

CRITICAL APPRAISAL RESOURCES

Journal article series

JAMA Users' Guides to the Medical Literature

http://faculty.etsu.edu/harvill/critical_literature_appraisal.htm

BMJ Series by Trisha Greenhalgh titled "How to Read a Paper"

<http://www.uab.edu/lister/bmjbib.htm>

Web sites

Users' Guides to Evidence-Based Practice

<http://www.cche.net/usersguides/main.asp>

A Student's Guide to the Medical Literature

<http://Denison.uchsc.edu/SG/main.html>

Critical Appraisal Resources for Assessing Health and Medical Research

<http://library.kent.ac.uk/library/info/subjectg/healthinfo/critapprais.shtm>

Bandolier

<http://www.jr2.ox.ac.uk/bandolier/extra.html>

What is critical appraisal?

What is Evidence-Based Medicine?

What is systematic review?

What is meta-analysis?

What is an NNT (Number-needed-to-treat)?

What are confidence intervals?

How to Read a Medical Journal Article by Steve Simon

<http://www.cmh.edu/stats/journal/jourtxt.htm>

Books

Guyatt, G. and Rennie, D. Users' Guides to the Medical Literature: Essentials of Evidence-Based Clinical Practice (Pocket-sized paperback), JAMA, 2001 (includes CD-ROM and laminated cards). To obtain online access to additional resources if you own the book:

<http://pubs.ama-assn.org/misc/usersguides.dtl>

Sackett, D L, Haynes, R B, Tugwell, P. Clinical Epidemiology: A Basic Science for Clinical Medicine, Little, Brown and Company, Boston/Toronto, 1st edition, 1985.

Fletcher, R H, Fletcher, S W, Wagner, E H. Clinical Epidemiology: The Essentials, Williams and Wilkins, 3rd edition, 1996.

Dawson, B, and Trapp, R G. Basic and Clinical Biostatistics (Paperback), Lange Medical Books/McGraw Hill Medical Publishing Division, 4rd edition, 2004, chapter 13, pp. 332-361 (includes NCSS 2004 and PASS 2002 statistical and sample size determination software).

Gehlbach, S H. Interpreting the Medical Literature (Paperback), McGraw-Hill Medical Publishing Division, New York, 4th edition, 2002.

Greenhalgh, T. How to Read a Paper (Paperback), BMJ Publishing Group, 2nd edition, 2001.

HOW TO READ A MEDICAL JOURNAL ARTICLE BY STEVE SIMON

I want to briefly introduce you to a guide that I found. It can be used for reviewing various types of articles, not just clinical trials. It was written by Steve Simon and is titled How to Read a Medical Journal Article.

Simon indicates that when you are reading a journal article, you need to ask yourself five simple questions:

- 1) Who did the choosing?
- 2) Was there a plan?
- 3) Who knew what when?
- 4) Who was left out?
- 5) How much did things change?

Under each of the five major questions, there are sub-questions that need to be answered.

1. Who did the choosing?
 - 1.1 Was there a good comparison group?
 - 1.2 Did the authors create the groups?
 - 1.3 Was the assignment randomized?
2. Was there a plan?
 - 2.1 Were there enough subjects?
 - 2.2 Did the research have a narrow focus?
 - 2.3 Did the authors deviate from the plan?
 - 2.4 Did the authors discard outliers?
3. Who knew what when?
 - 3.1 During the study, did the patients know which group they were in?
 - 3.2 At the start of the study, did the patients know which group they were going to be placed in?
 - 3.3 Did the authors rely on retrospective data?
4. Who was left out?
 - 4.1 Who was excluded at the start of the study?
 - 4.2 Who dropped out during the study?
 - 4.3 Were volunteers used?
5. How much did things change?
 - 5.1 Was there a quantitative measure of the size of the effect?
 - 5.2 Could other factors account for this effect?
 - 5.3 Were any important outcomes forgotten?

GUYATT ET AL., USERS' GUIDES FOR AN ARTICLE ABOUT THERAPY

Are the results of the study valid?

