

Obstacles facing evidence based medicine in physical medicine and rehabilitation: from opinion and knowledge to practice

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Abstract

Background: Evidence-based medicine (EBM) is a new approach to medicine which can guide clinical services toward effective and beneficial results with the least side effects or errors. Up to now, there have been few available articles about specialists' EBM status, specifically the status of physiatrists in the area of EBM.

Objective: To determine the present status of physiatrists' attitudes, knowledge and skill in the area of EBM and the existing obstacles.

Methods: The cross-sectional study was performed in 2014 among physiatrists in Iran. The valid and reliable questionnaire contained 25 questions in 8 fields including demographic and professional information, point of view regarding EBM, familiarity with databases, educational history and information about EBM, use of scientific resources, scientific evidence usage, and the amount of access to resources. Final analysis of the questionnaires was done using SPSS version 16.

Results: One hundred twenty-eight questionnaires were completed (response percentage 52.2%). In total, 48.4% specialists had attended EBM workshops and 89.6% of people were familiar with medical search engines. The amount of familiarity with databases was mostly with MEDLINE/PubMed (52.3%). Respondents mainly had a positive point of view towards EBM. Those who had access to databases at work or somewhere out of home had a more positive attitude ($p=0.002$). Those who had attended EBM workshops and members of faculty also had more positive attitudes ($p=0.003$ and $p=0.01$, respectively). Around 70% of responders had adequate knowledge regarding EBM. Physicians, members of faculty and participants who had spent more time on research, reviewed articles and attended workshops had more knowledge ($p=0.001$). There were three major obstacles recognized:

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An insufficient amount of knowledge regarding the principles, advantages and applications of EBM, difficulty with gaining access to associated databases and an insufficient amount of activity in judging and analyzing the related articles.

Conclusion: Results from our study revealed that although there is a significant number of physiatrists who are familiar with the practicality of EBM, they are still not familiar enough with its concepts and applications.

Keywords: Physical and rehabilitation medicine, Evidence -based medicine, Iran, Attitude, Knowledge

1. Introduction

The concept of Evidence-based medicine (EBM) is a new approach to medicine which can guide clinical services toward effective and beneficial results with minimum side effects or errors. The term “evidence-based medicine” was proposed first in McMaster University in Canada in 1990. Later in 1996, Sackett et al. described it more precisely, “using the existing research evidence wisely and correctly for treating and managing patients” (1). Other definitions were proposed for it thereafter (2). Prescribing improper diagnostic tests and medications can impose high costs on the health system. Therefore, EBM education has been included in many health committees and educational curriculums in developed countries (3, 4). Despite great efforts to expand EBM applications, different obstacles have been reported in this regard, such as resource limitations, limited access to medical databases, lack of sufficient skill in analyzing and judging articles etc. Based on past studies, education per se has not been successful in changing physicians’ professional behaviors (5). It seems that EBM application in the clinical setting needs education and training which is time-consuming and requires individual self-learning (6). During recent years, especially with the evolution of medical search engines, use of literature has increased significantly and the need of familiarity with EBM principles has become a clinical necessity. Various studies have been carried out in medical and paramedical fields regarding individuals’ attitudes towards EBM (7-10). Up to now, there have been few available articles about specialists’ EBM status, specifically the status of physiatrists in the area of EBM (11, 12). The Iranian Society of Physical and Rehabilitation Medicine (PRM) was established more than 40 years ago. During 30 years of PRM residency training, about 420 specialists and 90 residents have been providing PRM services in different academic, state and private medical centers (13). EBM education in Iran has been included in the PRM educational curriculum since 2007. History of EBM inclusion in the educational curriculum of medical and post-graduate students in developed countries dates back to more than 35 years ago (14), while EBM inclusion in medical students’ educational curriculum in Iran has been included only in recent years (15). It seems that older graduates have less information about this concept and its applications (17, 16). Although studies have been performed in Iran in the area of EBM in paramedical fields, internship and residency (4, 16-20), no published study has been performed on the physiatrists’ status in this area. In order to develop specialist education in the area of EBM, designing a basic study for evaluation of their status regarding EBM was felt necessary. The aim of the present study was to determine the knowledge, understanding and application of evidence based clinical practice in a group of physiatrists from Iran. In this study, besides evaluating the present status of physiatrists’ attitudes, knowledge and skill in the area of EBM and the existing obstacles, we provide necessary issues for further studies.

