

# Reading Medical Articles Critically

Use this framework for critically evaluating medical studies:

Research fields	Primary considerations	Secondary considerations
Diagnostic tests/procedures	A study sample that includes an appropriate spectrum of patients.  Independent and blind comparison with a standard reference (for example biopsy, autopsy or surgery)	Whether the results of the test being evaluated influence the decision to perform the standard reference.  Full and detailed description of methods for performing the test/procedures to permit replication.
Therapy/prevention	Random assignment of subjects to treatments.  Low or minimal dropout rate.  Sufficient and complete follow-up. Assessment of unwanted side effects.	Blinding of both subjects and study personnel.  Similarity of subjects at the start of the trial.  Equal treatment of the study groups aside from the intervention.
Harmful effects	The availability of a comparison group that is similar with respect to important determinants other than the one being investigated by the study.  Similar measurements of the exposures and outcomes in the groups being compared.  Sufficient and complete follow-up.	Whether exposure to the harmful effect precede the adverse outcome (namely correct temporal relationship).  The existence of a dose-response gradient (namely the adverse outcome increases as the duration or quality of exposure increases).
Prognosis	A well-defined study sample of patients at a similar point in the course of the disease.  Sufficient and complete follow-up.	Use of objective and unbiased outcome criteria.  Adjustment of the analysis for important prognostic factors, such as age and gender.
Meta-analyses	Addressing a single, focus clinical question.  Whether the criteria used to select articles for inclusion are objective and appropriate.	Whether important relevant previous studies are missed or excluded.  Whether the validity of the included studies is appraised.  Whether assessments of studies are reproducible.  Whether results are similar from study to study.
Practice guidelines	Specification of all important options and outcomes.  Whether an explicit and sensible process is used to identify, select, and combine evidence.	Whether an explicit and sensible process is used to consider the relative value of different outcomes.  The likelihood that the guideline accounts for important recent development.  Whether the guideline has been subjected to peer review and testing.
Decision analyses	The inclusion of all important strategies and outcomes.  Whether an explicit and sensible process is used to identify, select, and combine evidence into probabilities.	Whether the utilities are obtained in an explicit and sensible way from credible sources.  Determination of the potential impact of any uncertainty in the evidence.
Economic analyses	Provision of full economic comparison of alternative health strategies.  Proper measurement and evaluation of costs.  Whether all direct, indirect, and intangible costs and benefits have been included.	Whether appropriate allowance is made for uncertainties in the analysis.  Whether estimates of costs and outcomes related to the baseline risk in the treatment population.

Adapted from: Al-Ateeq, FA. 2004. Reading Medical Articles Critically, What they do not teach you in Medical School. *Saudi Med J.* 25(4):409-423

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