

Primary Health Care Physicians' Knowledge, Attitude and Practice towards Evidence-Based Medicine in Tabuk City, KSA

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ABSTRACT

Background: Evidence-based medicine (EBM) is an essential component of modern medical practice and crucial for patient safety and high-quality health care services.

Objectives: This study was conducted to assess the knowledge, attitude and practice towards evidence-based medicine and the barriers against its application in daily medical practice.

Subjects and Methods: This is a cross-sectional survey using a self-administered validated questionnaire among 68 primary health care physicians in Tabuk city, Kingdom of Saudi Arabia during the period from December 2016 to June 2017. Validated questionnaire was used to collect data from the respondents. The Statistical Package for Social Sciences (SPSS) was used for data analysis. P-value of <0.05 was considered as significant. **Result:** There are 62.2% male participants, the age of the majority were from 30 to 50 years (73.5%) and (72.1%) did not have board qualification, the primary literature review and summaries were the popular methods for EBM. The knowledge and attitude were suboptimal; some did not even access Medline. The unavailability of time and internet access were the most frequent barriers reported. Only a minority received formal EBM training.

Conclusion: The knowledge and attitude regarding EBM were suboptimal among the primary health care physicians, the time factors, unavailability of the internet and the lack of letters, access to journals, and guidelines were the principal barriers to EBM incorporation in the clinical practice.

Keywords: Evidence-based medicine, primary health care physicians, knowledge, attitude, practice, barriers

INTRODUCTION

Evidence-based medicine is a process of turning clinical problems into questions and then systematically locating, appraising, and using contemporaneous research findings as the basis for clinical decisions ⁽¹⁾. It is the integration of evidence from proper medical research with patients' values and clinical expertise. It has been shown to reduce mortality and hospital stay. However, more than one-third of patients do not receive evidence-based health care, and a similar proportion receives harmful or unnecessary care ⁽²⁾. Medical practitioners are continuously required to update their knowledge and skills concerning new modalities of diagnosis and management. In the face of the massive amount of new products regarding the management, it is virtually impossible for primary healthcare physician to keep track and update. Thus, it is vital to implement evidence-based medicine to optimize patient's care ⁽³⁾.

The implementation of EBM is challenging. It is faced with numerous barriers including lack of resources, suboptimal knowledge, lack of skills, and time. In spite of being overloaded with information, primary health care physicians are not able to provide services that give the most significant benefit to the community served. The primary healthcare physicians are under continuous time pressure and may prefer to rely on their

clinical experience, colleagues' opinion, and electronic resources of information rather than directly referring to evidence-based medicine. Others may distrust evidence-based information and have the perception that it is not applicable to their practice ⁽⁴⁻⁶⁾.

A review of several studies assessed the performance of physicians showed that many factors could be used to raise the awareness and maintain the level of knowledge about medical advances, and enhance clinical performance of practitioners. Such factors include the learning of how to practice EBM, the skills of adopting the protocols related to evidence-based practice developed by respected medical colleagues, and the ability to seek out and apply the findings of EBM ⁽⁷⁾. Research about EBM among practitioners started earlier. One pioneer study about the reaction of general practitioners towards EBM was conducted in the UK in 1996. Although there was a low-level of awareness about extracting journals, reviewing publications and databases relevant to EBM, most of GPs welcomed and agreed that EBM improves patient care. There was considerable variation in attitudes to the promotion of EBM and the major perceived barrier to its practice was lack of personal time. Respondents stated that the best way to move from opinion-based practice towards

EBM is by using evidence-based guidelines and protocols developed by colleagues⁽⁸⁾.

It is imperative to set clinical practice guidelines that are informed by evidence and assessing the harm and benefit of the alternative options. The guidelines set by many countries are tailored to the local setting and resources⁽⁹⁾. The Kingdom of Saudi Arabia is a vast country with differences in background and culture. The studies conducted in other countries may not be applied to the Kingdom of Saudi Arabia. Few researchers have studied the attitude and practice towards evidence-based medicine among primary healthcare physicians in the Kingdom of Saudi Arabia and their results, although necessary, cannot be generalized to all regions of the Kingdom. Furthermore, medical practice is very dynamic and continuous update is needed to help policymakers in the health sector to promote the use of EBM among primary healthcare physicians. Thus, we conducted this research. In the present survey, we thought to assess the knowledge, attitude, and practice towards evidence-based medicine among primary healthcare physicians in Tabuk, Kingdom of Saudi Arabia.

SUBJECTS AND METHODS

The setting, study design, and participants

This is a cross-sectional study conducted among primary health care physicians working in PHC centers in Tabuk city, Kingdom of Saudi Arabia. Tabuk city had a population of 455,450⁽¹⁰⁾. There are 35 primary care centers in Tabuk city.