2. Material and Methods

This cross-sectional study was performed in 2014 among physiatrists in Iran. The questionnaire was distributed by three physical medicine and rehabilitation PRM residents among 245 physiatrists who participated in the annual congress of PRM as well as monthly meetings of the society. Written study objectives were also described orally. In order to prevent the missing of individuals’ responses, the process of recall and collection was done by one of the main study colleagues, and questionnaires were collected personally at the end of each session. The self-declaration questionnaire contained 25 questions in 8 fields. The first 10 questions were about demographic and professional information including age, gender, the university and the year of graduation, places of employment, being a faculty member, hours of visits in a week and number of patients visited in a day. Point of view about EBM (question 11), familiarity with databases (questions 12 and 13), educational history and information about EBM (questions 14 to 18), use of scientific resources (question 19), scientific evidence usage (questions 20 to 23), the amount of access to resources (question 24) and existing obstacles (question 25) were the other 7 areas of the questionnaire. In questions associated with the point of view towards EBM and using scientific resources, a 5-point Likert scale from “completely agreed” to “completely disagreed” was utilized. In questions 18 and 24, a 3-point Likert scale was used. Except for question 25 which had 3 choices, other questions had 4 choices and the respondent was required to select only one choice. In order to evaluate the reliability of the questionnaire, it was distributed among 23 physiatrists who were experts in the EBM field. Based on received feedback, necessary changes were made and for evaluating the validity of the questionnaire, it was distributed among 15 physiatrists twice within 2 weeks. Obtained intraclass correlation coefficient (ICC) intervals for all items were between 0.787 and 0.961. Final analysis of the

questionnaires was done using SPSS version 16 (SPSS Inc. Chicago, Illinois, USA). For quantitative data analysis, mean and variance were used. For variables with normal distribution, paired t-test, ANOVA test and independent t-test were used and for variables with non-normal distribution, non-parametric tests such as Mann-Whitney were utilized. For expression of qualitative variables, frequency and percentage were used. P value of 0.05 was considered as meaningful limit.

3. Results

3.1. General findings

One hundred twenty-eight out of 245 questionnaires were completed. The response percentage was 52.2. There were 82 (64.1%) male participants and 45 (35.2%) were female. The mean age of the respondents was 37.87. There were 34 participants (26.6%) who were academic members of medical faculties. Participants' characteristics are summarized in Table 1. Sixty specialists (48.4%) had attended EBM workshops. In total, 113 people (89.6%) were familiar with medical search engines. The amount of familiarity with databases was mostly with MEDLINE/PubMed (52.3%) and least for BMC (Biomed center) (43%) (Table 2).

Table 1. Demographic Data

Characteristic		n ^a	%
Sex	Female	45	35.2
	Male	82	64.1
Age (years)	<35	52	40.6
	35-40	32	25
	40-45	22	17.2
	>45	14	10.9
Years licensed (years)	<5	64	57.1
	5-10	22	19.6
	>10	26	23.2
Work setting	Office	57	44.5
	Private organization	25	19.5
	Public organization	108	84.4
	Others	5	3.9
Hours of work per week (hours)	<30	25	19.5
	30-40	45	35.2
	41-50	39	30.5
	>50	17	13.3
Patients per day	10 >	25	19.5
	10-15	41	32
	16-20	26	20.3
	>21	35	27.3
University graduated	Shahid Beheshti University of Medical Sciences	35	27.3
	Iran University of Medical Sciences	5	3.9
	Artesh Medical University	21	16.4
	Baghiatallah University of Medical Sciences	4	3.1
	Shiraz University of Medical Sciences	35	27.3
	Tabriz University of Medical Sciences	14	10.9
	Isfahan University of Medical Sciences	10	7.8

a: Number varies for each variable due to missing data

Table 2. The amount of familiarity with and application of search engines in clinical decision making.

