Attitude and Practice of Evidence-Based Medicine: Exploring the Responses of Primary Healthcare Physicians to Evidence Based Practice, in Some Suburban Areas of Saudi Arabia

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Abstract

Background: Primary health care (PHC) physicians have significant effect on determining the level and quality of provided medical care. Old medical practices depended on unsystematic observations from clinical experiences. Understanding the pathophysiologic principles of disease, common sense and clinical experience were used as a means for building and maintaining knowledge of patient management. According to this paradigm, clinicians had a number of options for sorting out clinical problems, which often weren’t based on evidence. In addition, this traditional continuous of medical education doesn’t work in improving professional practice.

Objective: In order to apply increase the awareness of the importance of applying evidence-based medicine in primary health care physicians, we have conducted this study to explore such physicians’ attitude, perception, knowledge and application barriers facing them.

Method: A survey study was conducted on all PHC physicians of 15 centers selected randomly from 3 main sectors were proved to be used. A questionnaire was designed to assess the respondents’ attitude towards evidence-based medicine (EBM) there, ability to access and interpret evidence, facing barriers to practice EBM, and the best way to shift from opinion based to evidence based medicine. In addition, assessment of attitude and awareness of physicians towards EBM has been done.

Results: Study results have revealed high mean score for attitude towards applying EBM (61.76%). And even a higher mean score for the significance of management of patients (71.96%). In addition 79.8% of General Practitioners (GPs) have confirmed that practicing EBM can improve patients care. The mean score of adoption of EBM by already over-loaded GPs was 47.45%.

Conclusion: From this study we can conclude that there is an urgent need to improve physician’s skills in researching the evidence in practice, with the recommendation to encourage the GPs to develop local EB guidelines, and to provide computer facilities and conduct small workshops of EBM at the primary health care centers.

Key Words: PHC -physicians – EBM -practice – Attitude – Awareness – Barriers.

Introduction

CLINICIANS had a number of options for sorting out clinical problems. For instance reviewing textbooks and consulting local experts were considered appropriate ways of obtaining medical information [1].

Experienced physicians differ in making of clinical judgments, most of which are often not based on evidence [2]. In addition to the expansion in research and its validity, [3] there is currently an increased interest in narrowing the gap between research findings and their implementation in clinical practice [4].

Evidence-based medicine (EBM) deals directly with the uncertainties of clinical medicine. It has the potential for transforming the education and practice of the next generation of physicians [1] and it requires the integration of the best research clinical evidence and our patient’s unique values and circumstances [5]. The experienced doctors and specialists can be considered as a source of evidence in solving clinical problems [6].

A study shows that general practitioners have been cautious about the evidence-based model generally [7]. Another study shows that the commonest reason that general practitioners are refrain from using evidence-based practice was the reluctance to jeopardize their relationship with the patient [8]. PHC physicians have a significant effect on determining the level of provided medical care. The first step in application of evidence-based medicine among primary health care physicians is to explore their attitude, perception, knowledge,
and application barriers towards evidence-based medicine. Hence, this research was conducted to investigate these aspects.

This study is aiming to explore the awareness and the attitude of primary health care physicians toward evidence based medicine in Tabuk City. The specific objectives are to identify the attitude and awareness of evidence based medicine among Tabuk primary health care physicians, and to know the major barriers to practicing evidence based medicine among them.

**Material and Methods**

Tabuk city is located the north-west area in the Kingdom of Saudi Arabia. It covers about 5% of Saudi Arabia.

The study population is all Primary Health Care Physicians working in Ministry of Health and private polyclinics. It is cross-sectional study.

**Description of the questionnaire:**

The questionnaire records demographic data, respondents’ attitude towards evidence-based medicine, ability to access and interpret evidence, perceived barriers in practicing evidence-based medicine and the shifting from opinion-based medicine to evidence-based medicine. All physicians responses are measured on a percentage rank scale. Closed questions are used to assess the physicians awareness and perceived usefulness of extracting journals. Reviewing publications, and databases relevant to evidence-based medicine; their ability to access Medline or other bibliographic databases and the world wide web; their understanding of technical terms in the area of evidence-based medicine; and their views on how best to move from opinion-based practice to evidence-based medicine. A free text section is also added to determine study subjects’ views on the major barriers in practicing evidence-based medicine in general practice.

**Sampling:**

All primary health care centers (PHCc) in the study area (38 centers) were divided into 3 sectors. Five primary health care centers were chosen randomly from each sector. Multistage random sampling technique was used to select 15 PHCC out of all PHCCs in tabouk area in the first stage five PHCCs were selected randomly from each sector. All primary health care physicians working in these 15 centers were asked to fill the questionnaire. Only 51 physicians out of 58 participated self administered questionnaire adopted from McCool et al. [4] was used.

