

An introduction to critical appraisal

Where do you start?

Sometimes at first glance a journal article can seem a bit overwhelming. How do you tell if it's a good study? If the results are relevant? How do you interpret all the statistics in the results section?

There are some basic things you can do to extract the information you need from an article, you just need to know where to look.

The abstract can tell you a bit about the study, but you shouldn't rely on it to make a judgement about the research it's reporting. You can use the abstract to work out if it's worth reading the whole paper—does the research answer a question relevant to you and your practice? Is there a clear conclusion?

If you're not sure what the research is about, then the research question is usually the very last sentence of the Introduction section. It should state clearly what the research was asking, and this should be the question the article answers. If the Results and Discussion sections start answering different questions, then be suspicious!



Critical appraisal checklists

There are lots of critical appraisal checklists freely available to help you evaluate articles, and they tend to ask different questions depending on the research method used. Here some of the more popular ones:

- [Critical Appraisal Skills Programme checklists](#)
- [Joanna Briggs Institute critical appraisal tools](#)
- [Worksheets from the Centre for Evidence-Based Medicine](#)
- [BEST BETS critical appraisal worksheets](#)

Facilitating research amongst radiographers through **Information Literacy workshops**

Internal and external validity

The premise of critical appraisal is that it asks the following two questions of research:

- *To what extent does the study measure what it sets out to measure? (Internal validity)*
- *To what extent can the results from the study be generalised to a wider population? (External validity)*

Internal validity looks at how well the research was carried out, whether the methods used were appropriate, how much effort was put into ensuring that the results weren't caused by bias or confounding factors rather than the intervention being tested.

External validity relates to how transferable the results are—did the research take place under 'real life' conditions? Was the sample population used representative of the wider patient population? Thinking about your own context, could the findings be applied to your clinical practice and patient groups?

Reading list

The following are great books for finding out more about critical appraisal. We highly recommend the Gosall book—it's not just for doctors!

Gosall, N. & Gossal, G. (2015) *The doctor's guide to critical appraisal (5th ed)* Knutsford: Pastest

Greenhalgh, T. (2014) *How to read a paper: the basics of evidence-based medicine (5th ed)* Chichester: Wiley

You can also find a series of critical appraisal articles from the BMJ by Greenhalgh [freely available here](#).

Harris, M., Taylor, G. & Jackson, D. (2014) *Clinical evidence made easy* Banbury: Scion

Stats!

If the article is swamped in stats and you feel like you need a mathematics degree to interpret them, look for P values in the results section. If a P value is less than 0.05, then the result is statistically significant—the probability of the result occurring by chance is less than 1 in 20. If it is greater than 0.05 then the result is not statistically significant and is more likely to have occurred by chance.

There's a great YouTube video by Sketchy EBM that explains the concept of p values (and confidence intervals) beautifully: [Watch it here](#)

Next steps

- **Creating a poster** is on Tues 7th Feb, 09:00-10:00, Seminar room 9, EC1
Fri 10th of Feb, 12:00-13:00, Seminar room 9, EC1
- Think about how you can incorporate critical appraisal into your daily practice. Interested in starting a journal club? We can help you get it up and running!

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