



Tips for Tutors for facilitating Critical Appraisal

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Types of Acceptable Resources

Does the article report a study or is it:

- ❑ A description of an intervention program?
- ❑ A program evaluation?
- ❑ Expert opinion?
- ❑ A government document?
- ❑ Institutional policies & procedures?
- ❑ Newsletter (professional, consumer)?
- ❑ Web based information?

Web Evaluation Sites

- <http://www.lib.berkeley.edu/TeachingLib/Guides/Internet/Evaluate.html>
- <http://lib.nmsu.edu/instruction/evalcrit.html>
- http://www3.widener.edu/Academics/Libraries/Wolfgram_Memorial_Library/Evaluate_Web_Pages/659/
- http://www2.library.ucla.edu/libraries/college/1605_12337.cfm

Tools for Evidence Based Practice & Critical Appraisal

- * User's Guides to the Medical Literature (JAMA)
- * Levels and Applications of Qualitative Research Evidence (Kearney, 2001, Research in Nursing & Health, 24, 145-153))
- * Quantitative and Qualitative Review Guidelines (SRS website. Law, 2002)
- * Measurement Tool Review Guidelines (CanChild website. Law, 2002)
- * Evidence Based Practice and Critical Appraisal Websites like : OT Seeker, PEDRO, Clinical Practice Guidelines, OT CATS, Cochrane....

Tools continued

- * www.cebm.net/
 - * www.med.ualberta.ca/ebm/
 - * <http://www.otcats.com/>
 - * <http://www.cochrane.org/>
 - * <http://www.cche.net/usersguides/guideline.asp>
- * <http://www.guideline.gov/>
 - * <http://www.ahcpr.gov/>

Quantitative Critical Appraisal

- Systematic Review (term 4)
- Therapy /Effectiveness (term 1)
- Measurement tools (term 2)
- Causation/Harm *
- Prognosis *
- Diagnosis *
- Clinical Practice Guidelines *
- Economic Analysis *

*term 5

SYSTEMATIC VS NARRATIVE REVIEW

SYSTEMATIC

- well focussed research question
- well focussed searching strategy with comprehensive and explicit methods
- rigorous methods of appraisal and synthesis of the literature
- method of undertaking review is explicit and repeatable

NARRATIVE

- no focussed research question
- no focussed searching strategy
- no clear method of appraisal or synthesis of literature
- not easily repeatable.

The danger of a narrative review: it can lead to misleading conclusions because a comprehensive search for and critique of literature is not undertaken.

What about SCOPING STUDIES ?

Another type of literature review, a technique to 'map' relevant literature in the field of interest.

Scoping Studies: Towards a Methodological Framework
Hilary Arksey & Lisa O'Malley (2005)

Int. J. Social Research Methodology
Vol. 8, No. 1, 19-32.

Main differences between a systematic review and a scoping study?

Systematic Review

- * focuses on a well-defined question where appropriate study designs can be identified in advance.
- * aims to provide answers to questions from a relatively narrow range of quality assessed studies.

Scoping Study

- * tends to address broader topics where many different study designs might be applicable
- * doesn't usually address very specific research questions
- * doesn't usually assess the quality of included studies.

Levels of evidence

1. Systematic reviews of RCTs; high quality RCTs
2. Systematic reviews of cohort studies; cohort studies.
3. Systematic reviews of case controls; case control studies
4. Case series, before after studies.
5. Expert opinion