**Statistical analysis:**

Data entered and analyzed using SPSS version. 13. Descriptive statistics was used to describe all variables. Non-parametric technique was used to find the relation between the participants' ranks of their attitudes towards EBM in different questionnaire items. P-value was set to be <0.05 throughout the study. Chi square test was used to find the association of different database and the awareness of the participants towards it.

**Ethical issue:**

Permission was taken from Ministry of Health Administration, with IRB approval.

**Results**

Out of 58 physicians working in the selected centers, 51 (87%) filled the study questionnaire. Twenty-seven (53%) physicians were from sector one, 15 (29%) from sector 2, and 9 (18%) from sector 3. The majority of physicians (61%) were males. Most of the physicians (45%) were in the age group (40-49) followed by those who were in the age group (30-39), then 22% were at age group (50-59) and the minority 2% were in the age group of less than 30 years. Only 21 (41%) physicians were holding higher qualifications (Saudi Board, Arab Board, Jordanian Board or the other qualifications).

**Attitude towards Evidence Based Medicine (EBM):**

Out of the 51 physicians who responded, 47 (92%) revealed their attitude towards current promotion of EBM more than 50%. Fourteen (27.5%) revealed their attitude as 100%. The mean score for attitude of physicians towards current promotion of EBM was 81.57.

Forty-two physicians thought that the attitude of most of their GP colleagues towards EBM was more than 50%. Only two (4%) thought that the attitude of their colleagues towards EBM was 100%. The mean score for attitude of most of their GP colleagues towards EBM was 61.76.

Thirty-nine (76%) of the physicians ranked the usefulness of the research findings in the physicians’ day to day management of their patients as more than 50%. The mean score for that item was 71.96.

Thirty-two (63%) physicians had a positive attitude and they mentioned that their clinical practice as evidence-based was more than 50%. Only two ranked it as 100%. The mean score of the current clinical practice is evidence-based was 58.43. Forty-nine (96%) physicians’ ranked practicing evidence-based medicine to improve patient
Seventeen (33%) physicians described evidence-based medicine as of limited value in general practice because, much of primary care lacks a scientific base. Six ranked it as 90%, three ranked it as 80%, five ranked it as 70%, and three ranked it as 60%. The mean score of this item was 44.9%. Eighteen (35%) physicians ranked the adoption of EBM as ideal, but places another demand on already overloaded GPs as more than 50%. Four ranked it as 90%, six ranked it as 80%, four ranked it as 70%, and another four ranked it as 60%. The mean score of this item was 47.45.

The appropriate methods to move from opinion-based evidence-based practice and major barriers to practicing EBM:

Twenty-one (41%) of the physicians considered using the method "Of learning the skills of EBM" alone. Six (12%) considered using the method of "learning the skills of EBM" in addition to the method "Of seeking and applying evidence based summaries". Only one physician considered using the method "Of learning the skills of EBM" in addition to the method "Of using EBP guidelines or protocols" and five (10%) considered using the three methods together as the most appropriate method to shift from opinion based to evidence-based practice. Eleven (22%) consider using the method "Of seeking and applying evidence based summaries" alone. However, only six (12%) of the physicians considered using the method "Of using EBP guidelines or protocols" as the only method to move from opinion based to evidence-based practice.

Twenty-seven (52%), 13 (25.5%) & 11 (21.6%) physicians, thought "By learning the skills of EBM", "By seeking and applying evidence based summaries" and "By using EBP guidelines or protocols" respectively was the most appropriate method to move from opinion based to evidence-based practice.

With respect to the major barriers to applying EBM in the physician’s practice, most of them (65%) considered unavailability of time was the major barrier to practice EBM, followed by no internet access and no distributed updated clinical journals or guidelines (51%) the least observed barrier to practice EBM from physicians’ perspective was being expensive (8%) (Table 1).

Training of physicians on topics related to EBM:

Regarding training received by physicians on topics related to EBM. 14 (25.5%) of physicians received formal training in search strategy. 16 received formal training in critical appraisal, and another 16 (31%) attended other courses related to evidence-based medicine. In general, 28 (55%) did not receive any formal training, 8 (16%) received only one formal training course, 7 (14%) received two, and another 8 received three related to evidence-based medicine (Table 1).