Primary Guides:

Was the assignment of patients to treatment randomized?

Were all patients who entered the trial properly accounted for and attributed at its conclusion?

Was follow-up complete?

Were patients analyzed in the groups to which they were randomized?

Secondary Guides:

Were patients, their clinicians, and study personnel "blind" to treatment?

Were the groups similar at the start of the trial?

Aside from the experimental intervention, were the groups treated equally?

What were the results?

How large was the treatment effect?

How precise was the estimate of treatment effect?

Will the results help me in caring for my patients?

Can the results be applied to my patient care?

Were all clinically important outcomes considered?

Are the likely treatment benefits worth the potential harm and costs?

- 1) I. How to get started. 1993, November 3; 270(17):2093-5 and 2096-7.
- 2) II.A. How to use an article about therapy or prevention. Are the results of the study valid? 1993, December 1; 270(17):2598-2601.
- 3) II.B. How to use an article about therapy or prevention. What were the results and will they help me in caring for my patients? 1994, January 5; 271(1):59-63.
- 4) III.A. How to use an article about a diagnostic test. Are the results of the study valid? 1994, February 2; 271(5):389-91.
- 5) III.B. How to use an article about a diagnostic test. What are the results and will they help me in caring for my patients? 1994, March 2; 271(9):703-7.
- 6) IV. How to use an article about harm. 1994, May 25; 271(20):1615-9.
- 7) V. How to use an article about prognosis. 1994, July 20; 272(3):234-7.
- 8) VI. How to use an overview. 1994, November 2; 272(17):1367-71.
- 9) VII.A. How to use a clinical decision analysis. Are the results of the study valid? 1995, April 26; 273(16):1292-5.
- 10) VII.B. How to use a clinical decision analysis. What are the results and will they help me in caring for my patients? 1995, May 24-31; 273(20):1610-3.
- 11) VIII.A. How to use clinical practice guidelines. Are the recommendations valid? 1995, August 16; 274(7):570-4.
- 12) VIII.B. How to use clinical practice guidelines. What are the recommendations and will they help you in caring for your patients? 1995, November 22-29; 274(20):1630-2.
- 13) IX. A method for grading health care recommendations. 1995, December 13; 274(22):1800-4.
- 14) X. How to use an article reporting variations in the outcomes of health services. 1996, February 21; 275(7):554-8.
- 15) XI. How to use an article about a clinical utilization review. 1996, May 8; 275(18):1435-9.
- 16) XII. How to use articles about health-related quality of life. 1997, April 16; 277(15):1232-7.
- 17) XIII.A. How to use an article on economic analysis of clinical practice. Are the results of the study valid? 1997, May 21; 277(19):1552-7.
- 18) XIII.B. How to use an article on economic analysis of clinical practice. What are the results and will they help me in caring for my patients? 1997, June 11; 277(22):1802-6.
- 19) XIV. How to decide on the applicability of clinical trial results to your patient. 1998, February 18; 279(7):545-9.
- 20) XV. How to use an article about disease probability for differential diagnosis. 1999, April 7; 281(13):1214-9.
- 21) XVI. How to use a treatment recommendation. 1999, May 19; 281(19):1836-43.
- 22) XVII. How to use guidelines and recommendations about screening. 1999, June 2; 281(21):2029-34.
- 23) XVIII. How to use an article evaluating the clinical impact of a computer-based clinical decision support system. 1999, July 7; 282(1):67-74.

