NUR635: Nursing Research

Systematic reviews critical appraisal guide

Critical appraisal of systematic reviews also requires a slightly different approach to other critical appraisal tasks, again using the same evidence-based principals. More emphasis is placed on the methodology of the review, rather than the individual studies. If a meta-analysis is included, it is important to ensure that the studies have been appropriately combined.

Grading Rubric for Systematic review Article Critique

1. Validity	Where do I look?
Did the review explicitly address a focused clinical question? [1%] The main question being addressed should be clearly stated. The exposure, such as a therapy or diagnostic test, and the outcome(s) of interest will often be expressed in terms of a simple relationship but not necessarily a PICO question.	Introduction (title, abstract or final paragraph)
Was the search for relevant studies detailed and exhaustive? [1%] Ideally includes a comprehensive search for all relevant studies in the major bibliographic databases (e.g. Medline, Cochrane, EMBASE, etc) and a search of reference lists from relevant studies, contact with experts, and conference abstracts. The search strategy should be included so that the search can be repeated. The search should not be limited to English language only. The search strategy should include both MeSH terms and text words and should be reproducible. The results section will outline the number of titles and abstracts retrieved and reviewed and the number of full-text studies retrieved.	Methods Results
Was the selection of primary studies reproducible and free from bias? [1%] Ideally the authors should define transparent inclusion and exclusion criteria for the review. The selection of studies should be reproducible. The methods section should describe the inclusion and exclusion criteria for the review.	• Results • Figures • Inclusion and exclusion criteria

The results section will outline the number of studies included/excluded together with the reasons for exclusion. This information may be presented in a figure or flow chart.	
Was the quality of included studies assessed, and were they of a high standard? [1%] The article should describe how the quality of each study was assessed using predetermined quality criteria appropriate to the type of clinical question (e.g. randomization, blinding and completeness of follow-up). Results should be reproducible. The methods section should describe the assessment of quality and the criteria used (assessment of quality blinded to authors/title/journal is ideal). The results section should provide information on the quality of the individual studies which may be tabulated.	• Methods • Results Tables •

Were all the important outcomes considered? [1%] Study outcomes should have been defined appropriately and should consider all clinically relevant outcomes.	• Methods
Are the individual studies adequately described? [1%] Important characteristics of individual studies should be described succinctly. The Results section should include a table or summary of important characteristics of included studies. This may be an Appendix in Cochrane Reviews, or available as supplementary data online for other papers.	• Results • Tables • Appendix

Were the results of primary studies combined appropriately? [1%] Any meta-analysis should combine the same outcome measures from individual studies. The results section should show which outcomes were combined.	• Methods • Statistics • Results
How are the results presented and is this appropriate to the data? [1%] A systematic review can include a meta-analysis if the data are appropriate to combine in this way. A meta-analysis combines the results of individual studies and produces a summary estimate of the intervention effect. This weights individual studies according to their size. Results are expressed in a standard way, such as relative risk, odds ratio, or mean difference between groups. Results are often displayed as a Forest plot, where individual studies are represented with a black square and horizontal line corresponding to the point effect of the study (where the square sits), the size of the study (size of the square), and the 95% confidence interval (black line). A diamond at the bottom represents the pooled effect of all trials and the combined 95% CI. If the diamond does not overlap '1', we know that the pooled effect is statistically significant. Corresponding figures may include Odds Ratio or Hazard Ratio with 95% confidence intervals, weight (% of total) of the studies, and the number of events/patient number for individual studies. If the results are not suitable for meta-analysis, it is also valid to present them in a tabular form without statistical synthesis.	• Methods • Statistics • Figures Results •

Were the results similar from study to study? [1%] Ideally, the results of the different studies should be similar or homogeneous. If heterogeneity exists the authors may estimate whether the differences are significant (chi-square test). The results section should state whether the results are heterogeneous and discuss possible reasons for heterogeneity. The forest plot should show the results of the chi-square test for heterogeneity.	• Methods • Results • Figures
Has a sensitivity analysis been performed? [1%] A sensitivity analysis asks whether the results would change if the study inclusion criteria were changed. For example, what happens if we narrow the meta-analysis to include only adults? Or only high quality studies? It may or may not be appropriate to perform sensitivity analyses.	• Methods • Results

2. Clinical Importance

	Where do I look?
Are the outcomes clinically relevant? [1%] Check that the study outcome measures relate to the clinically important outcomes.	• Methods
How large was the treatment effect in meta-analysis? [1%] Have the results been presented in a way that you can understand them?	• Results • Figures
How precise was the estimate of treatment effect? [1%] A 95% confidence interval and p value give an estimate of the precision of the results.	Results Figures
Are the benefits worth the costs and potential toxicities? [1%] Have the authors also addressed toxicities and economic considerations in the review? Look for meta-analysis of toxicities, which may include only a	• Results

subset of studies where this information was available from the original publication.	
Is a Relative Risk, Absolute Risk Reduction or Number Needed to Treat (harm) given? [1%] If not, you can calculate them. More information about Relative Risk, Absolute Risk Reduction, and Number Need to Treat (harm).	Results Tables

3. **Applicability**	Where do I look?
Are the results discussed in relation to existing knowledge, and is the discussion biased? [1%] The discussion should place results into a clinical context and the authors conclusions should be justified by the study results.	• Discussion
How would I clearly express the results to a colleague or my patient? [1%] Try to extract data and describe the study findings to a patient or colleague in plain English. Use EBP calculations to help you do this. Put a NNT, ARR, NNH into a sentence for your patient. More information about Relative Risk, Absolute Risk Reduction, and Number Need to Treat (harm).	• Abstract • Results
Does this paper answer your clinical question or have you changed your question to suit the literature? [1%] Ask whether the paper helps you answer your clinical question. Ask yourself if your altered question is more or less relevant to your patient. Try another search or another paper if the meta-analysis answers questions that are not meaningful for your patient.	

How similar were the patients in the included trials to your patient or population? [1%] Check whether your patient would have been eligible for the clinical trials. Identify any important characteristics your patient has which have not been considered in the systematic review. Look for a sub-set analysis that has been done for a group more like your patient.	• Methods • Tables • Figures
Is treatment feasible and available in your clinical setting? [1%] Do you and your colleagues have the right skills to deliver this intervention? Consider whether the intervention or test is funded by insurers, Medicare, or the PBS.	• Consider your practice setting