PROVIDING EVIDENCE FOR MEDICAL AND MENTAL HEALTH PRACTICE THROUGH SYSTEMATIC REVIEWS

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INTRODUCTION

Because patients, each day, present with a range of unpredictable and untimely conditions, clinicians these days are faced by an ever increasing uncertainties. On the other hand clinicians face much more difficulty in accepting the uncertainty, especially in the health services. Therefore, they have to acquire the skills to recognize, understand and master the uncertainty surrounding them[1]. This they can do by recognizing their own skills, experience, and knowledge base. The critical appraisal skills, core skills of evidence based medical practice when acquired will help individuals understand and deal with the uncertainty in practice[2].

Concurrently, the ever increasing interest in taking health-care decision that are based on evidence from a variety of health professional groups has made the topic of Evidence Based Medicine (EBM) a global phenomenon taking place at a variety of speeds in different countries[3-4]. With the idea already widely welcomed by all, the scope of EBM has become very broad. This can be seen from the increased collaboration between individuals and organizations in their effort to exploit their potential for improved patient's care[6-11]. Now we see an increasing number of randomized controlled trials (RCT), systematic reviews (SSRs), increased links between researchers and organizations and number of position statements and development of clinical practice guidelines[2,3,5,12-16].

The aims of this paper are; first to explain what is evidence based medical practice and to give a brief overview of the design of a systematic review and highlight their importance in the practice of evidence based medicine. This is in no way exhaustive review of the subject but is basically intended to increase awareness and interest of the reader in the subject.

EVIDENCE BASED MEDICINE (EBM)

Evidence based medicine is employing a conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients. It is basically an approach to medical care through integration of systematic assessment of clinically relevant scientific evidence relating to the patient's medical history with the health-care providers clinical expertise and the patients treatment needs[10,16-20]. It is a subject and philosophy of care that seeks to ensure that all involved in patients-care and even the patients themselves are equipped with unbiased up-to-date knowledge about a clinical decision and the best treatment alternative for a contemporary clinical problem.

Sources of Evidence

The evidence for EBM is searched through electronic retrieval of papers, critical appraisal of original studies, reports and reviews based on research. However, identifying and finding this research is not easy. It can not only be costly and time-consuming but also not easily understood by the busy practitioners. Most of the resources may be beyond the ordinary practitioners in almost all developing countries. For this purpose, they are being helped, by others, making this search easy, fast and affordable to explore evidence for their clinical decisions, through the establishment of special libraries and publication of systematic reviews (SSRs). At all levels, there is, also, now a considerable emphasis put on the importance of using robust study designs that ensure conducting good quality primary research trials[7,9,10,15,16,21-27].

Quality of Evidence

Broadly, research may be categorized as primary research or it may be a secondary research in the form of literature reviews[25]. Primary research being new and based on individual studies when of good quality is the best source for finding evidence about a problem[2,5,18,24]. In the presence of a wealth of high quality research studies addressing some health questions, pertaining to treatment, diagnosis, relevant to the management of an individual case, the potential for evidence will be good. But when there is a patchy coverage of the area in question with little generalizable evidence relating to the problem, the uncertainty has to be acknowledged, rationally managed or a good clinical judgment has to be used[1,28].A problem is that all areas of health-care services and all questions have never received the attention of primary research with some areas particularly neglected, especially those in developing counties. It is also very time-consuming to design, fund and publish high quality pri-

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mary research in clinical disciplines. Even when the evidence from good quality trials is available from a country, it could not be applicable to the populace in other countries. Lastly, in many countries including specifically Pakistan, high quality primary research could not be done for problems of funding, infrastructure and recruitment, training and retention of clinical academic staff.

Problems of Using Published Material For Evidence

The driving force for searching the evidence is the ongoing tension between what is known and that is yet to be known and what is certain and what is to be ascertained. Even if an individual clinician is trained in the skills of critical appraisal of research, he or she usually faces difficulty in practicing these skills due to many reasons[5,13,14,17,19,24]. One may be the problem of prompt and convenient access to relevant research publications in the work place. Another may be the time restraint. It usually requires sifting through huge volume of work available on a problem or question. Even after managing all the above, the more frequent and common experience of much work available falling short of modern standards of objectively structured methodological quality is highly frustrating to many.

Keeping the above in mind, the clinician is required to be able to constructively critique the primary research[2,6,17,18,20]. Only then he or she will be able to integrate useful research conducted to the standards of the day. All that is necessary to do this is that the clinician has adopted a constructive and professional mindset in making own assessment of published work. During the appraisal of a research study, primarily one will look for the presence of quality and relevance in relation to the clinical case or question with reference to the characteristics of population studied, study setting or environment, the procedure or intervention assessed and the degree to which the findings of the study should influence an individual clinical practice[2,15,17].

