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Making Evidence-based Medicine (EBM) Doable in Developing Countries: A Locally-tailored Workshop for EBM in a Pakistani Institution

Z Zaidi, M Iqbal, J Hashim, M Quadri

Shifa College of Medicine, Pitrus Bukhari Road, Islamabad, Pakistan

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Zaidi Z, Iqbal M, Hashim J, Quadri M

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ABSTRACT

Objective: To demonstrate that evidence-based medicine (EBM) training can be imparted in developing countries using minimal resources.

Design: Development of a minimal cost workshop with validation of gain in EBM skills using the Berlin questionnaire.

Setting: Teaching hospital in Pakistan.

Participants: Multidisciplinary faculty from The Shifa College of Medicine and Nursing, Pakistan.

Intervention: A 14-hour locally-tailored McMaster-style workshop, using a problem-based, learner-focused small group format, with pre- and post-workshop evaluation of EBM skills.

Results: Analysis of the pre- and post-Berlin questionnaires of the participants revealed that the pre-workshop Berlin questionnaire score for the group was 4.7±2.3, with a post-workshop Berlin score of 7.6±1.0 ($p<0.001$).

Conclusion: EBM workshops can be locally-tailored in developing countries, where access to such workshops is generally not available. Workshops can serve to promote EBM skills in faculty, who can then help to disseminate and model concepts. The process increases awareness and interest in EBM, which in this case resulted in formation of a national platform for EBM.

Keywords: Evidence-based medicine, faculty development, developing countries

Introduction

Evidence-based medicine (EBM) is the 'integration of the best research evidence with clinical expertise and patient values' (Sackett *et al.*, 2000). EBM requires that healthcare decisions should be based on the best available evidence. To achieve this, it is necessary to inculcate the principles of EBM, which starts with **a**sking a clinical question at the point of care (most commonly the physician-patient encounter), **a**cquiring evidence by literature search, **a**ppraising evidence on rigorous principles, **a**pplying valid evidence to patient care incorporating patient values and preferences. These **4As** are the pillars of practicing EBM (Guyatt *et al.*, 2000).

Evidence-based medicine is not new. However, the current EBM paradigm started in 1990, and in 1992 the ideas were consolidated and named EBM by a group led by Gordon Guyatt at McMaster University in Canada (Guyatt *et al.*, 1992). Since then, EBM has been recognized as a cornerstone of practicing good medicine.

While EBM has been introduced in medical schools worldwide (Gruppen *et al.*, 2005), there is little known about effective methods for teaching EBM skills in developing countries (Kouhpayehzadeh *et al.*, 2006). In the developing world, several obstacles to teaching and practicing EBM have been identified, including limited resources, limited access to databases and libraries, lack of time to attend workshops and lack of role models.

An initiative was undertaken by our institution to overcome some of these obstacles and impart EBM training using minimum resources and local faculty. A taskforce was created to promote the practice and teaching of EBM initially in the home institution. Now the institution is successfully serving as a countrywide platform for promotion of EBM. This paper describes the first step of this process, i.e. development of an institutional taskforce, training of participants through a 14-hour McMaster style workshop and gains attained in EBM skills by participants.

Methods

We designed a 14-hour workshop, composed of seven sessions (one hour each) dedicated to covering basic EBM concepts, along with seven hands-on (one hour each) sessions spanning a seven-week period. The course was designed to accommodate faculty schedules, so that there would be minimal interference in their clinical and academic work. Faculty did try to block out time whenever possible for the sessions.

Course facilitators used a problem-based, learner-focused, small group format which has been shown to demonstrate success in helping adult learners understand the concepts of EBM (Crites *et al.*, 2002). The workshop was designed to cover basic EBM

concepts, including developing a well-built clinical question, searching the medical literature using PubMed and appraising various types of articles (therapy/harm, diagnosis and prognosis articles).

The course was designed such that the group met twice per week, once on Saturdays 8:00am to 10:00am and on Tuesdays from 9:30am to 10:30am. The Saturday sessions were a mixture of interactive discussions, didactic sessions and problem-based learning tasks. The goal of these sessions was to provide participants with an understanding of EBM steps and concepts. The Tuesday sessions were geared towards development of critical appraisal skills of the team.

