

Research Article

Assessment of Physicians' Attitude, Awareness and Knowledge of Evidence Based Medicine: An Observational Study from Yemen

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Background: Evidence-based practice is essential for patient safety and high-quality health care. This study aims to assess physicians' attitude, awareness and knowledge about evidence-based medicine (EBM) and to identify the barriers against its implication in daily medical practice.

Method: A questionnaire survey was conducted among physicians working in primary healthcare centers and public hospitals in Mukalla City, Yemen. The main outcome measures were physicians' attitude, awareness and knowledge score.

Results: The response rate was 65.1%. Most of the respondents welcomed the current promotion of EBM (87%). While 14.7% of participants had used EBM resources in their clinical decision and an average of 46.9% of respondents know the EBM baseline methods. The main barrier against evidence based practice was the unavailability of the internet in the work place (57.2%) followed by lack of personal time (53.0%). Factors positively affected physicians' attitude were older age, longer time since graduation, specialists versus residents, higher qualification and previous EBM training. Awareness and knowledge were affected by EBM training and qualification, respectively.

Conclusion: EBM attitude is favorable in the current study but it was not reflected on physicians' awareness and knowledge. Efforts should be directed toward modifiable factors most probably EBM training with emphasizing on its quality and effectiveness and encouraging higher qualifications. We recommend making EBM electronic resources available in hospitals and health centers.

Keywords: Evidence-based medicine; Physicians; Practice; Knowledge; Awareness; Attitude

Abbreviations

EBM: Evidence-based Medicine; PHCCs: Primary Health Care Centers

Introduction

Evidence based medicine (EBM) is the use of best available evidence in making decisions about patient's care explicitly, and sensibly [1]. EBM is especially useful to current medicine as physicians facing increasing demands to deliver the best possible outcomes while dealing with rapidly expanding medical knowledge [2]. So, nowadays it is not acceptable for care providers to depend on clinical experiences and narratives but instead all physicians should learn and practice EBM to provide optimal patient care [3].

The practice of EBM includes five steps: formulate answerable clinical questions, search for evidence, appraise your evidence, implement the valid applicable evidence, and evaluate [2]. Many studies had been conducted to assess the knowledge, attitude, perception, and practice of EBM among physicians. Most of them were quantitative by using a questionnaire survey [4-9]. Some studies targeted certain specialty examples are primary care or

family physicians [4,5,9-12], physiotherapists [13], dentists [14], and occupational health physicians [15]. On the other hand, Al- Omary and Al-Asmari have carried out a similar study among consultant physicians of different specialties [8]. A qualitative Canadian study about EBM in the primary care setting concluded that physicians welcomed the promotion of EBM but significant number of barriers and limitations to the implementation of EBM were identified [12]. Other studies also reported positive attitude of physicians toward EBM but lower level of awareness and knowledge [5,9]. The majority of previous work on EBM attitude and knowledge identified barriers against its application in daily practice. Nynke et al. conducted a systematic review on the barriers that residents experience in the application of evidence-based practice, the most frequently mentioned barriers for residents was lack of time [16].

To our knowledge, no similar published studies have been carried out in Yemen or a lower-middle-income country. Therefore, the aims of this study were to determine physicians' attitudes, awareness and knowledge of EBM and to identify the barrier against evidence-based practice. The results would help to encourage greater use of EBM in patient care.

Table 1: Characteristics of physicians by their attitude, awareness and knowledge score concerning evidence-based medicine.

Variables	No.(%)	Attitude		Awareness		Knowledge	
		Median	P value	Median	P value	Median	P value
Age (yr)	< 30	85(39.5)	16.0	10.0	0.257	24.0	0.252
	30-	85(39.5)	18.0			22.0	
	40-	29(13.5)	18.0			22.0	
	≥ 50	16(7.4)	19.5			20.5	
Gender	Male	135(62.8)	17.0	10.0	0.869	22.0	0.936
	Female	80(37.2)	17.0	10.5		22.5	
Years since graduation (yr)	< 6	148(68.8)	17.0	10.0	0.467	23.0	0.161
	6-	39(18.1)	17.0	11.0		21.0	
	11-	19(8.8)	18.0	11.0		20.0	
	≥ 20	9(4.2)	20.0	16.0		23.0	
Number of patients seen per day	< 20	122(56.7)	17.0	10.0	0.413	23.0	0.435
	20-	82(38.1)	18.0	10.0		22.0	
	40-	7(3.3)	18.0	14.0		23.0	
	≥ 60	4(1.9)	14.5	9.0		21.0	
Specialty	Specialist	167(77.7)	17.3	10.9	0.252	21.2	0.186
	Residents	48(22.3)	16.2	10.3		22.3	
Qualification	Master	103(47.9)	17.0	10.0	0.660	23.0	0.046*
	Board	43(20.0)	18.0	11.0		19.0	
	PhD	21(9.8)	18.0	10.0		22.0	
	MBBS	48(22.3)	17.0	10.0		23.0	
Ever Trained in EBM	Yes	154(71.6)	18.0	10.5	0.001*	23.0	0.335
	No	61(28.4)	16.0	9.0		22.0	
Total		215(100)	17.0	10.0		22.0	