Access to medline and world wide web:

Regarding access to MEDLINE, 28 (55%) physicians had access to MEDLINE at home, while only 6 (11.7%) of them had access to it in their clinics. Thirty-seven (72.5%) physicians had access to the World Wide Web at home, compared to only two (4%) who had an internet access in their clinics.

Awareness of journals and other databases relevant to EBM:

About 84% of board unqualified physicians were unaware of Bandolier Database in comparison to 47% of qualified physician. 61.1% of board unqualified physicians were unaware of Evidence-Based Medicine from BMJ in comparison to 6.7% of qualified physician. 80.6% of board unqualified physicians were unaware of Effective Health Care Bulletins in comparison to 40% of qualified physician. 80% of board unqualified physicians were unaware of Cochrane Database in comparison to 13.3% of qualified physician. 80.5% of board unqualified physicians were unaware of Database of Abstracts of Review of Effectiveness in comparison to 33.3% of qualified physician, and 86% of board unqualified physicians were unaware of evidence-Base Purchasing in comparison to 53.3% of qualified physician. These associations were statistically significant ($p<0.0001$).

There was no statistical association between qualification holding and awareness of Bandolier database, Effective Health Care bulletins or Database of Abstracts of Review of Effectiveness. In contrast, there was statistical association between qualification holding and awareness of E-B Medicine from BMJ, Cochrane Database, or Evidence-Base Purchasing (Table 2).

Understanding technical terms related to EBM:

Thirty-three percent, of the board qualified physicians understood and could explain relative risk in contrast to 30% of board unqualified physicians. 52% of the board qualified physicians understood and could explain absolute risk, in contrast to 30% of board unqualified physicians, 43% of the board qualified physicians understood and could explain systematic review. In contrast of 27% of board unqualified physicians, 38% of
the board qualified physicians understood and could explain odds ratio in contrast to 23% of board unqualified physicians, 57% of the board qualified physicians understood and could explain meta analysis in contrast to 20% of board unqualified physicians, 48% of the board qualified physicians understood and could explain clinical effectiveness in contrast to 30% of board unqualified physicians, 48% of the board qualified physicians understood and could explain the number needed to treat in contrast to 23% of board unqualified physicians, 43% of the board qualified physicians understood and could explain confidence interval in contrast to 20% of board unqualified physicians, 43% of the board qualified physicians understood and could explain heterogeneity in contrast to 13% of board unqualified physicians, 43% of the board qualified physicians understood and could explain publication bias in contrast to 20% of board unqualified physicians (Table 3).

<table>
<thead>
<tr>
<th>Barriers</th>
<th>Number of physicians</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Time Available</td>
<td>33</td>
<td>65</td>
</tr>
<tr>
<td>No computer</td>
<td>22</td>
<td>43</td>
</tr>
<tr>
<td>No Internet Access</td>
<td>26</td>
<td>51</td>
</tr>
<tr>
<td>No distributed updated clinical Journals or guidelines</td>
<td>26</td>
<td>51</td>
</tr>
<tr>
<td>Expensive</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Time consuming</td>
<td>16</td>
<td>31</td>
</tr>
</tbody>
</table>

**Frequencies of received training physicians on topics related to EBM:**

<table>
<thead>
<tr>
<th>Topics &amp; courses</th>
<th>No.</th>
<th>Yes</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formal training on search strategy</td>
<td>13</td>
<td></td>
<td>25.5</td>
</tr>
<tr>
<td>Formal training on critical appraisal</td>
<td>11</td>
<td>1</td>
<td>21.57</td>
</tr>
<tr>
<td>Attending any course related to EBM</td>
<td>10</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Not attending any course related to EBM</td>
<td>38</td>
<td>74.51</td>
<td></td>
</tr>
<tr>
<td>Formal training on search strategy</td>
<td>13</td>
<td>25.5</td>
<td></td>
</tr>
</tbody>
</table>

Table (1): Barriers to practicing EBM in general practice from physicians' perspective.

Table (2): Awareness of physicians according to their Board qualification about access to databases relevant to EBM and their perceived usefulness.

