Knowledge, practices and attitudes of physicians towards evidence-based medicine in Egypt

Amira Abdel-Kareem,[1] Ibrahim Kabbash,[1] Shima M. Saied[1] and Abdel Al-Deeb[1]

[1]Public Health and Community Medicine, Faculty of Medicine, Tanta University, Tanta, Egypt. (Correspondence to: Ibrahim Kabbash: iafkabbash@gmail.com; Ibrahim.kabbash@med.tanta.edu.eg).

Abstract

Background: Evidence-based medicine help clinicians deal with information overload, to distribute healthcare resources more equitably, help reduce healthcare costs, and justify treatment choices to the public.

Aims: This study aimed to assess evidence-based medicine (EBM) knowledge, practices and attitudes among physicians in Tanta University hospital, Tanta, Egypt.

Methods: A cross-sectional study was used. Collection of data was by a self-administrated questionnaire distributed to 398 physicians in different specialties during 2017.

Results: Response rate was 93.6%. More than half (61.3%) of participants reported Pub Med as used in decision-making. Physicians with good knowledge of EBM represented 10.5%, those with fair knowledge represented 54%, and those with poor knowledge represented 35.5%. Regarding attitudes towards EBM, 76.4% of study participants welcomed the current promotion of EBM; 81.4% thought that it useful to use research findings in daily management of patients; and 89.9% thought that practicing EBM improved patient outcomes. More than half of participants (55.8%) had attended courses related to EBM, but only 6.8% had attended courses related to critical appraisal. The majority of participants (97%) had access to the World Wide Web. Barriers reported by participants that interfere with EBM practice were patient overload (68.1%), lack of time (60.1%), colleagues' attitudes (47%), lack of skills (46.7%), and fear of criticism (44.5%).

Conclusions: Most participants in this study have a positive attitude towards EBM, have a fair knowledge of it, but poor practices. EBM should be integrated in the curriculum of both undergraduate and postgraduate studies, and EBM training courses provided to residents to ensure correct application of EBM in daily practice.

Keywords: evidence-based medicine, medical students, KAP, Egypt

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Introduction

Evidence-based medicine (EBM) as a new paradigm for medical practice involves integrating the best available external clinical evidence with individual clinical expertise and use of individual patient's rights and preferences in clinical decision-making. Thus, the ability to critically appraise literature and assess its applicability is identified as integral to the practice of EBM (*1*). Evidence-based practice is the process of care for the patient, which takes into account his or her preferences and actions, the clinical resources available, and current and applicable scientific evidence, under the clinical expertise and training of the health-care provider (*2*).

Competent physicians use both individual clinical expertise as well as the best available external evidence (3). The benefits of EBM help clinicians deal with information overload, to distribute health care resources more equitably, help reduce healthcare costs, and justify treatment choices to the public. The goal is to improve quality of care by promoting effective practices and encourage clinicians have to try new scientific methods and discard ineffective practices (*4*).

In Egypt, relatively few studies (*5*–*7*) have been carried out to assess awareness demonstrated by health care physicians towards evidence-based medicine, the ability to access and interpret evidence, the barriers to moving from opinion-based to evidence-based practice, and the additional support necessary to incorporate evidence. This study was conducted to assess knowledge, attitudes and practices regarding EBM among physicians in Tanta University Hospitals in Tanta, Egypt, and identify barriers to EBM.

Methods

A cross-sectional study was performed in Tanta University Hospitals, which has 1962 beds providing secondary and tertiary healthcare services to 559 532 patients per year. The total number of working physicians is 2138 (*8*). The study subjects were physicians working at Tanta University Hospitals based on the following inclusion criteria: residents, demonstrators, and assistant lecturers working at different departments of Tanta University Hospitals. Exclusion criteria included: physicians who spent < 3 months in the job, and those who were on vacation during the whole period of study.

The sample size was calculated using Epi info 7, software developed by Center for Disease Control & Prevention (CDC) and the World Health Organization (WHO). The Calculated number was 384 physicians (CI 95%), and expected outcome (total score of knowledge) was estimated at 50% with a 5% margin of error. The sample was obtained by one stage stratified sampling method. The departments were divided into two different strata; medical stratum and surgical stratum. The total sample size was divided by weight of total population of each stratum. In the medical stratum the total sample was 225 physicians while in the surgical stratum the total sample was 173 physicians. Departments were randomly selected from each stratum.

