Peer review of a scientific manuscript

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What is Peer Review

Peer review is the critical assessment of manuscripts, grant proposal, or other work by an expert (peer).

Provides expert reliable and unbiased judgement of the importance and quality of work and suggests means to improve the paper

By definition, peer reviewers are peers of the authors.

Peer is the "one that is of equal standing with another."

What are the benefits to the Reviewer?

- To be selected as a reviewer is an honor as it signifies that one is an expert in the field
- The reviewer contributes to the body of knowledge and facilitates the dissemination of new knowledge
- Peer reviewing can help advance the reviewer's career when listed on CV's and many journals offer continuing medical education credits for completed reviews.

The Journal of the American Osteopathic Association 2013; 113:916-20

Practical guide to critically review a scientific manuscript

The art of reviewing manuscripts should follow systematic scientific methods to enhance the quality and reduce the time spent on this practice.

Falavigna A et al, J Neurosurg, Published online October 20, 2017; DOI: 10.3171/2017.5.JNS17809

Steps for a critical review

- Type of study and is it correct for the question
- Importance and originality of the research
- population (patients)
- Usefulness and strength of comparisons
- Statistical methods
- Internal and external validity
- Are ethical considerations addressed

Question of the study

Was the study question clear

Was the study question innovative or important

Was the review of literature up to date

Is the study adding anything new to the literature?

Is the paper clearly written and well organized

Population (Patients)

Are the criteria for inclusion and exclusion clearly stated?

Is the selected disorder well defined?

Were the affected similar in their demographics?

Ethical issues

Was ethics approval obtained?

Was informed consent obtained?

Are there any conflicts of interest?

Statistical methods and sample size calculation

Were the statistical methods well described?

Do the tables include the data accurately?

Did the authors perform a sample size calculation?

Internal validity

Was the study performed according to the original protocol?

Were the results valid?

Any bias?

Were the study limitations mentioned?

Are the conclusions justified?

External validity

Can the study be reproduced?

Are the weaknesses and strengths clear?

Could the results be applied in a practical situation

General considerations of peer review.

- ✓ If there is a potential conflict of interest, contact journal staff.
- ✓ Give time to read the manuscript carefully (at least 3 hours)
- ✓ Be fair and objective in evaluating a manuscript and in writing your comments.
- ✓ Do not recommend rejecting an important paper because its conclusions are not in accord with current scientific beliefs.
- ✓ Be specific in your comments to the authors.
- ✓ Consider each section of the manuscript carefully and provide detailed comments for each.
- ✓ Focus on the data and interpretation, leave the correction of language to the editors.
- ✓ It is a confidential communication. The information in the paper may not be used by you or shared with anyone except the editorial staff.

Peer review. In: The ACS Style Guide: Effective Communication of Scientific Information. 3rd ed. New York, NY: Oxford University Press; 2006:71-76.

Abstract

Does the abstract contain the objective, methods, results and conclusion

Does the information in the abstract match that in the body of the manuscript?

Will the abstract gain readers' attention?

Introduction

- What is known and unknown
- Hypothesis

Methods

- Research design
- Statistical methods

Results

- All outcome clearly shown
- Clear data presentation

Discussion

- Relevance
- Limitations methods

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Conclusion

Is the conclusion clear and justified?

Figures and Tables

Is the information in the tables and figures easy to interpret?

Does information in the tables and figures match the information in the text?

References

Up to date references?

Are they mostly original sources?

Critical appraisal of a scientific article

What to learn to exercise critical appraisal

- The principles of critical appraisal and its role in evidence-based practice
- How to use critical appraisal checklists and aids
- Critical Appraisal Skills enable you to assess the trustworthiness, relevance and results of published papers so that you can decide if they are believable and useful

Critical appraisal is the systematic evaluation of clinical research papers to judge its trustworthiness, and its value and relevance

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

To proceed with appraisal, the answer to these questions should be YES.

Why is CA important?

- Enable us to find the best evidence efficiently
- Enable us to assess systematically the reliability, relevance and results of published papers
- Identify papers that are relevant for practical applications
- Combat information overload
- Continuing professional development

Key points in critical appraisal

- Critical appraisal is a systematic process used to identify the strengths and weaknesses of a research article
- Critical appraisal provides a basis for decisions on whether to use the results of a study in clinical practice
- Different study designs are prone to various sources of systematic bias
- Design-specific, critical-appraisal checklists are useful tools to help assess study quality
- Assessments of other factors, including the importance of the research question, the appropriateness of statistical analysis, the legitimacy of conclusions and potential conflicts of interest are an important part of the critical appraisal process

Main questions to ask

- Are the results of the study valid?
- What are the results?
- Will the results help locally?