<table>
<thead>
<tr>
<th>Database</th>
<th>Awareness</th>
<th>No.</th>
<th>Yes</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bandolier</td>
<td>Unaware</td>
<td>30 (84%)</td>
<td>7 (47%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>Aware but not used</td>
<td>3 (8.34%)</td>
<td>3 (20%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Read</td>
<td>2 (5.56%)</td>
<td>4 (26.7%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Used to help in clinical decision making</td>
<td>1 (2.7%)</td>
<td>1 (6.7%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>36 (100%)</td>
<td>15 (100%)</td>
<td></td>
</tr>
<tr>
<td>EBM from BMJ</td>
<td>Unaware</td>
<td>22 (61.12%)</td>
<td>1 (6.7%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>Aware but not used</td>
<td>9 (25%)</td>
<td>1 (6.7%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Read</td>
<td>4 (11.12%)</td>
<td>7 (47%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Used to help in clinical decision making</td>
<td>1 (2.7%)</td>
<td>6 (40%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>36 (100%)</td>
<td>15 (100%)</td>
<td></td>
</tr>
<tr>
<td>Effective health care bulletins</td>
<td>Unaware</td>
<td>29 (80.6%)</td>
<td>6 (40%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>Aware but not used</td>
<td>4 (11.12%)</td>
<td>4 (27%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Read</td>
<td>2 (5.56%)</td>
<td>3 (20%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Used to help in clinical decision making</td>
<td>1 (2.7%)</td>
<td>2 (13.3%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>36 (100%)</td>
<td>15 (100%)</td>
<td></td>
</tr>
<tr>
<td>Cochrane database</td>
<td>Unaware</td>
<td>29 (80.6%)</td>
<td>2 (13.3%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>Aware but not used</td>
<td>3 (8.34%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Read</td>
<td>2 (5.56%)</td>
<td>3 (20%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Used to help in clinical decision making</td>
<td>2 (5.56%)</td>
<td>10 (66.7%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>36 (100%)</td>
<td>15 (100%)</td>
<td></td>
</tr>
<tr>
<td>Database of Abstracts of Review of Effective (DARE)</td>
<td>Unaware</td>
<td>29 (80.6%)</td>
<td>5 (33.3%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>Aware but not used</td>
<td>4 (11.12%)</td>
<td>2 (13.3%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Read</td>
<td>2 (5.56%)</td>
<td>3 (20%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Used to help in clinical decision making</td>
<td>1 (2.8%)</td>
<td>5 (33.3%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>36 (100%)</td>
<td>15 (100%)</td>
<td></td>
</tr>
<tr>
<td>Evidence Based Purchasing</td>
<td>Unaware</td>
<td>31 (86%)</td>
<td>8 (53.3%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>Aware but not used</td>
<td>2 (5.56%)</td>
<td>3 (20%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Read</td>
<td>2 (5.56%)</td>
<td>3 (20%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Used to help in clinical decision making</td>
<td>1 (2.8%)</td>
<td>1 (6.7%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>36 (100%)</td>
<td>15 (100%)</td>
<td></td>
</tr>
</tbody>
</table>
Table (3): Physician’s understanding of terms relevant to EBM by qualification.

<table>
<thead>
<tr>
<th>Board Qualification</th>
<th>Terms and Response</th>
<th>Terms and Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>It would not be helpful to me to understand</td>
<td>Don’t Understand but would like to</td>
<td>Some Understanding</td>
</tr>
<tr>
<td>Relative Risk</td>
<td>1 (2.8%)</td>
<td>6 (16.7%)</td>
</tr>
<tr>
<td>Absolute Risk</td>
<td>1 (2.8%)</td>
<td>5 (14%)</td>
</tr>
<tr>
<td>Systematic Review</td>
<td>1 (2.8%)</td>
<td>11 (30.56%)</td>
</tr>
<tr>
<td>Odds Ratio</td>
<td>1 (2.8%)</td>
<td>22 (61.12%)</td>
</tr>
<tr>
<td>Meta analysis</td>
<td>1 (2.8%)</td>
<td>26 (72.23%)</td>
</tr>
<tr>
<td>Clinical Effectiveness</td>
<td>1 (2.8%)</td>
<td>12 (33.34%)</td>
</tr>
<tr>
<td>Number Needed to Treat</td>
<td>1 (2.8%)</td>
<td>20 (55.56%)</td>
</tr>
<tr>
<td>Heterogeneity</td>
<td>1 (2.8%)</td>
<td>20 (55.56%)</td>
</tr>
<tr>
<td>Publication Bias</td>
<td>2 (5.56%)</td>
<td>22 (61.12%)</td>
</tr>
</tbody>
</table>

Discussion

A response rate of (87%) is considerable achievement because the response rates to questionnaire surveys among general practitioners are low [3] as shown in Scott study [10] where the response rate was only (20%).

Attitude toward evidence based medicine:

Most of the respondents in this study agreed that practicing evidence based medicine improved patient care with no difference in the percentage between qualified and unqualified Board physicians, which illustrates the understanding of the importance of the evidence based medicine. Compared to other studies, 81.57% of primary health care physician in Tabuk city have welcoming attitude toward EBM which is close to those in Australia (82.7%). In UK [4] most of the respondents were supportive of the current promotion of EBM (50%), Riyadh region [11] (60%), Eastern Saudi Arabia [12] only 39.6% of the respondents heard of EBM and 65.7% of them in favor of it, in Jeddah city [11] (78.9%).