Data were collected from physicians using a self-administered questionnaire. The valid and reliable questionnaire used by McColl et al. 1998 (*9*) and modified by Boulus et al. 2013 (*6*) was adopted. The questionnaire consists of the following sections:

1. Socio-demographic data

2. Knowledge of physicians

3. Attitude of physicians towards evidence-based medicine.

4. Questions to describe practicing of EBM

5. Perceived major barriers to practicing EBM in medical practice.

The questionnaire was sent to five experts for testing for validity. A pilot study was done on 20 physicians not included in the study and Cronbach's alpha was found to be 0.853. The questionnaire was distributed to all residents, demonstrators and assistant lectures of the included medical and surgical departments. Out of 425 questionnaires distributed to physicians, 398 questionnaires were completed. Only 12 questionnaires were returned unanswered and were counted as 'no response'. Fifteen questionnaires were not returned (93.6% response rate). The scoring system of the questionnaire (*10*) was as follows:

A. Knowledge scoring:

Knowledge assessment consisted of 14 items (seven items to determine awareness of physicians with journal sites and seven items to reveal awareness with statistical terms used in scientific papers). Each item had a four response format. Subscale scores ranging from 0 to 3 were obtained by summing the items in each subscale and calculating the mean of score percentage. Total knowledge score ranged from 0 to 42. Knowledge score was divided into three tertiles; the first tertile represented poor, the second tertile represented fair, and the third tertile represented good knowledge.

B. Attitude scoring (10):

Attitude assessment consisted of three items with 5-Likert-scale format as zero "strongly unwelcoming" to 4 "strongly welcoming". Subscale score was obtained by summing the items and mean score percentage was calculated. Total attitude score ranged from zero to 12. The attitude score was divided into two halves; the first half represented negative, and the second half represented positive attitude.

C. Practice scoring:

Practice assessment consisted of five questions. First two questions addressed any previous training and was scored as (0) for no attendance and (1) for attending. The third question asked about accessibility to World Wide Web and was scored as (0) for "No" and (1) for "Yes". The fourth question asked about using the World Wide Web in clinical decision-making and was scored (0) for "No" and (1) for "Yes". The fifth question asked about reading of medical journals and was scored as the following (0) for "do not read any journals", (1) for "read occasionally", (2) for "read on demand", and (3) for "read regularly".

Total practice score ranged from 0 to 7. The mean score percentage was calculated and the score was divided into three tertiles; the first tertile represented poor, the second tertile represented fair, and the third tertile represented good practice.

Statistical Analysis

Analysis of data was performed using Statistical Package for Social Sciences (SPSS®) version 21 (IBM, Armonk, NY; United States of America). Qualitative data were described using number and percent. Quantitative data were presented as mean and standard deviation. Chi square test was used for comparison of subcategories. $P < 0.05$ was adopted as the level of significance.

Ethical considerations

Approval for the research was obtained from the ethical committee of Tanta Faculty of Medicine before starting the study. Subjects were informed about the purpose of study and benefits of participating in it. Verbal consent was obtained from subjects to participate in the study. Confidentiality and privacy were guaranteed during the whole period of study.

Results

Table 1 shows socio-demographic characteristics of study participants. Table 2 shows that the highest reported resources as "used in decision-making" among participants were Pubmed (61.3%), Cochrane database for systematic review (10.1%), and EBM from BMJ Publishing Group (5.5%). Table 3 shows that more than one third (35.3%) of study participants had poor knowledge and more than half of them (53.7%) had fair knowledge, and only 10.5% of them had good knowledge. The table also reveals that job grade, specialty, and previous training concerning EBM had a statistically significant effect on knowledge score distribution among study participant.

Table 4 shows that 93.2% of participants had a positive attitude towards EBM, while only 6.8% of them had a negative attitude. Gender, job grade, specialty, previous qualifications, and previous training concerning EBM had a statistically significant effect on attitude scoring among study participants.

Table 5 shows that more than one-half of the participants attended EBM courses, while 6.8% attended critical appraisal courses. Only 3.0% of participants did not have access to World Wide Web. Among those who had accessibility, 87.7% used it in clinical decision-making. The percentage of study participants reading medical journals was 73.1%. More than one half of the participants (54.5%) reported their EBM practice as less than 50%, and only 8.8% reported their EBM practice more than 75%. The best educational method to move towards EBM according to participants' opinion was the case review and discussion (87.7%), followed by workshops for training physicians (84.2%), and lastly the integration of EBM into undergraduate courses (75.4%). The major barriers perceived were patient overload (68.1%), followed by lack of time (60.1%), colleagues' attitude (47%), lack of skills (46.7%), and lastly fear of criticism (44.5%).

Table (6) shows that more than half (58.5%) of study participants had a poor practice score and one third (33.2%) of them had a fair practice score, and only 8.3% of them had a good practice score. The

table also reveals that job grade, and specialty had a statistically significant effect on practice score distribution among the study participants.