SYSTEMATIC REVIEWS

Evidence based medical practice starts with the critical appraisal of primary research[29]. The findings of relevant primary research trials are synthesized in Systematic Reviews (SSRs). In systematic reviews, the strength of evidence is established across a number of studies. This is done by a systematic synthesis, using robust and comparable analyses of the findings. Ideally, in systematic reviews, a number of randomized controlled trials are reviewed[6,8,15,17,22]. Then a rigorous, composite overview of the degree of success of a particular intervention or treatment is made through a meta-analysis[2,5,8,20,24,25].

Usually, the quality and reliability of systematic reviews is considered good if these are produced by organization like Cochrane Collaboration. The Cochrane Collaboration is an international organization helping people make informed decisions about health-care by preparing, maintaining and promoting the accessibility of systematic reviews and the effects of health-care interventions (For further details please visit www.cochrane.org).

The conduct and interpretation of the findings of systematic reviews may be easy where the evidence is plentiful, and coming from a reasonable number of high quality randomized controlled trials. Interpretation of findings of SSRs may become difficult in situations where the evidence is different, limited and when it of very variable quality.

Quality and limitations of Systematic Reviews

Systematic reviews are the cornerstones of evidence based medical practices. It involves a thorough, unbiased, explicit and systematic process whereby all the evidence to specific well-defined review question is sought and appraised in terms of quality and relevance. The utility and quality of the resultant systematic review is influenced by the review question and literature review conducted.

Most clinicians having the experience of reading systematic reviews would have realized the inherently unpredictable nature of SSRs. The outcome of an SSR is certainly dependent on the objective analyses of the only those studies that meet the specific inclusion criteria[2,6,12,13,16-19,27]. On many occasions and to many researchers and policy makers, recognition of these criteria remains unknown before the start of an SR. Another problem is that many studies, despite being oft-cited and popular, unexpectedly fail to pass the pre-set threshold of methodological quality. There are many other problems which affect the quality of a systematic review. These include:

- Use of inadequate search strategies.
- Inadequate inclusion and exclusion criteria.
- Use of inadequate screening and quality assessment of papers.
- Pooling of data.
- Subjective bias in interpretation of findings.
- The way of reporting SSRs[8,13,15,18,20,25].

Guidelines for conducting, reporting and improvement of the quality of SSRs have been laid down by expert groups and organizations and their consideration have been shown to have beneficial effects[10, 17].

Foundations of Evidence Based Medical Practice

There is a need for joint effort from the researchers, sponsors and health-service organization for a planned dissemination of research findings. An effective and sincere coalition among researchers, industry, care-

providers and professional organizations is a need of the time. With the establishment of close links between researchers, teachers and professional research associations evidence based practice could be promoted by raising awareness about the use of SSRs in routine clinical practice.

Well planned SSRs have the potential to change the practice of helath professional for the benefit of their patients . For example Cochrane reviews that demonstrated that adding artesunate, a new antimalarial drug, to existing drug regimens dramatically reduces the risk of treatment failure[29] can help to to save thousands of lives in developing countries.

However, in the presence of now well-documented 90/10 gap in medical research (less than 10% of global funding is allocated for the research that affect over 90% of the world population[30], SSRs cannot help to identify the answers to these questions on their own because the randomized trials answering the questions for most of the conditions we face in this part of the world simply do not exist. Increasing the proportion of systematic reviewers from the developing world can improve this situation which is only possible if we can demonstrate in our practice that the evidence base for the intervention we need in this part of the world is inadequate. SSRs can also help to identify the relevant research questions that need to be answered for effective health care provision in these countries, one of the most important but unfortunately commonly ignored steps in conducting research. Properly conducted SSRs should be able to inculcate a spirit of critical approach to the scientific literature, which at present is blind spot in our training and practice.

Specialty organizations such as Pakistan Psychiatric Society can play a vital role in this. Publication of abstracts of systematic reviews in the Cochrane Corner, a regular feature of JPPS is an example which other journal can follow. It is important to identify gap in our knowledge areas and to instill funding in to those. Research funding bodies such as PMRC, Pakistan Science Foundation and the Federal and Provincial Health Ministries must consider only the funding of randomized controlled trials (RCTs) and systematic reviews (SSRs) that aim to answer the question which are relevant to our settings. The professional associations also need to be aware of the benefits of the EBM by promoting the high quality research that is directly relevant to practice and care.

There is also a need for establishing a close link between medical education and research to redesign and initiate undergraduate, postgraduate and professional development programmes so that teaching is done effectively and ethically to prepare the doctors who are well equipped with the skills to appraise and apply the evidence needed in their practice. They should be able to understand both the basic and applied science, able to manage the uncertainty and understand the importance of knowledge development. The young doctors must be willing to remain updated and willing to change clinical procedures over their lifetime clinical practice. This, they can easily do when they are taught critical appraisal skills (CAS) which unfortunately is rarely part of the medical curricula in Pakistan at present.

CONCLUSION

It is need of the hour to focus on conducting good quality research and conducting randomized controlled trials and systematic reviews. This will then establish credible evidence for the practice of medicine.

