

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.

Validity

Where do I look?

<p>Did the review explicitly address a focused clinical question?</p> <p>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.</p>	<ul style="list-style-type: none"> • Introduction (title, abstract or final paragraph)
<p>Was the search for relevant studies detailed and exhaustive?</p> <p>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.</p> <p>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.</p> <p>The results section will outline the number of titles and abstracts retrieved and reviewed and the number of full-text studies retrieved.</p>	<ul style="list-style-type: none"> • Methods • Results
<p>Was the selection of primary studies reproducible and free from bias?</p> <p>Ideally the authors should define transparent inclusion and exclusion criteria for the review.</p> <p>The selection of studies should be reproducible. The methods section should describe the inclusion and exclusion criteria for the review.</p> <p>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.</p>	<ul style="list-style-type: none"> • Results • Figures • Inclusion and exclusion criteria
<p>Was the quality of included studies assessed, and were they of a high standard?</p> <p>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.</p> <p>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.</p>	<ul style="list-style-type: none"> • Methods • Results • Tables

<p>Were all the important outcomes considered?</p> <p>Study outcomes should have been defined appropriately and should consider all clinically relevant outcomes.</p>	<ul style="list-style-type: none"> • Methods
<p>Are the individual studies adequately described?</p> <p>Important characteristics of individual studies should be described succinctly.</p> <p>The Results section should include a table or summary of important characteristics of included studies.</p> <p>This may be an Appendix in Cochrane Reviews, or available as supplementary data online for other papers.</p>	<ul style="list-style-type: none"> • Results • Tables • Appendix
<p>Were the results of primary studies combined appropriately?</p> <p>Any meta-analysis should combine the same outcome measures from individual studies.</p> <p>The results section should show which outcomes were combined.</p>	<ul style="list-style-type: none"> • Methods • Statistics • Results
<p>How are the results presented and is this appropriate to the data?</p> <p>A systematic review can include a meta-analysis if the data are appropriate to combine in this way.</p> <p>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.</p> <p>Results are expressed in a standard way, such as relative risk, odds ratio, or mean difference between groups.</p> <p>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.</p> <p>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.</p> <p>If the results are not suitable for meta-analysis, it is also valid to present them in a tabular form without statistical synthesis.</p>	<ul style="list-style-type: none"> • Methods • Statistics • Figures • Results

<p>Were the results similar from study to study?</p> <p>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).</p> <p>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.</p>	<ul style="list-style-type: none"> • Methods • Results • Figures
<p>Has a sensitivity analysis been performed?</p> <p>A sensitivity analysis asks whether the results would change if the study inclusion criteria were changed.</p> <p>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.</p>	<ul style="list-style-type: none"> • Methods • Results

Clinical Importance

Where do I look?

<p>Are the outcomes clinically relevant?</p> <p>Check that the study outcome measures relate to the clinically important outcomes.</p>	<ul style="list-style-type: none"> • Methods
<p>How large was the treatment effect in meta-analysis?</p> <p>Have the results been presented in a way that you can understand them?</p>	<ul style="list-style-type: none"> • Results • Figures
<p>How precise was the estimate of treatment effect?</p> <p>A 95% confidence interval and p value give an estimate of the precision of the results.</p>	<ul style="list-style-type: none"> • Results • Figures
<p>Are the benefits worth the costs and potential toxicities?</p> <p>Have the authors also addressed toxicities and economic considerations in the review? Look for meta-analysis of toxicities, which may include only a subset of studies where this information was available from the original publication.</p>	<ul style="list-style-type: none"> • Results
<p>Is a Relative Risk, Absolute Risk Reduction or Number Needed to Treat (harm) given?</p> <p>If not, you can calculate them.</p> <p>More information about Relative Risk, Absolute Risk Reduction, and Number Need to Treat (harm).</p>	<ul style="list-style-type: none"> • Results • Tables

Applicability

Where do I look?

<p>Are the results discussed in relation to existing knowledge, and is the discussion biased?</p> <p>The discussion should place results into a clinical context and the authors conclusions should be justified by the study results.</p>	<ul style="list-style-type: none">• Discussion
<p>How would I clearly express the results to a colleague or my patient?</p> <p>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.</p> <p>Put a NNT, ARR, NNH into a sentence for your patient.</p> <p>More information about Relative Risk, Absolute Risk Reduction, and Number Need to Treat (harm).</p>	<ul style="list-style-type: none">• Abstract• Results
<p>Does this paper answer your clinical question or have you changed your question to suit the literature?</p> <p>Ask whether the paper helps you answer your clinical question.</p> <p>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.</p>	
<p>How similar were the patients in the included trials to your patient or population?</p> <p>Check whether your patient would have been eligible for the clinical trials.</p> <p>Identify any important characteristics your patient has which have not been considered in the systematic review.</p> <p>Look for a sub-set analysis that has been done for a group more like your patient.</p>	<ul style="list-style-type: none">• Methods• Tables• Figures
<p>Is treatment feasible and available in your clinical setting?</p> <p>Do you and your colleagues have the right skills to deliver this intervention?</p> <p>Consider whether the intervention or test is funded by insurers, Medicare, or the PBS.</p>	<ul style="list-style-type: none">• Consider your practice setting