Start with two screening questions:

1. Is there a clear and focused research question?
2. Was an appropriate study design/method used to answer this question?

Then continue with the detailed assessment of the methods, results, discussion and conclusion of the paper

CASP tools

- The Critical Appraisal Skills Programme (CASP) aims to help people develop the necessary skills to make sense of scientific evidence, and has produced appraisal checklists covering validity, results and relevance specific for different study design

www.casp-uk.net

http://www.casp-uk.net/casp-tools-checklists

Other tools: www.cebm.net/critical-appraisal/

CASP CHECKLISTS

This set of eight critical appraisal tools are designed to be used when reading research, these include tools for Systematic Reviews, Randomised Controlled Trials, Cohort Studies, Case Control Studies, Economic Evaluations, Diagnostic Studies, Qualitative studies and Clinical Prediction Rule.

These are free to download and can be used by anyone under the Creative Commons License.

CASP Checklists (click to download)

CASP Systematic Review Checklist	CASP Qualitative Checklist
CASP Randomised Controlled Trial Checklist	CASP Case Control Checklist
CASP Diagnostic Checklist	CASP Cohort Study Checklist
CASP Economic Evaluation Checklist	CASP Clinical Prediction Rule Checklist

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11 questions to help you make sense of a trial

How to use this appraisal tool

Three broad issues need to be considered when appraising a randomised controlled trial study:

Are the results of the study valid?	(Section A)
What are the results?	(Section B)
Will the results help locally?	(Section C)

The 11 questions on the following pages are designed to help you think about these issues systematically. The first two questions are screening questions and can be answered quickly. If the answer to both is "yes", it is worth proceeding with the remaining questions.

There is some degree of overlap between the questions, you are asked to record a "yes", "no" or "can't tell" to most of the questions. A number of italicised prompts are given after each question. These are designed to remind you why the question is important. Record your reasons for your answers in the spaces provided.

Screening Questions

1. Did the trial address a clearly focused issue? ☐ Yes ☐ Can't tell ☐ No

HINT: An issue can be 'focused' In terms of

- The population studied
- The intervention given
- The comparator given
- The outcomes considered

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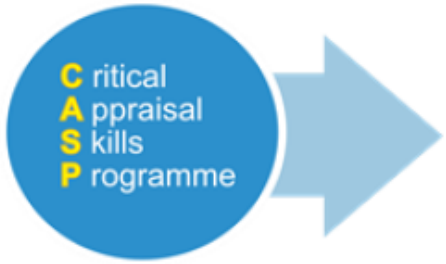
2. Was the assignment of patients to treatments randomised? ☐ Yes ☐ Can't tell ☐ No

HINT: Consider



12 questions to help you make sense of cohort study

How to use this appraisal tool

Three broad issues need to be considered when appraising a cohort study:

Are the results of the study valid?	(Section A)
What are the results?	(Section B)
Will the results help locally?	(Section C)

(A) Are the results of the study valid?

Screening Questions

1. Did the study address a clearly focused issue? ☐ Yes ☐ Can't tell ☐ No

HINT: A question can be 'focused' In terms of

- The population studied
- The risk factors studied
- The outcomes considered
- Is it clear whether the study tried to detect a beneficial or harmful effect?

http://www.casp-uk.net/

CASP appraisal - Norton Safe S...

CASP Critical Appraisal Skill...

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Critical Appraisal Skills Programme (CASP)

Making sense of evidence

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CASP offers critical appraisal skills training, workshops and tools. These help you read and check health research for trustworthiness, results & relevance.

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Email Address

- https://www.medscape.com/viewarticle/706399_2

How to Critically Appraise an Article

Jane M Young; Michael J Solomon

Nat Clin Pract Gastroenterol Hepatol. 2009;6(2):82-91.

http://www.cebm.net/critical-appraisal/

Critical Appraisal Worksheets

- Systematic Reviews Critical Appraisal Sheet
- Diagnostics Critical Appraisal Sheet
- Prognosis Critical Appraisal Sheet
- Randomised Controlled Trials (RCT) Critical Appraisal Sheet

Appraise the evidence

- May be useful to use a grading system for methodological quality (e.g. CONSORT, STROBE, PRISMA)

www.consort-statement.org

www.strobe-statement.org

www.prisma-statement.org

references

- Cohen, D. J., & Crabtree, B. F. (2008). Evaluative criteria for qualitative research in health care: Controversies and recommendations. *Annals of Family Medicine, 6*(4), 331-339.
- Greenhalgh, T., & Taylor, R. (1997). How to read a paper: Papers that go beyond numbers (qualitative research). *British Medical Journal, 315*, 740-743. Retrieved November 28, 2008, from http://bmj.bmjjournals.com/cgi/content/full/315/7110/740


THANK
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