REFERENCES

1. Richards D. Accepting uncertainty. Evidence Based Dent 2004: 5; 59.
2. Guyatt D, Sackett D, Sinclair J, Hayward R, Cook D, Cook R. User's guide to the medical literature. IX. A method for grading the health-care recommendations. J Am Med Assoc 1995; 274: 1800 - 4.
3. Slavin B. Best evidence synthesis. An intelligent alternative to meta-analyses. J Clin Epidemiol 1995; 48: 9 -18.
4. National Institutes for Clinical Excellence Guidelines [Online] 2006 [Cited on October 20, 2006] Available from: URL://http://www.nice.org.uk/nice-web.
5. Cook DJ, Sackett DL, Spitzer WO. Methodological guidelines for systematic reviews of randomized controlled trials in health care from the potsdam consultation on meta-analyses. J Clin Epidemiol 1995; 48: 167 – 71.
6. Clark M, Oxman M. Locating and selecting Studies. In: Clark M, Oxman M editors. Cochrane Reviewer's Handbook. Oxford: Oxford University Press.
7. Britton A, McKee M, Black N, McPherson K, Sanderson C, Bain C. Choosing between randomized and non randomized studies. A systematic review. Health Technol Assess 1998; 2: 1- 24.
8. Clark MJ, Stewart IA. Obtaining data from randomized controlled trials. How much do we need for reliable and informative meta-analyses. BMJ 1994; 309: 1007-10.
9. Cook RJ, Sackett DL. The number needed to treat (NNT). A clinical useful measure of treatment effect. BMJ 1995; 310: 452- 4.
10. Drunning M, Abi-Aad G, Gilber D, Gillam S, Levitt H. Experience, evidence and every day practice. London: King's Fund Publishing 1999.
11. Counsell C. Formulating the question and locating studies for inclusion in systematic reviews. In: Mulrow C, Cook D, editors. Systematic reviews- synthesis of the best evidence for health-care decisions. Philadelphia: Am Coll Physicians 1998: 67 - 79.
12. Sackett D, Wennberg J. Choosing the best research design for each question. BMJ 1997; 315: 1636.
13. Vickers A, Guyal N , Harlands R, Rees R. Do certain countries produce only positive results. A systematic review of controlled trials. Control Clin Trial 1998; 19: 159 - 66.

14. Goodman C. Specify inclusion criteria for studies. Swedish Council on Technology Assessment in Health-care (SCTAHC). [Online] 2005 [Cited on May 12, 2006] Available from: URL://http:// www.sbu.se/sbu-site/report.

15. Squires BP. Structured abstracts of original research and review articles. Can Med Assoc J 1990; 143: 619- 22.

16. Sackett DL. Bias in analytical research. J Chron Dis 1979; 32: 51 - 63.

17. Tramer MR, Reynolds DJ, Moore RA, McQuay MJ. Impact of covert duplicate publication on meta-analyses. A case study. BMJ 1997; 315: 635 -40.

18. Walter S. Method of reporting statistical results for medical research studies. Am J Epidemiol 1995; 141: 896 - 906.

19. Pitts N. Understanding the jigsaw of Evidence based dentistry. Part II: Dissemination of research results. Evid Based Dent 2004; 5: 33 - 5.

20. Evans D, Hains A. Implementing evidence based changes in health-care. Oxford: Redcliffe Medical Press; 2000.

21. Pitts N. Understanding the jigsaw of evidence based dentistry. Part III: Implementation of research findings in clinical practice. Evid Based Dent 2004; 5: 33 - 5.

22. Ghani F. The authors, reviewers and editors triad: Its impact on quality of papers, contents of journal and image of science. J Pak Dent Assoc 2006; 16: in Press.

23. Niederman E, Richards D, Matthews D, Shugars D, Worthington H, Shaw W. International standards for clinical trial conduct and reporting. J Dent Res 2003; 82: 415 - 6.

24. Moher D, Schulz KF, Altman D. The CONSORT statement: revised recommendations for improving the quality of reports of parallel-group randomized trials. J Am Med Assoc 2001; 285:1987- 91.

25. Moher D, Jones A, Lepage L. Use of the CONSORT statement and quality of reports of randomized trials: a comparative before-and-after evaluation. J Am Med Assoc *2001;* 285:1992 - 5.

26. Moher D, Cook DJ, Eastwood S, Olkin I, Rennie D, Stroup DF. Improving the quality of reports of meta-analyses of randomised controlled trials: the QUOROM statement. Quality of Reporting of Meta-analyses. *Lancet* 1999; 354:1896–1900.

27. Richardson WS, Wilson MC, Nishikawa J, Hayward RS. The well-built clinical question: a key to evidence-based decisions. ACP J Club 1995; 123: A12–A13.

28. Moher D, Jones A, Lepage L. Use of the CONSORT Statement and quality of reports: A Comparative Before-and-After Evaluation. J Am Med Assoc 2001;285:1992-5.

29. Olliaro P, Mussano P. Amodiaquine for treating malaria. Cochrane Database Syst Rev 2003; 2: CD000016 .

30. WHO. Report of the Ad Hoc Committee on Health Research relating to future intervention options. Investing in health research and development. Geneva: WHO,1996.