Discussion

Regarding the knowledge of various EBM resources, the majority of study participants were aware of PubMed (Medline). Similar results were obtained by Risahmawati et al. (2011), which indicated that in Japan 90% of participants were aware of PubMed; moreover, it was the only resource among all EBM that was reported as used during clinical decision-making (*10*). However, the study conducted by Hassan et al. (2014) reported that only one half of the participants (50.9%) were aware of Pubmed (*7*).

This study showed that 60.5% of participants were aware of BMJ Publishing Group. Similar results were obtained by Al-Kubaisi et al. (2010) in which BMJ awareness represented 62.2% of the participants, followed by Qatar Medical Journal at 40% (*11*). The EBM from BMJ awareness in our study was higher than the study of Abd AL-Magied et al. (2013) and Hassan et al. (2014) in which only 28.6% and 27.3%, respectively reported awareness of that resource (*5,7*). In addition, 5.5% of participants had previously used EBM from BMJ in decision-making. This did not coincide with the study conducted in the Islamic Republic of Iran by Rashidbeygi and Sayehmiri (2013), which showed that 8.5% of participants used EBM from BMJ Publishing Group to support the process of decision-making (*12*).

Physicians' awareness percentage of clinical evidence in our results was 46.7%. This varied with results from Hassan et al. (2014), which showed that only 29.1% of participants were aware (*7*). In addition, the studies conducted by Abd Al-Magied et al. (2013) and Boulus et al. (2013) reported that participants' awareness of clinical evidence websites were 30% and 31.6%, respectively (*5,6*). This can be attributed to the observation that our study participants had received training during both undergraduate and postgraduate curricula about EBM and its resources. Our study was also conducted three years later when awareness of EBM resources and its availability had increased.

Physicians' awareness of the Cochrane database in the present study was 71.8%. This was higher than Hassan et al. (2014) in which only 25.9% of participants were aware (*7*). This was also higher than the results of Abd Al-Magied et al. (2013) in which 39.4% of participants were aware of Cochrane collaboration as a source of information about EBM (*5*). However, the study conducted by Rashidbeygi and Sayehmiri (2013) revealed that only 5.3% of physicians used the Cochrane database of systematic reviews. This difference could be due to the fact that EBM is still a new term in the Islamic Republic of Iran (*12*). In the present study, physicians' awareness of the Eastern Mediterranean Health Journal was 16.8%, which differed studies by Hassan et al. (2014) in which 29.1% of participants were aware (*7*).

This study indicated a generally positive attitude towards the current promotion of EBM. Boulus et al. (2013) found that 77.8% of participants had a positive attitude toward EBM (*6*). This was also similar to that reported by Abeysene et al. (2012) in which 75.8% of the study participants had a positive attitude towards the current promotion of EBM (*13*), while studies by Barghouti et al. (2009) indicated that 63.5% of participants were positive towards EBM (*14*).

In addition, 81.4% of participants agreed that research findings are useful in patient management. Similar results were obtained by Hassan et al. (2014), who reported that 82.3% of participants believed that research findings are useful in patient management (*7*). Mehrdad et al. (2012) found that 80% of participants believed that EBM is helpful in clinical decision-making (*15*). This result coincides with Jette et al. (2003) in which 85% of the respondents indicated they were interested in learning and improving their skills of implementing evidence-based practices (*16*).

This study indicated that 89.9% of participants agreed that practicing EBM improve patient outcomes. Studies by Hassan et al., (2014) indicated that 90% of participants also believed that EBM would improve patient outcomes (*7*), but was higher than studies by Risahmawati (2011) in which 65% of participants said that EBM improve patient care (*10*).

Over one half of participants (55.8%) attended courses in EBM. This differed from Hassan et al. (2014) who reported only 18.2% of participants attending EBM courses (*7*), or Boulus et al. (2013) at 7.2% (*6*). This could be explained by the younger age of the target group included in those studies, namely graduated residents with high workloads and thus little chance of attending courses, especially those not integral in their postgraduate study. This differs from the results of Ismail et al. (2011) in which the percent was 10.9% attending EBM courses (*17*). This difference can be attributed to the fact that EBM was one of the postgraduate elective courses in Tanta Faculty of Medicine.

Regarding critical appraisal courses, only 6.8% of the current study participants reported attending them. Nearly similar results were obtained by Hassan et al. (2014) in which 10% of participants attended critical appraisal courses (*7*). Our results were higher than that reported by Boulus et al. (2013) in which only 4% attended critical appraisal courses (*6*). A relatively higher percentage was obtained by Ismail et al. (2011) at 19.1% attending such courses (*17*). This could be attributed to the fact that the age of the participants ranged from 23 to 57 years old and included lectures and assistant professors.

