NSW GOVERNMENT

Factsheet

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How do I assess the quality of research evidence?

This Factsheet can help you find and critically appraise high quality research evidence. It includes a critical appraisal checklist that you can use to determine the quality and applicability of research findings for your work. It also provides links to useful resources and can be read alongside What is an evidence hierarchy?

Qualitative and quantitative research

High quality research studies may use quantitative, qualitative or mixed methods approaches. The most appropriate research design for a study depends on the research aims or questions. If a researcher is interested in 'what works?' or 'which intervention is most effective?', then a quantitative approach (for example, a Randomised Control Trial (RCT) or meta-analysis) might be most appropriate. However, if a researcher is interested in 'Why do parents tend to drop out of an intervention at an early stage?', then a qualitative approach (for example, interviews with parents) might address the question most appropriately.

In quantitative research, the research questions and methodology are known in advance of data collection, whereas in qualitative research the design and research questions may evolve as data is collected. While the strength of the quantitative approach is in its ability to provide insights about a very large number of people or even an entire population, the qualitative approach allows exploration of a topic in greater depth and may expand upon quantitative findings.

A mixed-methods study is one which employs both quantitative and qualitative techniques to investigate the same topic or phenomenon. For example, a mixed-methods study may count the type and number of services that a particular group of clients is accessing, as well as interviewing a representative sample of clients about the reasons why they are accessing the services that they do.

Where to find quality research and evidence-based information

Peer-reviewed journals

Peer-reviewed journals are a reliable source of information as they have been critically evaluated and recommended for publication by one or more experts in the field.

Systematic reviews

Systematic reviews involve a critical examination of a large body of research on a specific topic according to pre-determined search and inclusion criteria. Systematic reviews can be a more reliable source of information than reading randomly selected individual studies as the authors have synthesised a large range of studies on the topic. Systematic reviews that appear in peer-reviewed publications or from other reputable sources and are 1-2 years old are likely to be the most up to date and thorough examinations of a topic. There are several reputable sources of systematic reviews available:

- The Campbell Collaboration maintains a database of systematic reviews in the fields of education, social welfare, and criminal justice, with direct links to publications.
- Cochrane maintains a database of systematic reviews in the healthcare field that are peer-reviewed and can be downloaded from their website. The Developmental, Psychosocial and Learning Problems topic and Mental Health topic provides evidence that is relevant to the social care field.
- EPPI-Centre is a specialist centre for developing methods for systematic reviewing and synthesis of research evidence; and developing methods for the study of the use of research. EPPI-Centre maintains a database of systematic reviews that have been conducted by and supported by the EPPI-Centre.

Meta-analyses

Meta-analyses statistically combine the results of several different studies, to provide a single estimate of the size of the effect of an intervention.[1] The studies included in a meta-analysis have examined the same hypothesis by the same methods.[2] An advantage of meta-analyses is that they can overcome the limitations of individual studies. However, the quality of a meta-analysis is highly dependent upon the individual studies included.

How to critically appraise research findings

Critical appraisal is the systematic evaluation of a research paper to identify methodological flaws and determine the quality of the evidence. It involves considering the validity and rigour of the research, credibility of the findings, generalisability or applicability of the findings and how useful and relevant the findings are to your organisation or practice. Critical appraisal skills can be applied to quantitative, qualitative and mixed method research studies.

Before reading a research paper, ask yourself the following questions:

- Does this study address a clearly focused question?
- Did the study use valid methods to address this question?
- Are the results of this study important?
- Are these results applicable to my population/client group?

[1] Greenhalgh, T 1997, 'How to read a paper: Papers that summarise other papers (systematic reviews and meta-analyses)', British Medical Journal, no. 315, pp 672-675.
[2] Lam, RW & Kennedy, SH 2005, 'Using meta-analysis to evaluate evidence: Practical tips and traps', Canadian Journal of Psychiatry, vol. 50, no. 3, pp.167-174.

If you answer yes to the four questions above, then proceed in appraising the paper.[3]

Appendix A contains a Checklist for Assessing the Quality of Research. It provides a set of key questions to consider when evaluating the merits of a qualitative or a quantitative research study. This checklist is useful when you need to complete a rapid appraisal of a research paper.

Useful resources

The University of South Australia provide a consolidated list of critical appraisal tools.

The Critical Appraisal Skills Programme (CASP) checklists provide specific guides to evaluate different types of research studies (including systematic reviews, Randomised Control Trials and case control studies).

PRISMA checklist is a 27 item checklist designed to assist in reviewing a systematic review or meta-analysis.

The AMSTAR Checklist is a measurement tool to assess Systematic Reviews and consists of 11 items. This checklist is used by organisations such as Cochrane and academic researchers. A rigorous Systematic Review is one that has addressed all items on the checklist and received a score of 11.

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[3] Adapted from Centre for Evidence Based Medicine (CEBM), 'Critical appraisal tools', http://www.cebm.net/critical-appraisal.

Appendix A: Checklist to assess the quality of research evidence

Author: **Year:**

Title:

Key Aspects	Questions to Consider	Meets criteria YES	Does not meet criteria NO
Aims	Are the aims/research questions of the study clearly stated? **(E)**	☐	☐
	Is the overall methodology appropriate to the research questions? **(E)**	☐	☐
Conceptual Framework	Is there an explicit account of the theoretical literature and/or inclusion of a literature review that demonstrates how the study is informed by or linked to an existing body of knowledge? **(D)**	☐	☐
Study Design	Are the study design and data collection processes adequately described and justified? **(D)**	☐	☐
	Is the researcher's perspective clearly stated and taken into account? **(D)**	☐	☐
Sampling	Are there clear criteria in participant selection? And is the selection of participants theoretically justified? **(E)**	☐	☐
	Is there a clear description of the context and participants of the study? **(D)**	☐	☐
Analysis of Study Findings	Are the analytical methods explicit, systematic and reproducible? **(E)**	☐	☐
	What has been done to protect against selective use of the data? **(D)**	☐	☐
	Is both supportive and contrary evidence discussed? **(D)**	☐	☐
Conclusions	Are there evident sources of bias in the results reported? If so, have they been discussed? **(E)**	☐	☐
	Do the findings answer the original research questions? **(E)**	☐	☐
	Is sufficient indication provided to demonstrate that the findings and conclusions are grounded in the data? **(E)**	☐	☐
	Are the limitations of the study considered? **(D)**	☐	☐
	Are the findings discussed in terms of their theoretical and/or practical significance? **(D)**	☐	☐

(E) = Essential criteria (D) = Desirable criteria

Other comments:

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Good quality studies meet all essential criteria; less robust studies meet at least half of essential criteria.