack of resources, and motivational problems. In other studies, the lack of motivation and lack of sufficient skills in EBM implementation, as well as its time-consuming nature, especially among overworked physicians, have been pointed out (24, 26). In a study conducted in Kenya by Unadkat et al. the most common barriers of post graduate medical students to implementing evidence-based medicine were lack of time and lack of EBM skills (27). In the present study, almost 70% of physicians used evidence-based medicine very little or to some extent in their daily practice. These results are in line with the study of Lafuente-Lafuente et al. in France, which indicated that only 14.2% of physicians use EBM on a daily basis (28). Similarly, T Worku and colleagues in Ethiopia have pointed out the low use of EBM (32.3%) by clinicians in daily practice (13).

Conclusion

The findings of the present study show that the academic staff physicians of Hamadan University of Medical Sciences had a positive attitude towards evidence-based medicine, but few of them participated in training workshops and, accordingly, its application in daily clinical work was relatively low. The most important obstacle for using evidence-based medicine was lack of time and insufficient specialized knowledge. To increase the level of awareness about evidence-based medicine among physicians, it is necessary to hold periodic retraining courses by EBM experts on this field and in this regard, the role of continuous medical education centers (CME) in national universities is very important.

Declarations

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Conflicts of Interests

The authors declare no conflict of interest.



Ethical statement

The study has been approved by the Ethics Committee of Hamadan University of Medical Sciences (Ethical code: IR.UMSHA.REC.1398.838).

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Authors' contributions

All authors contributed to designing, running, and writing all parts of this study.

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