Most physicians (97%) in our study had access to the World Wide Web, while studies by Hassan et al. (2014) indicated that 95.5% of participants had accessibility (*7*). Our results were higher than those of Boulus et al. (2013) and Ismail et al. (2011) in which only 60% and 46% respectively had accessibility (*6,17*). In addition, 87.6% of participants reported that World Wide Web searches influenced their practice. This was higher than Hassan et al. (2014) in which 60% of the participant had used World Wide Web searches in clinical decision-making (*7*).

In this study, 73.1% reported reading medical journals as follows: 28.3% read occasionally, 26.6% read on demand, and 18% read regularly. This differed from Hassan et al. (2014) in which 42.8% reported reading medical journals (*7*), while Al-Kubaisi et al. (2010) reported that one third of participants were reading journals regularly, another third were reading on demand, and 28% were reading occasionally (*11*). Our study indicated that 33.2% of participants reported more than 50% of their practice was evidence based. This differed from Hassan et al. (2014) in which 66.1% reported more than 50% of their practice was evidence based (*7*).

Barriers towards EBM application

Our study revealed that the major barriers reported by study participants were as follows: patient overload, lack of time, colleagues' attitudes, lack of skills, and the fear of criticism. According to Abd Al-Magied et al. (2013), the first barrier to practicing EBM for most family physicians was patient overload (82.67%), followed by lack of critical appraisal skills (82%), lack of time (80.67%), lack of skills (72.67%), insufficient resources (67.33%), shortage of financial gain (64.67%), limited access to information (63.09%), colleagues' attitudes (60%), and not believing in EBM (22%) (*5*). Studies conducted by Al-Kubaisi et al. (2010) revealed that the major perceived barriers to practicing EBM in primary care were lack of free time (75.3%), limited resources and facilities (62.6%), no library in the location and lack of training workshops and courses (61%) (*11*).

Studies conducted by Abeysene et al. (2012) indicated the following barriers: insufficient resources (77.7%), patient overload (66.6%), lack of skills to apply EBM (65.8%), lack of personal time (64.8%) and lack of endorsement by health authorities (59%) (*13*). These differences in order and types of barriers from different studies can be explained by changes in educational methods, availability of resources, place of work and work situations (*7*).

Conclusion

This study indicated that more than one half of participants had fair EBM knowledge. The majority of participants had a positive attitude towards EBM and welcomed the current promotion of EBM. More than one half of participants had poor practice and one third had fair practice. Barriers reported by the participants that interfere with their EBM practice were patient overload, followed by lack of time, and colleagues' attitudes.

There were limitations to this study, namely the study design was that of self-perception of attitude, awareness, and barriers toward EBM; and the findings in this study cannot be generalized to other practitioners in different health facilities (for example, general hospitals and primary health care).

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Table 1: Socio-demographic characteristics of studied physicians

Characteristics	n= 398	%
Age		
25-	161	40.5
28-	122	30.7
31-	115	28.8
Range	25-34	
Mean± S.D	28.9 ± 2.7	
Gender		
Male	213	53.0
Female	185	47.0
Job		
Resident	188	47.2
Demonstrator	61	15.3
Assistant lecturer	149	37.5
Specialty		
Medical	225	56.0
Surgical	173	44.0
Years since graduation		
<2	15	3.8

2–	125	31.4
4–	108	27.1
6–	60	15.1
8–	66	16.6
10	24	6.0
Range	1-12	
Mean± S.D	5.1±2.7	
Qualifications or fellowships		
None	374	94.0
USMLE	10	2.5
MRCP	10	2.5
MRCS	4	1.0

Table 2: Awareness and utilization of different EBM resources

Journal or database	**Awareness**							
	Unaware		Aware but not use		Read		Used in decision making	
	n.	%	n.	%	n.	%	n.	%
Pubmed	19	4.8	21	5.3	114	28.6	244	61.3
Cochrane	112	28.1	117	29.4	129	32.4	40	10.1
EBM from BMJ *	157	39.5	143	35.9	76	19.1	22	5.5
CDC**	175	44.1	127	31.9	76	19.2	19	4.8
Clinical-evidence	212	53.2	139	34.9	40	10.1	7	1.8
Eastern-Mediterranean health journal	328	82.2	42	10.5	19	4.8	6	1.5
Journal of family practice	337	84.7	54	13.5	4	1.0	3	0.8

Others reported resources	
Medscape	77 (19.3%)
Up-To-Date	74 (18.5%)
E-medicine	12 (3%)
clinical key	8 (2%)