*Statistically significant, p-value < 0.05

Method

Study was carried out in four months period (March - July 2014). A cross-sectional study was carried out among physician working in primary health care centers (PHCCs) and governmental hospitals who were dealing with patients in their area of practice in Mukalla City. Mukalla City is the capital of Hadhramout Governorate, Yemen. It served by a total of 16 primary health care centers and three governmental hospitals.

The total number of residents and specialists was around 340 based on information from Department of Statistic and Information Office of Ministry of Public Health and Population Coastal Hadhramout. The self-administered questionnaire was distributed to all physicians in Mukalla City.

Data collection

The questionnaire adapted by Al-Ansary and Khoja for use in Saudi Arabia [9,17] from the British McColl's original questionnaire [6] was used in this study. A pilot study was carried out which led to some modification and local adaptations. The covering letter for the questionnaires included Sacketts definition of EBM [1]. The questionnaire has 5 parts and includes questions addressing attitudes, awareness, and knowledge about EBM as well as associated variables and barriers to practice it. The first part of the questionnaire includes data about the personal characteristics of the physicians: age, sex, specialty, qualifications, time of graduation, number of consultations per day, and training for EBM. The second part addresses attitudes towards EBM: welcoming current promotion of EBM, colleagues' positive attitudes towards EBM, whether EBM is useful in daily management, percentage of EBM in physician's current clinical

practice, whether EBM improves patient care and if EBM is of limited value or places additional demands on overloaded physicians. The third part includes information about barriers to EBM use in daily practice. The fourth part assesses awareness of various EBM resources including PubMed, EBM (from BMJ publishing group), clinical evidences references, Cochrane database of systematic review, and Journal of EBM. The last part includes knowledge of baseline methods of EBM; sensitivity, specificity, odds ratio, absolute risk, mean, median, mode, standard deviation, positive predictive, and negative predictive.

Statistical analysis

Analysis was carried out to address the following main outcome measures: Dependent variables; respondents' attitude, awareness and knowledge scores. The scores were calculated by the sum score of all items in each section. Independent variables; age, gender, years since graduation, number of patients seen per day, specialty, qualification and EBM training. Respondents' attitude, awareness and knowledge about EBM, and their perception of barriers to use of EBM in clinical practice were described.

Tables of frequency and proportion were used to describe variables. The Mann-Whitney and Kruskal-Wallis tests were used to determine if there are statistically significant differences between subgroups of the independent variables because attitude, awareness and knowledge score are ordinal. The significance level was 0.05 (a confidence level of 95%). SPSS, version 20 was used for data entry and analysis.

Ethical considerations

Approval for the research was obtained from the research

Table 2: Physicians' attitude toward evidence-based medicine.

Physicians' attitude items		No	%
Attitude towards EBM	Strongly Welcoming	72	33.5
	Welcoming	115	53.5
	Not Welcoming	17	7.9
	Don't Know	11	5.1
Attitude of Colleagues towards EBM	Strongly Welcoming	33	15.3
	Welcoming	111	51.6
	Not Welcoming	36	16.7
	Don't Know	35	16.3
Usefulness of research findings in day to day management of patients	Extremely Useful	119	55.3
	Not Useful	56	26.0
	Don't know	40	18.6
Percentage of your clinical practice you believe is currently EBM	75-100%	52	24.2
	50-74%	88	40.9
	25-49%	54	25.1
	0-24%	21	9.8
Practicing EBM improves patient care	Strongly Agree	76	35.3
	Agree	125	58.1
	Disagree	3	1.4
	Don't Know	11	5.1
EBM has limited value at work	Strongly Agree	29	13.5
	Agree	91	42.3
	Disagree	83	38.6
	Don't Know	12	5.6
EBM placing overload on our limited time	Strongly Agree	17	7.9
	Agree	83	38.6
	Disagree	97	45.1
	Don't Know	18	8.4
Total		215	100.0

EBM: evidence-based medicine

committee of Hadhramout University College of Medicine. A brief explanation of the study was written at the beginning of questionnaires and verbal consents were obtained from all participants. Confidentiality of data was assured.