Major barriers to practicing EBM:

Respondents identified major barriers to practice EBM among which is the unavailability of time (65%), followed by absence of internet access and non-distribution of updated clinical journals or guidelines (51%). The lack of available time was the main barrier to primary care physician (64.8%) and general practitioners (36.3%) as demonstrated by Al-Mutairi [11] and MacCol A [4] respectively.

Awareness of relevant information sources:

There was no statistical association between qualification holders and awareness of Bandolier Database, Effective Health Care Bulletins or Database of Abstract of Review of Effectiveness. In contrast, there was statistical association between qualification holding and awareness a EBM from BMJ, Cochrane Database, or Evidence-Base Purchasing. These results are different from those figured out among Saudis (Riyadh region) [11] and British [4] general practitioners; the qualified physicians have a high level of awareness and usage in clinical practice while the unqualified physicians
have a low level of awareness. This variation can be attributed to the wide range of family medicine board schools, in which some of these schools do not highly support teaching EBM. In addition to that, most of the board qualified physicians have old qualifications and the EBM is a new trend. Few unqualified physicians were aware of the mentioned evidence-based medicine.

Much of the clinical evidence in primary health care has already been identified, critically appraised, and packaged in extracting journals and databases [14]. Without current best evidence practice risks become out of date, making patients lives vulnerable to higher level of risk [14].

Access to relevant databases and the world wide web:

Very few physicians had access to MEDLINE and World Wide Web in their clinics. At home about 55% of them have access to MEDLINE and most of them (72.5) have access to World Wide Web, compared to Riyadh in which only 16 and 10.2% of primary health care physicians had access to MEDLINE and World Wide Web respectively [13].

To improve efficiency, evidence, Sackett suggested traveling to general practitioners’ clinics as they can spend twice as long traveling to a medical library as reading in it [4].

Training of physicians on topics related to EBM:

Most of the physicians (55%) did not attend any course related to evidence based medicine. Those physicians can be the target for any future training in evidence based medicine.

Views on how best to move to EBM:

The largest proportion (52.9%) of the participants chose to learn the skills of evidence based medicine i.e. to identify and appraise the primary literature of systematic reviews by oneself as the appropriate method to move from opinion based EBM. This method was also chosen as the best in Riyadh region (42.6%) [13].

Understanding of technical terms:

According to Young and his group who concluded that Australian general practitioners’ self ratings of understanding of terms used in evidence based medicine were modest and that their verbal explanation almost never met the essential criteria. Moreover, participants’ comments showed considerable misunderstanding of these terms [15].

We can apply the same conclusion to our respondents in Tabuk, whose responses were similar to the Saudi Arabia (Riyadh region) [14] and British, [4] it showed partial understanding of EBM technical terms, and almost full among qualified and unqualified physicians respectively. This difference can be attributed to the lack of EBM courses and symposia in Tabuk city, which is considered a remote area; taking an EBM center. In addition to that, most of the board qualified physicians have old qualifications and the EBM is a new trend.

The interpretation of evidence is the key element in practicing EBM, and this partial understanding could hinder interpretation and make evidence to the other members of the primary health care team more difficult.

Conclusion:

There is an urgent need to improve the physician’s knowledge and skills in searching the evidence based medicine sources by training and providing J m with the required resources and access to summaries of evidence, primary health care. Physicians who are skilled in accessing and interpreting evidence should be encouraged to develop local evidence based guidelines and advice. Tabuk city and other remote areas in Saudi Arabia are in urgent need for evidence based medicine centers or at least many courses or symposia about EBM to be held there.

Recommendations:

1- Primary health care administration and health authorities should encourage primary health care physicians to implement evidence based general practice.

2- They should encourage local primary health care physicians working in localities or commissioning groups who are themselves skilled in accessing and interpreting evidence, to develop local based guidelines and advice.

3- More awareness toward EBM is needed to all members of medical teams including higher medical authorities to provide good media for learning and practicing EBM.

4- Doctors who had a board qualification can teach basic searching skills and clarification of EBM sources in small workshops, in primary health centers, or they had attended EBM courses and seemed confident in understanding as well as explaining theses terms to others.

5- Primary health care center should be provided with computers, internet, and summaries of EBM.
6- Dissemination of the EBM concept and practice among primary health care physician is highly recommended.

References


