

EDITORIAL

CRITICAL APPRAISAL: SIFTING THE WHEAT FROM THE CHAFF

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(Current Psychiatry [Egypt] 2009;16(3):200-4)

Gone are the days when what the physician says goes unchallenged by a naïve patient. The public is inundated with medical advice and contrary views from the newspaper, radio, television and popular lay journals¹. With Internet access available to all, patients are increasingly gaining access to medical information, and then looking to their physician for interpretation. It is imperative for physicians to keep their personal fund of knowledge current. However, this is one of the most formidable challenges that they face². In one study estimating the effort required to systematically evaluate the literature base, primary care physicians, taking an average time of 2.89 minutes per article, required 627.5 hours per month, or about 29 hours per weekday, or 3.6 full-time equivalents of physician effort to evaluate an estimated volume of medical literature potentially relevant to primary care published in a month for updating a clinical knowledgebase³. Not only do most clinicians, including psychiatrists, groaning under the burden of information overload, have difficulty in finding the time to finish reading of all articles in their subject of interest, it is also unlikely that any individual would be able to retain all the new information⁴. However, it is important

to appreciate that not all articles published on a particular topic are useful⁵. In fact all what we need to know is contained in no more than 20% of the total literature, but the question is how to exclude research studies too poorly designed to inform practice, and free our time to concentrate on a more systematic evaluation of those studies that cross the quality threshold and then to extract their salient points? In other words, how to develop the skills of sifting the "wheat" from the "chaff" in the huge piles of available information? Despite an ongoing debate, I think the answer should be 'by critical appraisal'.

Critical appraisal is arguably the most important component of evidence-based medicine (EBM) as it provides a systematic way of assessing the validity, results and usefulness of research papers⁶. The purpose of critical appraisal is not the act of criticizing for the sake of criticism. Rather, it is an exercise in assigning a value to an article⁷. It is based upon answering three key questions with the help of predefined rules of evidence. The first question asks '***Is the study valid?***' This is a necessary prerequisite before considering the article any further. Many of us, when reading about a research study, will skip the methodology in favour of reading the

results and conclusion. However, the validity or truthfulness of the information is found primarily in the study methodology which determines the extent to which the evidence actually does what it purports to do. The second question is '***Is the study important?***' This is answered by looking at the *reliability* of the results using clinically relevant measures (e.g., a large mean difference in outcome scores between the two groups), not just statistical significance. The third and last question is '***Can I generalize from this study to my workplace?***' *Applicability* of research evidence into practice is of utmost importance not only to physicians but also to their patients. The answers to this question of whether the results of the study can be extrapolated to my patients can be obtained by reading the conclusion and selected portions of the abstract. This question, however, is the hardest to answer in a rigidly scientific manner and decisions in this area may still be an art.

Checklists have been produced addressing the above three broad questions in more detail for the purpose of checking evidence concerning studies of diagnosis, treatment, prognosis, or harm⁸⁻⁹. It is worth noting that types of clinical research can be usefully graded on a hierarchy according to the strength of evidence. In considering treatments, for example, the most valid evidence of efficacy is likely to come from: a) a meta-analysis of two or more RCTs, b) an individual RCT, c) a controlled study without randomization, d) an uncontrolled (open) study, e) case series and f) case reports, in this order⁶. However, the basic principles of reviewing research are the same, whatever type of evidence is being reviewed. Meta-analyses and RCTs can provide the best evidence. This is, however, not to ignore the importance of clinical

experience, as some critics of critical appraisal claim it does. Clinicians who are declaring that they are not prepared to discard therapies validated by tradition and their own experience on account of somebody else's numbers¹⁰ do not seem to understand the essence of RCTs or EBM which is defined as ". . . the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients . . . [by] integrating individual clinical expertise with the best available external clinical evidence from systematic research"¹¹. Another criticism is that critical appraisal is much too difficult. However, only few studies are inclined to support this claim. Thus, in a sample of family practitioners, it was reported that about one third claimed they "understood and could explain to others" terms which are intimately associated with an ability to critically appraise research¹². On the other hand, a Cochrane review concluded that there is evidence that critical appraisal teaching has positive effects on participants' knowledge, but as only one study met the inclusion criteria the validity of drawing general conclusions about the effects of teaching critical appraisal is debatable¹³.