Amount of familiarity	Search engine (%)							
	BMJ	PubMed	EMbase	Google	Ovid	Cochrane	Scopus	BMC
I don't Know	35.2	8.7	48.0	17.5	28.7	26.0	33.3	49.1
I've heard but not exact knowledge	40.0	11.1	28.5	12.7	22.1	23.6	32.5	32.1
I familiar but don't use	15.2	27.0	15.4	29.4	28.7	19.7	22.2	12.5
I familiar and use it	9.6	53.2	8.1	40.5	20.5	30.7	11.9	6.2

3.2. Attitudes

Respondents mainly had a positive point of view towards EBM. They completely agreed or agreed in the following issues: EBM is necessary in medical practice (92.1%), findings of the articles are useful in daily practice (89.8%) and its application is effective in promotion of the quality of patient care (91.2%). EBM had had influence on the practice of 60.2% of participants; however EBM did not consider the practice conditions of 51.2% of the respondents. They also picked the choice “I have no idea” in two questions: EBM does not consider patients’ tendencies (45.6%), and using EBM does not increase the workload of physicians (37.8%). Participants disagreed or completely disagreed in 55.9% regarding the question of whether there was no strong clinical evidence about therapeutic interventions they employed for their patients. The level of positive attitude had no meaningful relationship with demographic and practice data (including age, gender, the university and the year of graduation, places of employment, being a faculty member, and hours of visits in a week); except for the number of patients visited in a day ($p=0.012$). Physicians with less than 15 daily visits had less positive attitude compared to those having more than 16 daily visits. Those who had access to databases at work or somewhere out of home had more positive attitude ($p=0.002$). Participants who had attended EBM workshops and members of faculty also had more positive attitudes ($p=0.003$ and $p=0.01$, respectively).

3.3. Knowledge

Of 4 questions regarding EBM knowledge evaluation, 15.6% (20) answered all questions correctly, 22.7% (29) answered 3 questions correctly, 31.4% (40) answered only 2 questions correctly, 21.1% (27) answered only one question correctly and 9.4% (12) answered all questions completely wrong. Self-declaration about the measure of familiarity with article specific terms is demonstrated in Table 3. Among demographic variables, female specialists ($p=0.036$), physicians who were working in state hospitals or who were not working in private offices ($p=0.001$), physicians who spent more time on article review and research, participants who had attended workshops, and members of faculty had more knowledge ($p=0.001$). Regarding sources used in clinical settings and the level of attention to and use of articles and databases, in this section, time spent for research on EBM, number of articles studied in the past month and applying them in clinical settings, and the measure of database and MEDLINE use for clinically-associated articles were evaluated. Of all respondents, 38.6% spent less than 5 hours of their time for research on EBM. Among participants, 40.2% studied between 2 to 4 articles in a month. Most of the respondents (50.4%) had used specialized articles in clinical settings once or less and 44.9% had used databases for related articles once or less. Regarding sources used in clinical practice, reference books (86.5%) were the most commonly used source. Compared to physicians working in private offices or institutes, those who were working in state hospitals spent more time searching in sources ($p=0.00$); and the more the hours of work in a week, the more time was spent for searching articles ($p=0.017$). Members of faculty, individuals who had more access to sources and those who had passed the workshops spent more time on searching on sources and paid more attention to articles ($p=0.001$).

Table 3. Self-declaration of familiarity with epidemiologic terms

Self-declaration	Specific terms (%)							
	Relative risk	Absolute risk	Systematic review	Odds ratio	Meta-analysis	Confidence interval	Number need to treat	Publication bias
I understand completely	37.8	31.0	53.2	26.2	42.1	32.8	23.0	20.6
I understand somewhat	52.0	52.4	34.9	50.0	45.2	33.6	37.3	35.7
I don't understand	10.2	16.7	11.9	23.0	12.7	33.6	39.7	43.7

3.4. Access to articles

Almost 19.8% of respondents had access to new articles in published forms. Of all participants, 28.3% had access to articles at work and 28.6% had access to articles and databases at home or somewhere out of the work place.