Results

The response rate was 65.1%. Of the respondents, 135(62.8%) were males; 170(79.0%) were below the age of 40 and 103(47.9%) have a master degree. Specialist doctors were 167(77.7%); most of them were internists, surgeons, pediatricians, obstetricians and gynecologists, family physicians, or dermatologists. Around two thirds of the physicians had graduated for less than 5 years. More than half of physicians 122(56.7%) saw less than 20 patients per day; and most of them 154(71.7%) had trained in EBM (Table 1).

Table 2 shows the attitudes of the physicians towards EBM. Most of them 187(87.0%) welcomed encouraging EBM and around two thirds believed that their colleagues' attitudes were welcoming too 144(66.9%). More than half of them assessed the research findings as useful in daily management of patients. Most of them agreed that practicing EBM improves patient care 201(93.4%). Around half 120(55.8%) agreed that EBM was of limited value in patients' care and agreed that the adoption of EBM places overload on already busy physicians 100(46.5%). Around half of the physicians mentioned that 50-74% of their current clinical practice is EBM. Median attitude score was 17 (Total score 27).

Median awareness score was 10 out of 20 (Table 1). More than

a third of the respondents 80(37.5%) had little awareness of EBM resources and an average of 32(14.7%) of our respondents had used EBM resources in their clinical decision making (Table 3). Median knowledge score was 22 out of 30 as shown in Table 1. An average of 100(46.9%) of respondents know the EBM baseline methods shown in Figure 1. The most frequently identified method was specificity (149(69.3%) of the respondents), while the least was odds ratio 66(31.2%).

Regarding the opinion on barriers in practicing EBM, more than half of the physicians 122(57.2%) considered the unavailability of the

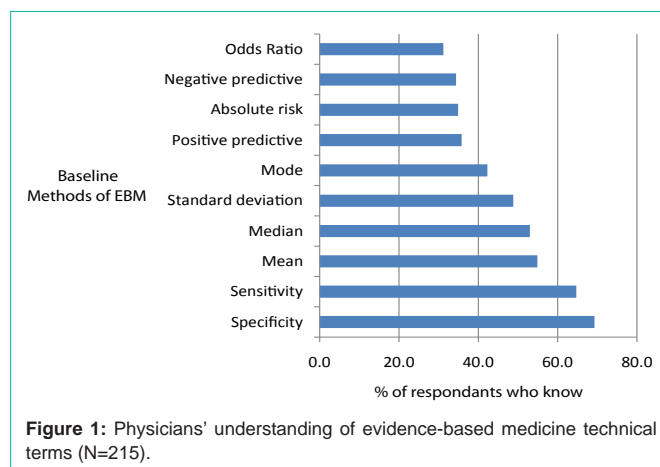
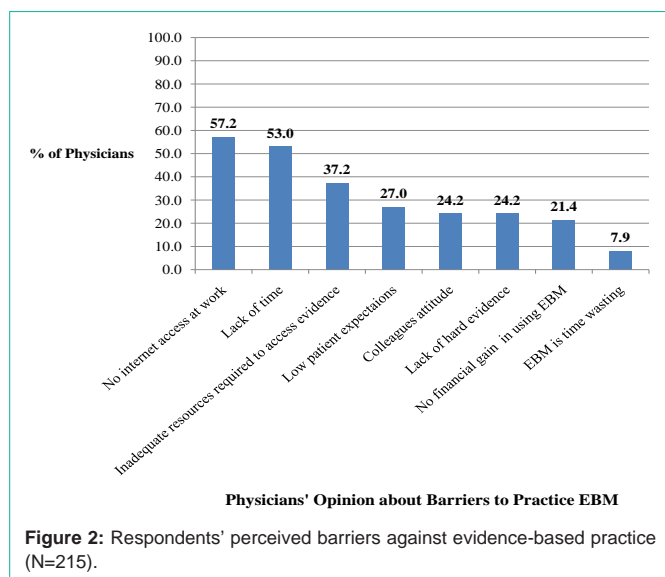


Figure 1: Physicians' understanding of evidence-based medicine technical terms (N=215).

Table 3: Physicians' awareness of various evidence-based medicine resources (N=215).