More serious criticisms have been raised against RCTs, the gold standard tool of critical appraisal. Thus, it is argued that many clinical situations do not lend themselves to randomization, as in procedures such as surgery and in recruiting suicidal patients or patients with intellectual disability. Ethical concerns have been raised about placing patients on a placebo when effective treatments exist. Further, if a new agent is tested only against a placebo, there is no guarantee that it is more effective, or even as effective, as an existing agent¹⁴. Sometimes, however, participants are desperate to receive the

experimental treatment. It is argued that it is unethical to recruit such individuals. First, because desperate volunteers are not in equipoise but desperate to be placed on one particular arm of the study. Second, clinicians, entering patients onto trials are disavowing their therapeutic obligation to deliver the best treatment. Third, desperate volunteers do not give proper consent: effectively, they are coerced¹⁵. RCTs have received further criticisms on the ground of publication bias: the failure to report "negative" trials and the biased presentation of results by investigators, editors and sponsors¹⁶. In defence of RCTs, however, we should note that when systematic testing is lacking many procedures, including surgery, are rapidly introduced into the clinical setting without reliable evaluation of their efficacy. In many cases, a randomized, placebo-controlled procedure trial may be necessary to provide this data¹⁷. Admittedly, designing an RCT to identify the efficacy of treatments for suicidal patients is challenging and requires great care. However, correctly choosing the hypothesis to be tested, the appropriate sampling frame, the intervention and control groups, and the outcome variables increases the likelihood that the study will be feasible, ethical and clinically meaningful¹⁸. The attitude of not setting up RCTs on treatment of intellectual disability because of ethical concerns over capacity and consent, which constitute a denial of opportunity, needs a fundamental change if proper evaluation is to prosper¹⁹. Recruiting participants who are desperate to receive the experimental treatment is not unethical. Trial entry does not involve clinicians disavowing their therapeutic obligation; individualised care based on insufficient evidence is not in patients' best interest. Finally, where equipoise exists it is

acceptable to limit access to experimental agents; desperate volunteers are not coerced because their desperation does not translate into a right to receive what they desire²⁰. RCT is a scientific experiment during which observations on the effects of therapy or a preventive action are conducted by the researcher under rigorous control. The purpose of the experiment is to clear the uncertainties surrounding a clinical/research issue and involves isolating the 'treatment' and 'end result' variables from external influences. RCTs therefore make use of scientific method standards: measuring, which includes the possibility of reproducing observations; controlling factors unconnected to the cause-effect relationship of interest; and the external verification or 'falsification' of the cause-effect relationship²¹. Indeed, RCTs are and will remain the "gold standard" method to estimate the efficacy of a therapeutic or prophylactic intervention²².

The need of doctors to acquire skills to track down the new types of strong and useful evidence, distinguish it from weak and irrelevant evidence, and put it into practice has been widely acknowledged. A recommendation from the 1993 World Summit for Medical Education is that medical schools should teach medical students to critically appraise scientific reports²³. As a consequence, critical appraisal courses have been included into medical training programs in many parts of the world²⁴⁻²⁶. Psychiatry could no longer lag behind in applying the principles of critical appraisal to clinical psychiatric practice. In United Kingdom, for example, The Royal College of Psychiatrists has introduced the critical review paper into the Membership Examination since 1999. In Egypt, on the other hand, it has been only about two years since the Institute of

Psychiatry, Ain Shams University, made a significant reform in its post-graduate curriculum incorporating Critical Appraisal into the teaching and examination items. So far, no studies have been produced about the outcome of these recent changes. Yet, I am wondering whether we are going to find in the near future some appraisal studies of the critical appraisal teaching of Ain Shams, published in the *Current Psychiatry*, the official journal of the Institute?! I am also wondering whether this initiative could spark awareness about critical appraisal teaching that would spread to other Egyptian centres which are still shutting their eyes to this important event?! And finally I am wondering whether current teaching of critical appraisal to these postgraduates could have late effects on their skills of appraising literature, sifting the wheat from the chaff, and applying the results of this appraisal to their practice?!

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