CRITICALLY EVALUATING RESEARCH ARTICLES

The Steps in Critically Evaluating a Research Article

Scan first! When first examining a research article, a good way to quickly determine if you should read the article or not is to read the introduction and the conclusion sections—if the text in those sections doesn’t match your topic, you can assume the article isn’t relevant and move on. If the text does match your topic, then you should take the time to read and critique the other sections. For guidance with the process of reading a book or article, see Edwards (2014).

In most cases, research articles and reports are divided into clearly labeled sections. These sections allow you to assess the article more quickly and easily, since each section can usually be examined to find answers to the questions below that help you evaluate the quality of the evidence presented in the article. Not all the questions below are appropriate for all studies—use them at your discretion.

As a general rule, if the methods section of an article fails any critical questions about how the study was conducted (which is a basic validity litmus test!), no further questions need be answered.

Questions by Article Section

INTRODUCTION

- What are the subject and purpose of the study? Are they clearly stated?
- How does this report differ from previous publications on the subject?
  - Do the authors discuss the differences?
  - If other studies have been performed on the subject, how does this study add to the previous studies?
- Are the assumptions and limitations of the study described? What are they?
- Do the authors present specific questions and clearly state their hypothesis?

LITERATURE REVIEW

- Is the related literature fully covered and described?
- Are the most important findings from other studies presented?
- Is the review well organized?

METHODS AND MATERIALS

STUDY POPULATION

- Is the test population clearly defined?
- How were participants recruited?
- Who was included/excluded? If these criteria do not represent the patient population that is seen in actual practice, the study results may not be applicable.
Keep in mind that if inclusion and exclusion criteria are too narrow, it may lead to results and conclusions that cannot be generalized or which skew practice.

- Is the population sample size appropriate for the study?
- What was the study environment—were subjects studied solely in a clinical setting or in “real” settings?
- Was the duration of the follow-up period appropriate?

**STUDY DESIGN**

- Was the study type appropriate to the question that was asked? Appropriate study types are:

  **Clinical Questions**
  - Systematic Review or Meta-Analysis (if available)

  **Therapy**
  - Double-blind, randomized controlled trials

  **Prognosis**
  - Longitudinal cohort studies

  **Causation**
  - Cohort studies or Case-control studies

  **Adverse events for drugs or devices**
  - Case reports

  **Cost**
  - Economic analysis

  **Diagnosis or Screening**
  - Cross-sectional survey

  **Patient satisfaction**
  - Surveys, interviews, and/or focus groups

  **Phenomenology**
  - In-depth Interviews

  **Ethnography**
  - Participant observation and in-depth interviews

  **Grounded Theory**
  - Observation and interviewing

- What outcome(s) was/were measured and were the methods of measurement appropriate?
- Are the study methods described clearly enough—within the methods section or referenced explicitly and accurately—for the experiment to be replicated by other researchers?
- Are the variables described clearly?
- Are the controls sufficient?

**MATERIALS**

- Are the materials used specified and if appropriate, the manufacturers noted?
  - * When looking at a question of therapy, if a specific, named drug or device is studied, take a moment to look at the funding for the study. Drug and medical device manufacturing companies or universities that developed an intervention sometimes fund studies that only present positive results—conflict of interest from the funders can introduce significant bias.

**OVERVIEW**

- Are all statements and descriptions concerning the design of the test(s) and control populations and materials and methods included in this section?

**RESULTS**

- Are results for all parts of the experiment provided?
- Was the assessment actually blind?
- Are the results clearly presented with supporting statistical analysis and/or charts and graphs?
- Are results presented with a discussion of why they occurred?
- If participants dropped out or were lost to follow-up, were these numbers included in the final analysis?
  - Is the final number of full participants adequate?


- If drop-outs and/or lost-to-follow-ups represent a significant number of the initial population, do the authors provide explanation or discussion of the reasons?
- Are all statistical analyses appropriate for the study question and were they accurately performed?

**DISCUSSION**

- Are all results discussed?
- Are the conclusions based on sufficient data?
- Are related previous studies integrated into the discussion section?

**Sources Used:**


Ploeg, J. (1999). Identifying the best research design to fit the question. Part 2: Qualitative designs. *Evidence-Based Nursing, 2*(2), 36–37. doi:10.1136/ebn.2.2.36