



KMJ AND CRITICAL APPRAISAL OF PUBLISHED RESEARCH

Research is the basis of scientific innovations and proliferation over the ages and scientific journals are responsible for dissemination of new research to the readers. In 17th century the 1st scientific French journal "Journal des Savants" was launched. The medical journals were started in 18th century. *The Lancet* was founded by Thomas Wakley in 1823. *Provincial Medical and Surgical Journal* (now published as *BMJ-British Medical Journal*) was launched in October 1840. Since then, the number of scientific research journals including medical journals is increasing day by day and the amount of research available for readers of medical journals is beyond our expectations. MEDLINE, compiled by the U.S. National Library of Medicine (NLM) is the world's leading source of life sciences and biomedical bibliographic information. It contains about eleven million records from over 7,300 different publications from 1965 to 2005.¹

Yet there is a significant under-representation of authors of developing and low income countries in the published scientific literature.^{2,3} This creates a serious concern in the minds of practising doctors from developing countries that the published research conducted in developed countries may or may not be applicable to the patients and clinical settings of developing or low income countries. This concern justifies the publication of new medical journals like KUST Medical Journal (KMJ) from developing countries to contribute our input to the international scientific literature regarding health and related economic and environmental issues.

Again the question may be raised regarding the reliability and validity of a particular research published in these journals or even in any standard medical journal. Findings of many published researches are not necessarily valid⁴. Every published research may not be of high quality and many studies may have serious flaws in research design, sampling techniques, patient's selection, intervention used, results compilation or conclusion drawn. This compels the reader of a medical journal to have a critical appraisal of the published medical research which may help in decision making regarding his daily clinical practice.

Critical appraisal is the process of systematically examining research evidence to assess its validity, results and relevance before using it to inform a decision.⁵ Critical appraisal may be conducted by any medical professional who have some background knowledge of medical research. Critical appraisal enables us to identify whether the published research is reliable, relevant and clinically effective.

The concept of critical appraisal has been explained by internal and external validity of a study. *Internal validity* refers to issues related to study design, patient selection and measures taken to minimize any bias in the study (e.g. randomization, blinding & allocation concealment etc). Studies with a proper study design

and methodology are analyzed for precision and significance of results by measuring p-values, confidence interval (CI), odds ratios (OR), risk ratios (RR) and number needed to treat (NNT).

External validity (or generalizability) measures the relevance of a study and helps a clinician to judge whether the results are applicable to a specific group of patients or population in a particular clinical setting in routine practice⁶. The patient's inclusion criteria, the clinical setting of the research and weighing of potential benefits and harms of treatment for patient along with cost effectiveness or economic evaluation of a study are important areas of concern in critical appraisal.

Various computer-assisted critical appraisal tools like *CAT* (Critically Appraised Topics) *maker* have been designed to help in appraising articles related to therapy, diagnosis, prognosis, aetiology/harm and systematic reviews of therapy. The *Critical Appraisal Skills Programme (CASP) appraisal tool* for qualitative research and CASP Appraisal Tools for other study designs are now available on line.^{7,8} We hope our readers will practice critical appraisal of all the published research so that they can judge the strengths and weaknesses of a research and promote the culture of evidence based medicine (EBM) in routine clinical practice.

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