Sampling method

By random sampling, 20 primary health care centers were randomly selected. All the available physicians working in the selected primary health care centers in Tabuk were requested to participate in this study. Sixty-eight physicians from the 20 primary health care facilities in Tabuk city responded and participated in this study.

Tool for data collection

The self-administered questionnaire was sent to all 68 PHC physicians in the selected PHC centers. Nineteen of the physicians have board qualification and the remaining 49 were without. Knowledge, attitude and practice related to evidence-based medicine were assessed using validated questionnaire⁽⁸⁾.

Six items were used to determine the respondents' level of knowledge about extracting journals, review publications and databases relevant to EBM (minimum and maximum total score to be obtained are 6 and 24 respectively) and 10 items to assess knowledge about the technical terms used in

EBM, (minimum and maximum total score to be obtained are 10 and 40 respectively).

Seven items were used to assess the respondents' attitude towards EBM (minimum and maximum total score to be obtained are 10% and 100% respectively). Practice related to EBM was assessed using three items: the method that the respondents used to move from opinion-based practice to evidence-based medicine and the frequency and place of accessing Medline database.

Data analysis

The statistical package for social science software (SPSS version 16, Chicago, Illinois, USA) was used to analyze the data. The collected data was described first using frequency and percentages for categorical variables and minimum, maximum, mean and standard deviation for numerical data. Factors influencing EBM were then explored using significant statistical tests (Student t test, ANOVA and Pearson Correlation analysis). *P*-value of <0.05 was considered significant.

RESULTS

Respondents' characteristics

From the 68 physicians interviewed there were 45 (66.2%) males, 23 (33.8%), their ages ranged from 40 to 49 years, 29 (42.6%) were graduated during the year 1990 to 1999, and 19 (27.9%) had board qualification with 10 of them (52.6%) had their board before the year 2000 (Table 1).

Table 1: Socio-demographic characteristics (n = 68)

Factor	Frequency (n)	Percentage %
Gender		
Male	45	66.2
Female	23	33.8
Age group		
<30	1	1.5
30 - 39	21	30.9
40 - 49	29	42.6
50 - 59	17	25.0
Year of graduation		
1980 - 1989	17	25.0
1990 - 1999	29	42.6
2000 - 2009	21	30.9
2010 +	1	1.5
Qualification		
Board	19	27.9
None board	49	72.1
Year of the board (n =19)		
Before 2000	9	47.4
After 2000	10	52.6

Moving from opinion-based practice towards evidence-based practice

There are three methods that can be used for moving from opinion-based practice towards evidence-based practice. These methods are classified as method A, B and C. Method A is related to the learning of skills of evidence-based medicine such as identification and appraising the primary literature or systematic review. Method B is related to the seeking and applying evidence-based summaries which give the clinical bottom-line such as summary obtained from abstracting journals. Method C is related to the use of evidence-based practice guidelines and protocols developed by colleagues to be used by others. Table 2, 3 and 4 show the distribution of participants according to the method that they use, interested in and the way that they think it is the most appropriate in general practice.

Table 2: Methods the physicians are using to move from opinion-based practice towards evidence-based practice (n = 68)

Factor	Frequency	Percentage
	n	%
Method A	31	45.6
Method B	14	20.6
Method C	7	10.3
Method AB	6	8.8
Method AC	3	4.4
Method BC	2	2.9
Method ABC	5	7.4

Table 3: Methods the physicians are interested in to move from opinion-based practice towards evidence-based practice (n = 68)

Factor	Frequency	Percentage
	n	%
Method A	22	32.4
Method B	18	26.5
Method C	10	14.7
Method AB	8	11.8
Method AC	3	4.4
Method BC	1	1.5
Method ABC	6	8.8

Table 4: Methods that is most appropriate to the physician in general practice (n = 68)

Factor	Frequency	Percentage
	n	%
Method A	39	57.4
Method B	17	25.0
Method C	12	17.6

Barriers to EBM

Barriers reported by physicians include lack of available time, the absence of distributed clinical letters, journals or guidelines, the absence of access to the internet, unavailability of computers, time consumption and cost. Barriers to evidence-based medicine are summarized in table 5.

Table 5: Barriers to practice EBM (n = 68)

Factor	Frequency	Percentage
	n	%
No time available	45	66.2
No distributed clinical letters, journals or guidelines	39	57.4
No internet access	24	35.3
No computer	9	13.2
Time-consuming	8	11.8
Expensive	2	2.9
Other barriers	1	1.5

EBM Practice

When respondents were asked about the frequency of accessing Medline, the range was found to be from zero to 60 times per year, with the mean of 9 times and standard deviation of ± 11.8 . When respondents were enquired about the type of topics that searched through Medline database, five respondents mentioned diabetes mellitus, two respondents mentioned hypertension, and one for attention deficit hyperactivity disorder (ADHD), anemia among infants, bronchial asthma, chronic obstructive pulmonary disease (COPD), dyslipidemia, *Helicobacter pylori* eradication, heart failure, management of bronchial asthma, pediatric review of genetics, statins, tension headache, and vertigo.