Variable	Unaware No(%)	Aware but not used No(%)	Read No(%)	Use to help in clinical decision No(%)
PubMed "MEDLINE"	55(25.6)	55(25.6)	65(30.2)	40(18.6)
EBM from BMJ publishing group	87(40.50)	54(25.1)	51(23.7)	23(10.7)
Clinical Evidences References	78(36.3)	49(22.8)	44(20.5)	44(20.5)
Cochrane database of systematic Review	109(50.7)	46(21.4)	34(18.5)	26(12.1)
Journal of EBM	74(34.4)	61(28.4)	55(25.6)	25(11.6)

**Figure 2:** Respondents' perceived barriers against evidence-based practice (N=215).

internet in the work place as the major barrier, followed by lack of personal time 114(53.0%). The least observed barrier to the practice of EBM was thinking that EBM wastes time 17(7.9%) (Figure 2).

About the factors affecting physicians' attitude toward EBM, the results of current study indicated that physicians' attitude scores are increasing significantly toward older age groups with the median score ranged between 16/27 for physicians younger than 30 years to 19.5/27 for those who are 50 years or older. It was noted that physicians who had graduated since 20 years or more had significantly higher attitude score 20/27 than others with shorter duration. In addition, specialist doctors, highly qualified physicians (PhD and Board), and physicians who trained in EBM had significantly higher median attitude score in comparison with the other subgroups. The only factor that affected physicians' awareness was previous EBM training with higher score for those who had trained (10.5/20) and 9/20 for physicians who had not trained before. Surprisingly, EBM knowledge was significantly associated with qualification as the only factor, less qualified physicians (MBBS and master) achieved 23/30 score while physicians with PhD or Board certificate had lower scores (22/30 and 19/30 respectively) (Table 1).

Discussion

The current study shows favourable attitude of physicians toward EBM which is quite similar to that reported by primary care physicians in Saudi Arabia, Qatar, England, Canada, Jordan [4-6,10,12]. Studies conducted among physicians with other specialty similarly reported positive attitude for the majority [7,8]. Half of the participants practice EBM in 50-75% of their work. Similar results were found in Jordan and Saudi Arabia [5,9,10]. Lower percentage of evidence-

based practice was found in Western region in Saudi Arabia [8]. The difference between studies could be attributed to different samples as the last one included consultant physicians only who are expected to rely more on their experience.

Although the attitude of most physicians toward EBM was positive in this study, most of them have little or no awareness of EBM resources. This corresponds with the result of studies done in Saudi Arabia Western region [8] and Jordan [5]. In contrast, a study in Qatar showed higher level of awareness [4]. Most of the respondents did not report evidence use in their clinical practice; this could be attributed to the low level of awareness (Table 3). Lack of awareness is known to be a barrier to adherence to EBM in clinical practice [18].

In the same vein, Low level of physicians' knowledge about technical terms in this study could explain their little use of evidence based practice. The core of professionalism is based on knowledge so technical knowledge is mandatory for physicians to practice EBM [18]. Similarly, low level of knowledge was observed in Jordan [5]. Western region, Saudi Arabia and Qatar studies reported higher level of knowledge [4,8]. This result is unexpected because most physicians participated in this study mentioned that they have trained for evidence-based practice. Analysis of factors in table 1 supports this finding as it shows that EBM training had no significant association with physicians' knowledge.

Green and Ruff concluded that informatics training and access to electronic information resources at point of care, although necessary, but insufficient to help residents practice EBM [19]. Fritsche et al. found that an intensive 3 day course in evidence-based medicine led to a significant increase in knowledge and skills of postgraduate doctors, and medical students [20]. Binda was assessed the influence of a monthly evidence-based health care seminar series on academic staff knowledge and attitudes. He found significant differences in knowledge and attitudes between academic staff who attended a seminar and those who did not attend [21]. Therefore, the quality of EBM training courses attended by respondents might be insufficient or infrequent to raise the level of knowledge among the participant physicians. Higher knowledge score among less qualified physicians in the current study is difficult to be explained.

Evidence-based medicine training courses were associated with higher awareness score. Al-Motairy and Al-Musa found a statistically significant association of Board qualification with higher knowledge and awareness level among primary health care physicians [10] while the current study found no significant association.

There were several factors affecting physicians' attitude toward EBM; older age, longer time since graduation, specialists versus residents, higher qualification, and previous EBM training all positively affected physicians' attitude score. In the same vein, Al-

Musa reported a significant positive association of physicians' attitude toward EBM with older age, and being consultants or specialists versus residents [7]. Most published studies did not analyze the factors affecting attitude, awareness and knowledge of physicians towards EBM.

More than half of respondents stated that, no internet access at work (57.2%) is a barrier to practicing EBM. Several studies reported lack of access to information as a barrier to evidence based practice [4-6,8]. Lack of personal time was the main perceived barrier in most published studies [4-6,10,12,22] while it is the second common barrier in the current study. This difference could be attributed to that most hospitals and health centers included in the current study have no internet access to EBM websites.