- 24) XIX. Applying clinical trial results. A. How to use an article measuring the effect of an intervention on surrogate end points. 1999, August 25; 282(8):771-8.
- 25) XIX. Applying clinical trial results. B. Guidelines for determining whether a drug is exerting (more than) a class effect. 1999, October 13; 282(14):1371-7.
- 25) XX. Integrating research evidence with the care of the individual patient. 2000, June 7; 283(21):2829-36.
- 25) XXI. Using electronic health information resources in evidence-based practice. 2000, April 12; 283(14):1875-9.
- 25) XXII. How to use articles about clinical decision rules. 2000, July 5; 284:79-84.
- 25) XXIII. Qualitative research in health care. A. Are the results of the study valid? 2000, July 19; 284(3):357-62.
- 25) XXIII. Qualitative research in health care. B. What are the results and how do they help me care for my patients? 2000, July 26; 284(4):478-82.
- 25) XXIV. How to use an article on the clinical manifestations of disease. 2000, August 16; 284(7):869-75.
- 25) XXV. Evidence-based medicine: principles for applying the Users' Guides to patient care. 2000, September 13; 284(10):1290-6.

OUTLINE FOR THE CRITICAL APPRAISAL OF A MEDICAL REPORT*

- I. Objectives or Hypotheses and Study Population
 - A. What are the objectives of the study or the questions to be answered, or the hypotheses to be tested?
 - B. What is the population to which the investigators intend to refer their findings? What is the population to which you would make inferences concerning the findings?
- II. Design of the investigation
 - A. Was the study a controlled clinical trial (experiment), follow-up (prospective), case-control (retrospective), cross-sectional study or some other study design?
 - B. How were the study subjects selected? Are there possible sources of bias that would make the total sample atypical or nonrepresentative of the population? If so, what provision was made to deal with this bias? How were subjects assigned to study groups? Was this method of assignment appropriate?
 - C. What is the nature of the control group(s) or standard of comparison? Are the study groups comparable?
 - D. Was the study designed and carried out in an ethical manner?
- III. Observations
 - A. Are there clear definitions of the terms used, including diagnostic criteria, measurements made, and criteria of outcome?
 - B. Was the method of classification or of measurement consistent for all the subjects and relevant to the objectives of the investigation? Are there possible biases in measurement and, if so, what provisions were made to deal with them?
 - C. Are the observations reliable and reproducible?
- IV. Presentation of Findings
 - A. Are the findings presented clearly, objectively, and in sufficient detail to enable the reader to judge them for himself/herself?
 - B. Are the findings internally consistent, i.e., do the numbers add up properly, can the different tables be reconciled, etc.?
- V. Analysis
 - A. Are the data worthy of and appropriate for statistical analysis? If so, are the methods of statistical analysis appropriate to the source and nature of the data? Is the analysis correctly performed and interpreted?
 - B. Is there sufficient analysis to determine whether “significant differences” may in fact be due to lack of comparability of the groups in sex and age distribution, in clinical characteristics, or in other variables?
 - C. Is there sufficient information and analysis to determine whether “non-significant differences” may be due to factors such as small sample sizes and not to “unimportant clinical differences”?
- VI. Conclusions
 - A. Which conclusions are justified by the findings? Which are not?
 - B. Are the conclusions relevant to the questions or hypotheses posed by the investigators?
- VII. Constructive suggestions

Assume you are planning an investigation to answer the questions asked in the study.

 - A. If the questions have not been clearly stated by the authors, frame them in an appropriate manner.
 - B. Suggest a practical design, criteria for observations, and type of analysis that would provide reliable and valid information relevant to the questions under study.

THE UNSUCCESSFUL SELF-TREATMENT OF
A CASE OF "WRITER'S BLOCK"¹

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REFERENCES

¹Portions of this paper were not presented at the 81st Annual American Psychological Association Convention, Montreal, Canada, August 30, 1973. Reprints may be obtained from Dennis Upper, Behavior Therapy Unit, Veterans Administration Hospital, Brockton, Massachusetts 02401.

*Received 25 October 1973.
(Published without revision.)*

COMMENTS BY REVIEWER A

I have studied this manuscript very carefully with Dr. Upper's failure. In comparison with the lemon juice and X-rays and have not detected a single flaw in either design or writing style. I suggest it be published without revision. Clearly it is the most concise manuscript I have ever seen - yet it contains sufficient detail to allow other investigators to replicate

other manuscripts I get from you containing all that complicated detail, this one was a pleasure to examine. Surely we can find a place for this paper in the Journal - perhaps on the edge of a blank page.