*British Medical Journal publishing group
**Center for Disease Control and Prevention

Table 3: Distribution of studied subjects in relation to total knowledge score

Variables	**Knowledge score**						χ^2	*P*
	Poor		Fair		Good			
	n.	%	n.	%	n.	%		
Gender								
Male (n = 213)	79	37.0	116	54.5	18	8.5	2.290	0.318
Female (n = 185)	62	33.5	99	53.5	24	13.0		
Job								
Resident (n = 189)	109	57.7	75	39.7	5	2.6		
Demonstrator (n = 61)	26	42.6	27	44.3	8	13.1	113.420	0.001
Assistant lecturer (n = 148)	6	4.0	113	76.4	29	19.6		
Specialty								
Medical (n = 225)	76	33.8	114	50.6	35	15.6	13.752	0.001
Surgical (n = 173)	65	37.6	101	58.4	7	4.0		
Previous qualifications								
Yes (n= 24)	2	8.3	3	12.5	19	79.1	57.632	0.001
No (n = 374)	179	47.8	164	43.8	31	8.4		
Previous EBM training							13.748	0.001

Yes (n = 222)	60	27.0	137	61.7	25	11.3		
No (n = 176)	81	46.0	78	44.3	17	9.7		
Total (n = 398)	141	35.4	215	54.0	42	10.6		

Table 4: Factors affecting attitude score among the studied physicians

Variables	**Attitude score**				χ^2	*P*
	Negative (n = 27)		Positive (n = 371)			
	n.	%	n.	%		
Gender						
Male(n = 213)	21	9.9	192	90.1	6.786	0.009*
Female(n = 185)	6	3.2	179	96.8		
Job					18.149	0.001*
Resident (n = 189)	22	11.6	167	88.4		
Demonstrator (n = 61)	5	8.2	56	91.8		
Assistant lecturer (n = 148)	0	0.0	148	100.0		
Specialty						
Medical (n = 225)	9	4.0	216	96.0	6.342	0.012*
Surgical(n = 173)	18	10.4	155	89.6		
Previous qualifications and fellowships					1.785	0.182
Yes(n = 24)	0	0.0	24	100.0		
No(n = 374)	38	10.2	336	89.8		
Previous EBM training						
Yes (n = 222)	4	1.8	218	98.2	18.402	0.001*
No (n = 176)	22	11.0	154	89.0		

Total	27	6.8	371	93.2	–	–

Table 5: EBM Practice and barriers among studied physicians

Variables	(n = 398)	%
Attendance of EBM courses	222	55.8
Critical appraisal training	27	6.8
Accessibility to World Wide Web		
No Accessibility	12	3.0
Home	358	89.9
Faculty Library	147	36.9
Mobile	171	43.0
Using World wide web in clinical decision	349	87.7
Reading medical journal	291	73.1
Frequency of reading journals		
Occasionally	113	28.4
On demand	106	26.6
Regularly	72	18.1
Practice percentage		
0-	43	10.8
25-	174	43.7
50-	97	24.4
75-100	35	8.8
Methods to move towards EBM		
EBM integration into undergraduate course	300	75.4

Training physicians to use EBM	335	84.2
Case review and discussion held in each department	349	87.7
Major barriers to practice EBM		
Patient overload	271	68.1
Lack of time	239	60.1
Colleagues' attitudes	187	47.0
Lack of skills	186	46.7
Fear of criticism by senior staff	177	44.5
No financial gain	151	37.9
Insufficient resources	87	21.9
Don't believe in EBM	34	8.5

Table 6: Factors affecting practice score among the studied physicians

Variables	Practice score						χ^2	P
	Poor		Fair		Good			
	n.	%	n.	%	n.	%		
Gender								
Male (n=213)	125	58.7	74	34.7	14	6.6	1.977	0.372
Female (n=185)	108	58.4	58	31.4	19	10.2		
Job								
Resident (n=189)	138	73.0	49	25.0	2	1.1	64.267	0.001*
Demonstrator (n=61)	42	68.9	16	26.2	3	4.9		
Assistant lecturer (n=148)	53	35.8	67	45.3	28	18.9		
Specialty								
Medical (n=225)	134	59.6	65	28.9	26	11.6	9.597	0.008*
Surgical (n=151)	99	57.2	67	38.7	7	4.0		

Previous qualifications								
Yes (n=24)	17	70.8	5	20.8	2	8.4	1.830	0.400
No (n=374)	216	57.8	127	34.0	31	8.3		
Total (n=398)	233	58.5	132	33.2	33	8.3	-	

***Significant**