See <http://www.cebm.net/index.aspx?o=1025> for full descriptions

LEVELS OF EVIDENCE – QUANTITATIVE www.cebm.net/

Level	Therapy/Prevention, Aetiology/Harm	Prognosis	Diagnosis	Differential diagnosis/symptom prevalence study	Economic and decision analyses
1a	SR (with homogeneity*) of RCTs	SR (with homogeneity*) of inception cohort studies; CDR† validated in different populations	SR (with homogeneity*) of Level 1 diagnostic studies; CDR† with 1b studies from different clinical centres	SR (with homogeneity*) of prospective cohort studies	SR (with homogeneity*) of Level 1 economic studies
1b	Individual RCT (with narrow Confidence Interval‡)	Individual inception cohort study with ≥ 80% follow-up; CDR† validated in a single population	Validating** cohort study with good††† reference standards; or CDR† tested within one clinical centre	Prospective cohort study with good follow-up****	Analysis based on clinically sensible costs or alternatives; systematic review(s) of the evidence; and including multi-way sensitivity analyses
1c	All or none§	All or none case-series	Absolute SpPins and SnNouts††	All or none case-series	Absolute better-value or worse-value analyses †††
2a	SR (with homogeneity*) of cohort studies	SR (with homogeneity*) of either retrospective cohort studies or untreated control groups in RCTs	SR (with homogeneity*) of Level >2 diagnostic studies	SR (with homogeneity*) of 2b and better studies	SR (with homogeneity*) of Level >2 economic studies
2b	Individual cohort study (including low quality RCT; e.g., <80% follow-up)	Retrospective cohort study or follow-up of untreated control patients in an RCT; Derivation of CDR† or validated on split-sample§§§ only	Exploratory** cohort study with good††† reference standards; CDR† after derivation, or validated only on split-sample§§§ or databases	Retrospective cohort study, or poor follow-up	Analysis based on clinically sensible costs or alternatives; limited review(s) of the evidence, or single studies; and including multi-way sensitivity analyses
2c	"Outcomes" Research; Ecological studies	"Outcomes" Research		Ecological studies	Audit or outcomes research
3a	SR (with homogeneity*) of case-control studies		SR (with homogeneity*) of 3b and better studies	SR (with homogeneity*) of 3b and better studies	SR (with homogeneity*) of 3b and better studies
3b	Individual Case-Control Study		Non-consecutive study; or without consistently applied reference standards	Non-consecutive cohort study, or very limited population	Analysis based on limited alternatives or costs, poor quality estimates of data, but including sensitivity analyses incorporating clinically sensible variations.
4	Case-series (and poor quality cohort and case-control studies§§)	Case-series (and poor quality prognostic cohort studies***)	Case-control study, poor or non-independent reference standard	Case-series or superseded reference standards	Analysis with no sensitivity analysis
5	Expert opinion without explicit critical appraisal, or based on physiology, bench research or "first principles"	Expert opinion without explicit critical appraisal, or based on physiology, bench research or "first principles"	Expert opinion without explicit critical appraisal, or based on physiology, bench research or "first principles"	Expert opinion without explicit critical appraisal, or based on physiology, bench research or "first principles"	Expert opinion without explicit critical appraisal, or based on economic theory or "first principles"

Critical Appraisal Pathway

Haynes et al 1993

Look at the title:
interesting or useful

YES

Review the authors : good
track record

YES

Read the summary: would
these results be useful?

YES

Consider the site; if valid
would results apply in your
practice

YES

NO

NO

NO

NO

**Go on
to next
article**

What is your intent?

Diagnostic test question

Prognosis question

Etiology or causation question

Useful or harmful therapy

Independent blind comparison with a gold standard?

YES

NO

Inception cohort assembled?

YES

NO

Were the methods for causation strong?

YES

NO

Was the assignment of patients randomized?

YES

NO

READ SUBJECTS AND METHODS SECTIONS

The “best” evidence depends on the type of question

1. *What are the phenomena/problems?*
 - *Observation (e.g., qualitative research)*
2. *What is frequency of the problem? (FREQUENCY)*
 - *Random (or consecutive) sample*
3. *Does this person have the problem? (DIAGNOSIS)*
 - *Random (or consecutive) sample with Gold Standard*
4. *Who will get the problem? (PROGNOSIS)*
 - *Follow-up of inception cohort*
5. *How can we alleviate the problem? (INTERVENTION/THERAPY)*
 - *Randomised controlled trial*

Are the Results of the Study Valid?

Quantitative

- ❑ A. Can the design answer the research question ⇒
Answer = **yes** then **continue**.
- ❑ B. Methods: Are the sample selection, the assignment of groups, study procedures including outcomes measures control for bias and confounders well managed? Answer = **yes** then **increased study validity**
- ❑ C. What are the results? Are the statistical tests able to address the research hypotheses and question?
Appropriate statistical calculation and interpretation of clinical and statistical significance
- ❑ D. Will the results help you in caring for your patient/client?

Validated Quality Scale

1. Was the study described as randomized?
2. Was the study described as double blind?
3. Was there a description of withdrawals and drop outs?

Give a scores of 1 point for each 'yes' or 0 points for each 'no'

Give 1 additional point each

If randomization/blinding appropriate

Deduct 1 point each

If randomization/blinding inappropriate

Scoring range: 0-5

Poor quality < 3

Guidelines for Selecting Qualitative Articles Most Likely to Provide Valid Results

For qualitative study, you need to ask 3 questions to determine if article worth reviewing :

- ✓ Is the research question/purpose clearly identified?
- ✓ Is a qualitative methodology & approach appropriate & identified?
- ✓ Is the setting in which the research took place clearly described?

Levels of evidence

Qualitative

(Kearney, 2001)

1. Explanatory description
2. Depiction of experiential variation
3. Shared pathway or meaning
4. Descriptive categories
5. Findings restricted by a priori frameworks

Kearney MH (2001). *Research in Nursing & Health*, 24:145-153

Levels of evidence

Qualitative

(Kearney, 2001)

Levels based on richness of description and discovery not design

Which criteria are most important in deciding on quality of information?

Qualitative information (trustworthiness)

After first 3 questions (purpose, methodology, setting), what about:

- Sampling procedures
- Data collection & analysis
- Rigour (credibility, confirmability, dependability, transferability)

Which criteria are most important in deciding on quality of information?

Qualitative information

What are the results?

- Key findings?
- Sufficient detail to assess interpretation?
- Are interpretations logical?

Qualitative and Quantitative

Same final Question

How will these results help with client care?

Can the results be applied to your client group or clinical dilemma?

THE END



THANK YOU