3.5. Obstacles

Based on the poll regarding obstacles against EBM application in clinical decision making, three main obstacles were generally recognized: An insufficient amount of knowledge regarding the advantages, principles, and applications of EBM, difficulty with gaining access to associated databases and an insufficient amount of activity in

analyzing and evaluating the related articles. Table 4 demonstrates the distribution of these obstacles. The relationship between demographic data, participating in EBM workshops, being a faculty member and searching and using articles and obstacles were evaluated and the following results were made. Lack of interest was a greater obstacle in individuals who had less access to published sources and those who worked more than 40 hours a week ($p=0.022$ and $p=0.001$, respectively). Individuals working in private ($p=0.019$) and state ($p=0.003$) hospitals, outlined the difficulty in getting access to sources as an important obstacle. Sufficient activity in judging and analyzing articles was meaningfully less in physicians who were working in private offices ($p=0.001$), working more than 50 hours a week ($p=0.038$), worked as a member of faculty ($p=0.028$) and had access to published sources ($p=0.016$) and articles at work ($p=0.003$). Male participants recognized non-practical EBM as an obstacle more than female participants ($p=0.018$). Members of faculty ($p=0.008$), physicians who did not work at private offices ($p=0.016$) and those who had more access to sources at work ($p=0.007$) and published sources ($p=0.003$) considered time limitation as an obstacle to apply EBM in clinical settings more than others.

Table 4. Available obstacles in EBM

Attribute	Available obstacles (%)					
	Lack of information about EBM	Lack of interest about EBM	Problem in access to literature	Poor ability to critically appraise the literature	EBM isn't applicable	Insufficient time
No	33.1	72.6	40.3	42.7	85.5	59.7
Yes	66.9	27.4	59.7	57.3	14.5	40.3

4. Discussion

About 48% of physiatrists who participated in this study had attended an EBM workshop. This rate was between 20% and 50.1% in other studies (21-23). This difference in familiarity with EBM could be related to the field of study, inclusion of EBM education in the educational curriculum of each field and availability of active EBM centers in different cities and universities. In our study, although almost half of the respondents had participated in EBM workshops, most of the participants lacked enough knowledge about EBM. Most of them used traditional sources for their medical knowledge and their level of attention to and use of articles and EBM related databases was low. Most participants in this study had a positive attitude toward EBM which was similar to the findings of prior studies performed in other fields such as nursing, physical therapy and internal medicine residents (4, 21-23). In the present study members of faculty, individuals who had passed EBM workshops and those who had access to databases had more positive attitudes. Similar to the study of Jette et al., most of the respondents were not sure if EBM considers patients' desire for treatment (9). Unlike the study of Abhari-Ahmadi et al. on internal medicine residents and interns, in our study a significant percentage of physiatrists agreed that EBM does not consider the physician's practical limitations in clinical settings (4). However, in the study of Jette, most of the respondents were neutral in this area. This difference in point of view could be associated with the specialty and the experience of the study participants, the kind of EBM training, the extent of access to the necessary sources and the physicians' practical conditions, as most of the participants of our study were among community active specialists while in the study of Ahmadi, participants were among interns and residents who had less experience of independent work. Questions of the knowledge domain included EBM basic concepts and familiarity with common terms. The mean knowledge score of the participants was 2.14 ± 1.2 . In this study, almost half of the participants recognized systematic reviews and meta-analyses as the highest level of EBM, which was similar to other studies. In the domain of basic concepts, like other studies, scores were not so high (4, 24). In our study, the extent of familiarity with some terms such as intention to treat, relative risk and absolute risk was lower compared to other studies (8, 25). It seems that participants in different studies are not aware of all epidemiologic terms of EBM which could be related to the kind of training in different fields in different countries. Our study showed that increased knowledge has direct relationship with the extent of access to the sources, being a member of faculty, having participation in EBM workshops and spending more time for searching in scientific sources.

In the present study, although almost 90% of participated physiatrists were familiar with medical search engines, their extent of familiarity with EBM sources was low. The three most common sources used for research were PubMed, Google scholar and Cochrane, respectively, which was similar to the findings of other studies (20, 21, 25). In addition, participants used books more often as reference for diagnostic and clinical decision making. This was similar to the findings of the studies of Ahmadi and also Sadeghi et al. (4, 21). Amini believes that one reason for unfamiliarity with EBM sources is the unawareness of the significant percentage of residents of specialized sources and scientific sites (20). Meanwhile, despite passing workshops and half the physiatrists being familiar with EBM,

