A critical appraisal tool for qualitative and quantitative research

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A critical appraisal tool

- When are CATs used?
  - Evidence based practice
  - Systematic and literature reviews
  - Assess validity and reliability of research

- What is the problem with current CATs?
  - Narrow focus
  - Lack design rigour
  - Little/no validity or reliability testing

- Why is this CAT different?
  - Based on theory and evidence

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A critical appraisal tool

- Types of research
- 8 categories
- 22 items
  53–97 descriptors
- Mark descriptors
  ☑ Present
  ☒ Absent
  ■ Not applicable
- Score 0–5
- User guide

- Valid
- Reliable (ICC2)
  Consistency 0.83
  Range 0.64–0.91
  Absolute 0.74
  Range 0.57–0.73
- 3 raters
- Future research
  Ongoing
  Volunteers

Category	Description of item	Score
1. Preliminary		
Title	1. Includes study aims ☐ and design ☐	Prelim score
Abstract	1. Contains key information ☐ 2. Balanced ☐ and informative ☐	
Text	1. Sufficient detail others could reproduce ☐ 2. Clear/concise writing ☐, table(s) ☐, diagram(s) ☐, figure(s) ☐	
2. Introduction		
Background	1. Summary of current knowledge ☐ 2. Specific problem(s) addressed ☐ and reason(s) for addressing ☐	Intro score
Objective	1. Primary objective(s), hypothesis(es), or aim(s) ☐ 2. Secondary question(s) ☐	
3. Design		
Research design	1. Research design(s) chosen ☐ and why ☐ 2. Suitability of research design(s) ☐	Design score
Intervention, treatment, exposure	1. Intervention(s)/treatment(s)/exposure(s) chosen ☐ and why ☐ 2. Precise detail of interventions/treatments/exposures ☐ for each group ☐ 3. Intervention(s)/treatment(s)/exposure(s) valid ☐ and reliable ☐	
Outcome, predictor, measure	1. Outcome(s)/output(s)/predictor(s)/measure(s) chosen ☐ and why ☐ 2. Clearly define outcome(s)/output(s)/predictor(s)/measure(s) ☐ 3. Outcome(s)/output(s)/predictor(s)/measure(s) valid ☐ and reliable ☐	
Bias, etc	1. Potential bias ☐, confounding variable ☐, effect modifier ☐, interactions ☐ 2. Sequence generation ☐, group allocation ☐, balance ☐, and by whom ☐ 3. Equivalent treatment of participants/cases/groups ☐	
4. Sampling		
Sampling method	1. Sampling method(s) chosen ☐ and why ☐ 2. Suitability of sampling method ☐	Sample score
Sample size	1. Sample size ☐, how chosen ☐, and why ☐ 2. Suitability of sample size ☐	
Sampling protocol	1. Target/actual/sample population(s): description ☐ and suitability ☐ 2. Participants/cases/groups: inclusion ☐ and exclusion ☐ criteria 3. Recruitment of participants/cases/groups ☐	
5. Data collect		
Collection method	1. Collection method(s) chosen ☐ and why ☐ 2. Suitability of collection method(s) ☐	Data collect score
Collection protocol	1. Dates ☐, locations ☐, settings ☐, personnel ☐, materials ☐, processes ☐ 2. Method(s) to ensure/enhance quality of measurement/instrumentation ☐ 3. Manage non-participation ☐, withdrawal ☐, incomplete/lost data ☐	
6. Ethics		
Participant ethics	1. Informed consent ☐, equity ☐ 2. Privacy ☐, confidentiality/anonymity ☐	Ethics score
Researcher ethics	1. Ethical approval ☐, funding ☐, conflicts of interest ☐ 2. Subjectivities ☐, relationship(s) with participants/cases ☐	
7. Results		
Analysis, interpret. method	1. Methods for primary outcomes/predictors chosen ☐ and why ☐ 2. Additional methods (e.g. subgroup analysis) chosen ☐ and why ☐ 3. Suitability of analysis/integration/interpretation method(s) ☐	Results score
Essential analysis	1. Flow of participants/cases/groups through each stage of research ☐ 2. Demographic and other characteristics of participants/cases/groups ☐ 3. Raw data ☐, response rate ☐, non-participate/withdraw/incomplete/lost ☐	
Outcome, predictor analysis	1. Summary results ☐ & precision ☐ for each outcome//predictor/measure 2. Consider benefit/harm ☐, unexpected result ☐, problem/failure ☐ 3. Describe outlying data (e.g. diverse case, adverse effect, minor theme) ☐	
8. Discussion		
Interpret	1. Interpret of results in the context of current evidence ☐ and objectives ☐ 2. Draw inferences consistent with the strength of the data ☐ 3. Consideration of alternative explanations for observed results ☐ 4. Account for bias ☐, confounding/effect modifier/interaction/imprecision ☐	Discuss score
Generalise	1. Consideration of overall practical usefulness of the study ☐ 2. Description of generalisability (external validity) of the study ☐	
Concluding remarks	1. Highlight study's particular strengths ☐ 2. Suggest steps that may improve future results (e.g. limitations) ☐ 3. Suggest further studies ☐	

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