All college faculty were invited to participate in the workshop, with the inaugural workshop restricted to the first 14 registrants. A multidisciplinary team of faculty members attended the workshop (see Table 1). Team members were volunteers, interested in learning about EBM. Of the 14 participants, eight belonged to internal medicine and allied specialties, with one each from pathology, obstetrics and gynecology, ophthalmology, pediatrics, nursing and general surgery. Faculty participants were primarily from the Department of Medicine. Two had previously gone through formal McMaster style workshops and were identified to help serve as facilitators.

Table 1: Credentials and disciplines of participants and course facilitators for the Evidence-based Medicine (EBM) workshop

Discipline	Faculty Title	Age	Gender
Nursing	Director School of Nursing	35	F
Pediatrics	Assistant Professor	45	F
Ophthalmology	Assistant Professor	34	F
Surgery	Assistant Professor	35	M
Internal Medicine	Assistant Professor	38	F
Pathology	Assistant Professor	40	F
Internal Medicine	Senior Registrar	31	M
Internal Medicine	Senior Registrar	31	M
Obstetrics & Gynecology	Senior Registrar	43	F
Internal Medicine	Senior Registrar	31	F
Family Medicine *	Assistant Professor	36	M
Internal Medicine *	Assistant Professor	33	F
Internal Medicine *	Associate Professor	38	M
Internal Medicine *	Professor	43	M

*Facilitator

Prior to the workshop, the group's basic knowledge of EBM concepts was tested using the Berlin Questionnaire, a standardized tool for assessing EBM knowledge and skills. The instrument, developed and validated by a team of experienced EBM teachers from the United Kingdom and Germany, measures: basic knowledge about interpreting evidence from healthcare research; skills to relate a clinical problem to a clinical question and the best design to answer it; and the ability to use quantitative information from published research to solve specific patient problems. The questions are built around typical clinical scenarios and linked to published research studies. The instrument is designed to measure deep learning (ability to apply concepts in new situations) rather than superficial learning (ability to reproduce facts). It consists of two sets of 15 test questions with similar content (Fritsche *et al.*, 2002). The questions address common EBM concepts such as Number Needed to Treat, Likelihood Ratios, Number Needed to Harm, Types of Studies, Fagan's Nomogram and Interpretation of Prognostic Studies.

At the end of the workshop, the post-test Berlin questionnaire was completed. Change in EBM knowledge by participants was documented. Paired students' t-tests were used to compare pre- and post-workshop Berlin questionnaire scores.

A Beginner's Evidence-based Medicine Handbook was compiled for all participants by the course facilitators. The 119-page handbook aimed to help participants find the best available evidence to answer clinical questions in the shortest possible time. It introduced the principles of evidence-based practice and provided a foundation of understanding and skills in: developing questions that are answerable from the literature; searching for and identifying evidence to answer questions; and appraising the evidence identified for quality, reliability, accuracy and relevance. The Table of Contents of the manual is presented in Table 2.

Table 2: Evidence-based Medicine handbook

Table of Contents

Participants were kept informed of the changes in the course schedule to accommodate faculty availability and distribution of assignments. The group mail was also used to answer questions during the course. Questions posted on the group mail usually pertained to the assignments given. For example, each participant was asked to formulate a PICO question (Patient Intervention Comparison Outcome), perform a related search and select the best article to answer the question. The assignment was posted on the group mail and all participants were invited to give their comments. The articles retrieved were then used for the hands-on sessions for development of critical appraisal skills.

Results

Mean age of participants was 36.3 (sd=4.3). There were nine females and five males in the group, including facilitators. Mean time from medical or professional school graduation was 12.3 years (sd=5.5).

Apart from the facilitators, the rest of the group rated themselves as having little prior knowledge of EBM. Three facilitators rated themselves as average and one as an advanced EBM learner.

The average pre-workshop Berlin questionnaire score for the whole group (including facilitators) was 6.7 (sd=4.0). The post-workshop Berlin questionnaire average was 9.9 (sd=2.1; p=0.02).

For non-facilitator participants, mean scores pre- and post-workshop were 4.7 (sd=2.3) and 7.6 (sd=1.0), respectively ($p<0.001$). Pre- and post-workshop scores for the four facilitators were 11.8 (sd=3.0) and 11.3 (sd=1.3), respectively.