In conclusion, although EBM attitude is favourable in the current study, it was not reflected on physicians' awareness and knowledge. There were many factors affected physicians' attitude, awareness and knowledge toward EBM. The efforts should be directed toward modifiable factors most probably EBM training with emphasizing on its quality and effectiveness, and encouraging higher qualifications. The most frequent barrier to practice EBM is lack of internet access in the workplace followed by lack of personal time. We recommend EBM electronic resources in hospitals and health centers.

References

- Sackett DL, Rosenberg WM, Gray JA, Haynes RB, Richardson WS . Evidence based medicine: what it is and what it isn't. *BMJ*. 1996; 312: 71-72.
- Bernstein J . Evidence-based medicine. *J Am Acad Orthop Surg*. 2004; 12: 80-88.
- Collins J . Evidence-based medicine. *J Am Coll Radiol*. 2007; 4: 551-554.
- Al-Kubaisi NJ, Al-Dahnaim LA, Salama RE . Knowledge, attitudes and practices of primary health care physicians towards evidence-based medicine in Doha, Qatar. *East Mediterr Health J*. 2010; 16: 1189-1197.
- Barghouti F, Halaseh L, Said T, Mousa AH, Dabdoub A . Evidence-based medicine among Jordanian family physicians: awareness, attitude, and knowledge. *Can Fam Physician*. 2009; 55: e6-13.
- McColl A, Smith H, White P, Field J . General practitioner's perceptions of the route to evidence based medicine: a questionnaire survey. *BMJ*. 1998; 316: 361-365.
- Al-Musa HM . Knowledge, perceptions, attitude and educational needs of physicians to evidence based medicine in South-Western Saudi Arabia. *Saudi Med J*. 2010; 31: 308-312.
- Al-Omari FK, Al-Asmary SM . Attitude, awareness and practice of evidence based medicine among consultant physicians in Western region of Saudi Arabia. *Saudi Med J*. 2006; 27: 1887-1893.
- Al-Ansary LA, Khoja TA . The place of evidence-based medicine among primary health care physicians in Riyadh region, Saudi Arabia. *Fam Pract*. 2002; 19: 537-542.
- Al-Motairy KA, Al-Musa HM. Primary Health Care Physicians' Perceptions, Attitude and Educational Needs Towards' Evidence Based Medicine. *Biomed Res*. 2013; 24: 257-262.
- O'Donnell CA . Attitudes and knowledge of primary care professionals towards evidence-based practice: a postal survey. *J Eval Clin Pract*. 2004; 10: 197-205.
- Tracy CS, Dantas GC, Upshur RE . Evidence-based medicine in primary care: qualitative study of family physicians. *BMC Fam Pract*. 2003; 4: 6.
- Iles R, Davidson M . Evidence based practice: a survey of physiotherapists' current practice. *Physiother Res Int*. 2006; 11: 93-103.
- Iqbal A, Glenn AM . General dental practitioners' knowledge of and attitudes towards evidence based practice. *Br Dent J*. 2002; 193: 587-591.
- Schaafsma F, Hulshof C, van Dijk F, Verbeek J . Information demands of occupational health physicians and their attitude towards evidence-based medicine. *Scand J Work Environ Health*. 2004; 30: 327-330.
- van Dijk N, Hooft L, Wieringa-de Waard M . What are the barriers to residents' practicing evidence-based medicine? A systematic review. *Acad Med*. 2010; 85: 1163-1170.
- Khoja TA, Al-Ansary LA . Attitudes to evidence-based medicine of primary care physicians in Asir region, Saudi Arabia. *East Mediterr Health J*. 2007; 13: 408-419.
- Timmermans S, Mauck A . The promises and pitfalls of evidence-based medicine. *Health Aff (Millwood)*. 2005; 24: 18-28.
- Green ML, Ruff TR. Why do residents fail to answer their clinical questions? A qualitative study of barriers to practicing evidence-based medicine. *Acad Med*. 2005; 80: 176-182.
- Fritsche L, Greenhalgh T, Falck-Ytter Y, Neumayer HH, Kunz R . Do short courses in evidence based medicine improve knowledge and skills? Validation of Berlin questionnaire and before and after study of courses in evidence based medicine. *BMJ*. 2002; 325: 1338-1341.
- Bindawas SM . Evidence-based Health Care Continuing Education Seminars Improve Academic Staff Knowledge and Attitudes in Saudi Arabia. *Pak J Med Sci*. 2013; 29: 703-709.
- Young JM, Ward JE . Evidence-based medicine in general practice: beliefs and barriers among Australian GPs. *J Eval Clin Pract*. 2001; 7: 201-210.