AH-TRIP

## Critical Appraisal Introduction

Critical appraisal is an important part of finding the best research evidence that you need to inform your clinical practice. It may be surprising to hear that not all research studies published as peer-reviewed articles are done well. Additionally, you can have a very high-quality study, that's simply not relevant to your specific clinical area. Critical appraisal helps you find both relevant - and the best - research evidence for your clinical practice.

It can sound like a daunting task but there are a lot of resources out there to support you, including critical appraisal tools. These are checklists that you work through to assess the quality of the study against specific criteria. They prompt you to look for specific bits of information that would indicate high quality research. I'll include links to some these at the end of the presentation.

As a general guide, there are three areas to consider in a critical appraisal process:

- Trustworthiness
- Impact
- Applicability

**Trustworthiness** is about whether the study is credible or *valid*. Can you believe the results? Being able demonstrate this type of validity (also called *internal* validity) could come from things like:

- using the right **type of study** to answer the research question (e.g. RCTs are suitable to identify the most effective treatment, while qualitative studies are suitable to explore client experiences);
- having a big enough **sample size** (which can mean the study is large enough to detect a significant difference); and/or
- minimising **flaws** in how the study was done.

**Flaws** can result in:

- an increased **chance** of getting certain results purely by 'chance' – or a fluke
  - this is - in part – why including statistics analysis of the data - is important, to identify the extent to which this is likely. And using randomisation can minimise this risk as well
- '**biases**' – which are systematic errors that can lead to under- or over-estimating the effects of an intervention
  - e.g. participant selection: the way that participants are recruited may mean certain people were unintentionally excluded from taking part, so the results won't be representative
  - e.g. placebo effect: improvements seen may be because the participant expects or believes that the intervention will do so, rather than being due to intervention
- '**confounding**' variables which – as the name suggests – can 'confuse' the findings
  - e.g. participants who are older – or have lower levels of education - may respond differently to an intervention, so you want to see the researchers account for that by either randomising (so each group has an 'equal chance' of seeing this) or using statistics like sub-group analysis or regression modelling

**Impact** which is about the study's clinical importance. What are the study results? And does the study have a large enough effect for you to consider changing your practice? This is the difference between 'statistical significance' and 'clinical significance'.

If – and only if! - the results you're looking at are statistically significant (usually a p-value of less than 0.05), you then need to decide whether that difference is *clinically* important to you and your clients. This process uses judgement (not statistics). So, it's important to be familiar with the outcome measures used and whether you consider those outcomes relevant, useful and important to you and your client.

**Applicability** (*external* validity) is: How generalisable are the results? Consider things like the study's type of participant, setting and time in history. (Hoffmann, Bennett & Del Mar, 2017)

A note on **assessing the quality** of **qualitative research**

- In qualitative research, the researchers are not removed from research process and legitimately influence the data analysis when they interpret their findings.
- How best to assess the quality of these studies is therefore debated.
- Trustworthiness, Impact & Applicability can be used are a guide. Alternatively, there are other ways to categorise the areas to look at, for example: *Credibility, Transferability, Dependability and Confirmability* (Hannes, 2011)

**Resources**

- There are many critical appraisal tools that you can access for free and there are different ones depending on the type of research design you are appraising. For example, there are tools for appraising clinical guidelines, systematic reviews, quantitative studies like RCTs or cohort designs, qualitative studies, economic evaluations and more.
    - The International Centre of Allied Health Evidence (iCAHE) and the Joanna Briggs Institute (JBI) websites have links to many different tools depending on the type of study you are appraising
- For some examples of Allied Health critical appraisals or Journal Club /, see iCAHE or PEDro World-Wide Journal Club
- The AHTRIP website have some examples of completed appraisals

**References**


- Hoffmann, Bennett & Del Mar, 2017. *Evidence-Based Practice Across the Health Professions* (3rd Ed). Elsevier, Chatswood, NSW.
- Hannes K. Chapter 4: Critical appraisal of qualitative research. In: Noyes J, Booth A, Hannes K, Harden A, Harris J, Lewin S, Lockwood C (Eds), *Supplementary Guidance for Inclusion of Qualitative Research in Cochrane Systematic Reviews of Interventions.* Version 1 (updated August 2011). Cochrane Collaboration Qualitative Methods Group, 2011.