Regarding the place where studied physicians access the internet (World Wide Web) it was found that 7 (10.3%) stated that they access it at both home and clinic, 49 (72.1%) at home, 6 (8.8%) at clinic and 6 (8.8%) do not get access it anywhere.

Analysis of the place where respondents used to access Medline yielded 8 (11.8%) at both home and clinic, 51 (75%) at home, 1 (1.5%) at their clinic and 8 (11.8%) did not access it anywhere.

Training related to EBM

Among the respondents, sixteen physicians (23.5%) stated that they received formal training in searching strategy (two of them from abroad), 19

(27.9%) received formal training in the clinical appraisal (one of them from abroad), and 21 (30.9%) received other training courses related to EBM (all are in KSA).

On average, the respondents had showed moderate level of knowledge about extracting journals, review publications and databases relevant to EBM as well as moderate level of knowledge about the technical terms used in EBM as shown in Table 6.

Knowledge, attitude, and practice about EBM

Table 6: Distribution of knowledge and attitude about EBM (n =68)

Factor	Minimum	Maximum	Mean	SD
Knowledge ¹	6	24	12.84	4.40
Knowledge ²	10	40	26.54	7.72
Attitude	30	83	60.04	9.84

¹Knowledge about extracting journals, review publications and databases relevant to EBM

²Knowledge about the technical terms used in EBM

Comparative Analysis

Factors influencing respondents' level of knowledge and attitude were explored using Independent t test, ANOVA and *Pearson* Correlation analysis. Respondents who had board qualification had higher levels of knowledge about extracting journals, review publications and databases relevant to EBM (mean =14.58, mean difference = 2.42, $t = -2.08$, $df = 66$, $P = 0.041$). Increasing the level of knowledge about extracting journals, review publications and databases relevant to EBM is associated with increasing the level of knowledge about the technical terms used in EBM ($r = 0.45$, $P < 0.001$). The higher the level of knowledge about extracting journals, review publications and databases relevant to EBM was associated with the higher level of attitude towards EBM ($r = 0.28$, $P = 0.021$).

Physicians who had board qualification were found to had higher levels of attitude towards EBM (mean and Std. D = 34.26 ± 4.72 , mean difference = 10.71, $t = -6.54$, $df = 66$, $P < 0.001$). The length of time the physician obtained the board was inversely related to levels of their attitudes towards EBM ($r = -0.51$, $P = 0.025$). Increasing the level of knowledge about the knowledge related to the technical terms used in EBM is associated with increasing the level of attitude towards EBM ($r = 0.41$, $P < 0.001$).

DISCUSSION

The current data showed that primary health care physicians had a suboptimal knowledge and attitude towards evidence-based medicine; more than two-thirds stated that there is no time available for the evidence-based medicine to be incorporated in the daily practice. Indeed, nearly half of general practitioners reviewed had no computer or internet access. Furthermore, almost two-thirds reported a lack of clinical letters, journals, and guidelines. The

identification and appraisal of the primary literature or systematic review and seeking and applying evidence-based summaries were the most popular methods for EBM implementation.

The situation is alarming in Tabuk, a lack of EBM and the reliance on the clinical experience and colleagues in medical practice could be harmful. A previous research⁽¹¹⁾ from the Kingdom of Saudi Arabia published in the last decade reported that only 39.6% of the physicians in Eastern Kingdom of Saudi Arabia have heard of EBM. In spite of a higher knowledge observed in this study, still there is a big gap and a room for improvement.

A recent study in Malaysia⁽¹²⁾ observed a low EBM practice despite the good knowledge observed. Poor knowledge regarding EBM was observed in other countries⁽¹³⁾. In the Kingdom of Saudi Arabia, the Ministry of Health provides free internet access to Primary Healthcare Centers and Hospitals including the access to a wide range of clinical database for free. The dramatic development and technology use could solve the issue (e.g. by the use of Smartphone applications).

The inadequate knowledge regarding EBM calls for a formal training of the primary healthcare physician which will not only allow them to apply research findings to solve daily clinical problems, but also improve their knowledge and clinical skills and help them monitor the quality and effectiveness of clinical treatments⁽¹⁴⁾. In the current study, only 23.5%, 27.9%, and 30.9% received training in searching strategy, clinical appraisal, and EBM, similarly to *Al-Kubaisi et al.*⁽¹⁵⁾ who found lack of training in 61% of primary healthcare physicians. The appraisal of systemic review and summaries as favorable methods reported by our sample and therefore need to be encouraged and reinforced (Cochrane Database of Systematic Reviews (CDSR)). The Database of Abstracts for Reviews

of Effectiveness (DARE) are good examples that contain full-text systematic reviews, using this database is helpful for the primary health care physicians in their daily busy clinical practice.