only 35% study more than 5 articles in a month and only 15% use more than 5 articles in a month for clinical decision making. These findings were similar to the findings of Jette et al. Our study showed that the less the access to the resources, the less would be the time spent for searching. This could be a reason for low article study and use in clinical settings. Jette had also achieved this relationship in his study (9). Those who had participated in EBM workshops and members of faculty spent more time rather than others on searching and studying articles. They also used more articles in their clinical decision making. It seems that availability of articles in academic centers and their attention to and the sense of demand could be the reasons for their increased use of articles. Three major obstacles were generally recognized against EBM application in clinical decision making which were an insufficient amount of knowledge regarding the principles, advantages and applications of EBM, difficulty in gaining access to associated databases and an insufficient amount of activity in analyzing and evaluating the related articles (in order of frequency). Iles et al. proposed lack of time, difficulty with subject interpretation and lack of access to different sources in their study as the 3 main obstacles in application of EBM in clinical settings (8). Lack of time was also introduced as the first obstacle in Jette's study. In our study, lack of time was ranked fourth, which could be due to difference in fields studied. Although almost 50% of participants had passed EBM workshops, it seems that besides the low number of workshops, subjects proposed in mentioned workshops did not fit the needs of physiatrists. Based on the study of McCulsky, attending workshops on its own does not change physicians' therapeutic behavior and other important factors such as increased critical thoughts, repetition and training are necessary (5). In our study participants also mentioned lack of familiarity with and sufficient task of article criticizing and analysis as one of the existing obstacles. Another reason that could be mentioned as an obstacle in this study is the existence of sanctions against Iran regarding database accessibility which has become a challenging problem for physicians and other researchers (26).

An important point in PRM is the differences between evidence based medicine approach in this field and other fields (27). Negrini believes PRM's focus is on the boundary between organic and psychological approaches, but also between medicine and society. Consequently, PRM uses many different therapeutic resources whose effectiveness relies mainly on tradition, practice, and unproven theories. So PRM is different from alternative medicine if we use a real evidence based medicine approach and using/rejecting them on the basis of the results obtained. Because of some differences, some studies suggested adaptations in PRM evidence based medicine which include the biopsychosocial model typical of PRM (totally different from the cause and effective model). Studies on disability are often methodologically different, statistical methods are different (specific approaches like Rasch analysis), RCTs in PRM are objectively more difficult (personal factors play an enormous role in all phases of PRM treatment) and different ethical issues and principles (due to the possibility to apply physical therapy or other rehabilitation interventions even without having been tested in clinical trials) (27, 28). In this study, generally there was no relationship between the age of participants and their year of graduation and their attitudes, knowledge, attention to and use of articles and available obstacles, which is different from the findings of other studies (9, 29). The reasons for this discrepancy seem to be the lower mean of participants' age and their lower domain and the resulting time of graduation. In other words, in the present study, the number of participants with older age was low. Good sample size and a reliable and valid questionnaire were among the advantages of our study. It was tried in the questionnaire to include EBM aspects while considering brevity. In addition, we tried to include physiatrists who were members of the Iranian Society of Physical Medicine and Rehabilitation in our study. Among the limitations of this study were the relative low response rate and insufficient participation of physicians with older ages. Physicians who had no information about EBM, especially those with older ages had less tendency to fulfill the questionnaires which could be a reason for the mentioned limitations. In our study, the ratio of the members of faculty to respondents was higher than this ratio in the society. In our study, 26.6% of participants were members of faculty while the percentage of this group in a normal population of physiatrists is 15%. In fact, their higher knowledge would make them fulfill the questionnaires more precisely. In addition, as these questionnaires were distributed in the annual congress of PRM and monthly meetings of the society, where often members of faculty (who are more interested in scientific achievements) participated, which could explain the higher rate of this group rather than other physiatrists.

5. Conclusions

Results from our study revealed that although there is a significant number of physiatrists who are familiar with the practicality of EBM, there is still a lack of familiarity regarding its concepts and applications. Therefore, comprehensive and practical planning is required during medical school education, physical medicine and rehabilitation residency, and post-graduation during continuous education programs so that physicians become trained for criticizing thoughts.

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Conflict of Interest:

There is no conflict of interest to be declared.

Authors' contributions:

All authors contributed to this project and article equally. All authors read and approved the final manuscript.

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