Discussion

In an attempt to train physicians who are adept at seeking out, applying and critically appraising the best evidence, evidence-based medicine has become an important part of curricula for under and post-graduate programs. EBM should have a vital role in developing countries with scarce resources, so that funds are utilized where the greatest difference can be made. Therefore, EBM can play an important part in health policy-making in developing countries and, consequently, EBM-trained physicians are the 'need' of the day. A major obstacle, however, is the lack of availability of EBM-trained faculty who are able to teach and role model the principles of EBM.

To try to overcome this obstacle, Shifa College of Medicine, Pakistan, developed an in-house training program based on McMaster-style workshop sessions for faculty development in EBM. The program was organized using local faculty who successfully trained a multidisciplinary team. Such workshops in developed countries minimally cost $250. The only expense we incurred during the workshop was for the distribution of the EBM manual at $1.50 each.

We found the faculty very receptive to the workshop and, subsequently, we have been invited to conduct the workshop again at our institution and at other local institutions. The EBM taskforce has also incorporated principles of EBM in morning reports (Iqbal & Quadri, 2007), journal clubs, teaching rounds, ambulatory preceptorships and mortality and morbidity conferences.

Overall, individuals with no prior exposure to EBM, enrolled in our workshop showed significant gain in EBM knowledge and skills. Our study, like others (Crites *et al.*, 2004), also shows that a locally-developed EBM faculty curriculum can succeed and receive institutional support, using proven educational methodologies, avoiding scheduling conflicts and incurring minimal costs.

Our McMaster-style workshop was not only effective in enhancing EBM skills at the institution, but also has led to an EBM movement at a national level. An important outcome of these workshops has been introduction of EBM at the undergraduate level. A formal workshop for targeting final students entitled "EBM for the Beginner" was successfully completed. The impact of this workshop is being studied as a project in collaboration with the Foundation for Advancement of International Medical Education and Research (FAIMER), Philadelphia, USA.

Finally, a Center for Evidence-Based Medicine at Shifa College of Medicine (CEBM-SCM) has been formed and from this platform, we hope to make EBM resources available nationally, conduct workshops and research and, hopefully, affect health policy-making. We believe that the Center for Evidence-Based Medicine can play a pivotal role in disseminating EBM skills in Pakistan and the region.

References

Crites, G.E., Chrisagis, X., Patel, V., Little, D., & Drehmer, T. (2004). A locally-created EBM course for faculty development. *Medical Teacher*, 26(1), 74-78.

Crites, G.E., & McDonald, S.D. (2002). Teaching EBM facilitation using small groups. *Medical Teacher*, 24(4), 442-444.

Fritsche, L., Greenhalgh, T., Falck-Ytter, Y., Neumayer, H-H., & Kunz, R. (2002). 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. *British Medical Journal*, 325, 1338-1341.

Guyatt, G.H., Haynes, R.B., Jaeschke, R.Z., Cook, D.J., Green, L., Naylor, C.D., *et al.* (2000). Users' Guides to the Medical Literature: XXV. Evidence-based medicine: Principles for applying the Users' Guides to patient care. Evidence-Based Medicine Working Group. *Journal of the American Medical Association*, 284(10), 1290-1296.

Guyatt, G.H., Haynes, R.B., Jaeschke, R.Z., Cook, D.J., Green, L., Naylor, C.D., *et al.* (1992). Evidence-based medicine. A new approach to teaching the practice of medicine. Evidence-Based Medicine Working Group. *Journal of the American Medical Association*, 268(17), 2420-2425.

Gruppen, L.D., Rana, G.K., & Arndt, T.S. (2005). A controlled comparison study of the efficacy of training medical students in evidence-based medicine literature searching skills. *Academic Medicine*, 80(10), 940–944.

Iqbal, M., & Quadri, K.H.M. (2007). Initial experience with learner-centered evidence-based format morning report. *Journal of Pakistan Medical Association*, 57, 120-122.

Kouhpayehzadeh J., Baradaran H., Arabshahi K.S., & Knill-Jones R. (2006). Clinical teachers' attitudes toward the efficacy of evidence-based medicine workshop and self-reported ability in evidence-based practice in Iran. *The Journal of Continuing Education in the Health Professions*, 26(3), 210-214.

Sackett, D.L., Straus, S.E., Richardson W.S., Rosenburg, W., Haynes, & R.B. (2000). *Evidence-Based Medicine: How to Practice and Teach EBM*. London: Churchill-Livingstone.