Medline and Embase include varieties of articles of different study and could be time-consuming ⁽¹⁶⁾ for our sample in which the majorly reported the time factor as the primary barrier to the application of EBM. The time factors and lack of internet access reported as the principal barriers to EBM in the present study are in line with previous studies ^(2, 17).

CONCLUSION

The knowledge and attitude were suboptimal among primary healthcare physicians in Tabuk, Kingdom of Saudi Arabia. Furthermore, the majority of physicians reported the inaccessibility of the internet and lack of time as major barriers to EBM. Formal training regarding EBM and the regular circulation of abstracts, related journals, guidelines, and the adoption of continuing medical education (CME) hours as prerequisites for renewal could be helpful.

Ethical Consideration: The study was done after approval of ethical board of University of Tabuk.

REFERENCES

- Rosenberg W, Donald A (1995):** Evidence based medicine: an approach to clinical problem-solving. *BMJ: British Medical Journal*, 310(6987):1122.
- Hisham R, Liew SM, Ng CJ, Mohd Nor K, Osman IF, Ho GJ, Hamzah N, Glasziou P (2016):** Rural Doctors' Views on and Experiences with Evidence-Based Medicine: The FrEEDoM Qualitative Study. *PLoS One*, 11(3):e0152649.
- Ashri N, Al-Amro H, Hamadah L, Al-Tuwaijri S, Metwally A (2014):** Dental and medical practitioners' awareness and attitude toward evidence based practice in Riyadh, Kingdom of Saudi Arabia. A comparative study. *The Saudi Journal for Dental Research*, 5:109–116.
- Robert Wood Johnson Foundation (2010):** Quality and equality in U.S health care United States, 1–36.
- Sadeghi-Bazargani H, Tabrizi JS, Azami-Aghdash S (2014):** Barriers to evidence-based medicine: a systematic review. *Journal of Evaluation in Clinical Practice*, 20: 793–802.
- Hay MC, Weisner TS, Subramanian S, Duan N, Niedzinski EJ, Kravitz RL (2008):** Harnessing experience: exploring the gap between evidence-based medicine and clinical practice. *Journal of evaluation in clinical practice*, 14(5):707-13.
- Davis DA (1995):** Changing physician performance: a systematic review of the effect of continuing medical educational strategies. *Journal of the American Medical Association*, 274:700–705.
- McColl A, Smith H, White P, Field J (1998):** General practitioners' perceptions of the route to evidence based medicine: a questionnaire survey. *BMJ: British Medical Journal*, 316(7128):361-5.
- Lee PY, Liew SM, Abdullah A, Abdullah N, Ng CJ, Hanafi NS, Chia YC, Lai PS, Wong SS, Khoo EM (2015):** Healthcare professionals' and policy makers' views on implementing a clinical practice guideline of hypertension management: a qualitative study. , 10(5):e0126191.
- United Nations (2017):** World Population Prospects. <https://esa.un.org/unpd/wpp/>.
- Al-Baghlie N, Al-Almaie SM (2004):** Physician attitudes towards evidence-based medicine in Eastern Kingdom of Saudi Arabia. *Ann Saudi Med.*, 24(6):425-8.
- Hisham R, Ng CJ, Liew SM, Hamzah N, Ho GJ (2016):** Why is there variation in the practice of evidence-based medicine in primary care? A qualitative study. *BMJ: British Medical Journal*, 6(3):e010565.
- Bin Briek AS, Webair HH, Al-Tuhaify MM (2014):** Assessment of Physicians' Attitude, Awareness and Knowledge of Evidence Based Medicine an Observation from Yemen. *J Fam Med.*, 1(3): 5.
- Richards D, Lawrence A (1998):** Evidence Based Dentistry. *Br Dent J.*, 179:270–3.
- Al Kubaisi NJ, Al Dahnaim LA, Salama RE (2010):** Knowledge, attitudes and practices of primary health care physicians towards evidence-based medicine in Doha, Qatar. *East Mediterr Health J.*, 16(11):1189-97.
- Yusof Z, Han L, San P, Ramli A (2008):** Evidence-based practice among a group of Malaysian dental practitioners. *J Dent Educ.*, 72(11):1333–42.
- Al-Musa H (2010):** Knowledge, perceptions, attitude and educational needs of physicians to evidence based medicine in South-Western Kingdom of Saudi Arabia. *Saudi Med J.*, 31(3):308–12.