

Coventry and Warwickshire Health Libraries NEWSLETTER



Issue 7: Critical Appraisal

Critical Appraisal

“Critical appraisal is the process of carefully and systematically examining research to judge its trustworthiness, and its value and relevance in a particular context.” (Burls, 2009).

In healthcare today the expectation is that patient care is based on evidence of what works ... and what doesn't. Before a new service is developed, a new drug prescribed or a change made in practice we need to be certain that the information used to justify that development or decision is trustworthy and relevant.

Thousands of journal articles are published each year but unfortunately not all the research reported is of good quality, and many studies contain bias which skews results towards false conclusions. Even good quality peer reviewed journals will sometimes publish papers which don't stand up to scrutiny.

Critical appraisal sounds daunting, but it is essentially a blend of careful reading, common sense and clinical judgement.

When reading any research – be it a systematic review, RCT, economic evaluation or other study design – it is important to remember that there are three broad things to consider: validity, results, relevance.

It is always necessary to consider the following questions:

- Has the research been conducted in such a way as to minimise bias?
- If so, what does the study show?

- What do the results mean for the particular patient or context in which a decision is being made?

A few pointers of what to look for can quickly establish whether a paper is worth taking seriously.

Tools to help

Various groups have developed sets of questions to guide us through the process of appraising a paper.

The questions vary depending on the study design (e.g. systematic review, randomised control trial, qualitative study), and are designed to pick up that any potential flaws in the research that may have introduced unintentional bias.

The Critical Appraisal Skills Programme has checklists of questions for different types of study available at <http://www.casp-uk.net/find-appraise-act/appraising-the-evidence/>

The Centre for Evidence-Based Medicine questions are available at: <http://www.cebm.net/index.aspx?o=1157>

Statistics

Many of us are uncomfortable with numbers, but in assessing a paper we need to be sure that the numbers presented do add up – sometimes there are flaws in the basic arithmetic.

We need to consider whether the results presented have significance: how likely is it that the result given is the 'true' result; are they actually useful in the real world?

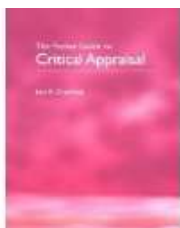
Even for the non-mathematically minded a little information about p values and confidence intervals can enhance the reading of papers.

Recommended Reading

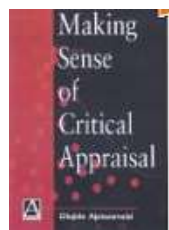
Greenhalgh, Trisha (2014) How to read a paper: the basics of evidence-based medicine. 5th ed. BMJ Books. *Gives a clear and full explanation of the principles of critical appraisal.*



Crombie, I (1996) The pocket guide to critical appraisal. London : BMJ *A short and readable introduction.*



Ajetunmobi, O. 2002. Making sense of critical appraisal. London: Arnold

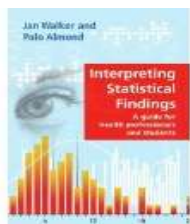


Goldacre, Ben (2008) Bad Science. *Not so much a how to guide as a fascinating read into the background of why we should critically appraise, and the tricks researchers ask us to swallow.*

Dancey, C.P. (2012) Statistics for the health sciences: a non-mathematical introduction. Sage.



Walker, J & Almond, P (2010) Interpreting statistical findings: a guide for health professionals and students. Open University.



Websites of interest

The Critical Appraisal Skills Programme (CASP) CASP is a programme within Learning & Development at the NHS Public Health Resource Unit. <http://www.casp-uk.net>

Centre for Evidence Based Medicine The Centre has been established in Oxford as the first of several centres around the country whose broad aim is to promote evidence-based health care and provide support and resources for EBM. <http://www.cebm.net>

Bad Science was a column in the Guardian written by Ben Goldacre, a doctor at UCL and a former researcher in neuroscience. He used the column to debunk science stories in the media. Last published in 2011 the archive is interesting. www.guardian.co.uk/science/series/badscience

NHS Choices: Behind the Headlines provides an unbiased and evidence-based analysis of health stories that make the news. The NHS Choices team analyses the scientific articles behind the stories and produces impartial assessments. <http://www.nhs.uk/News/Pages/NewsIndex.aspx>

Reference

1. Burls, Amanda (2009) What is critical appraisal? 2nd ed. Online: Available at: http://www.medicine.ox.ac.uk/bandolier/painres/download/whatis/what_is_critical_appraisal.pdf

Library staff

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