



Risk of Bias Assessment in Systematic Reviews

Background

Risk of bias assessment (sometimes called "**quality assessment**" or "**critical appraisal**") helps to establish transparency of evidence synthesis results and findings. A risk of bias assessment is often performed for each included study in your review.

Risk of bias assessment generally is not required with evidence synthesis methods outside of systematic reviews. However, this may depend on the evidence synthesis method that you are utilizing.

Why Should I Conduct a Risk of Bias Assessment?

The risk of bias is assessed frequently by evaluating the study design and the conduct of the study because it is impossible to determine a specific study has been affected by bias or not.

Types of Bias

SELECTION BIAS

- Participant or Population comparability in a study.

PERFORMANCE /CONFOUNDING BIAS

- The influence of estimate effect (aspects other than the intervention or exposure of interest).

DETECTION BIAS

- Problems with measurement or classification of exposure or outcomes.

ATTRITION /REPORTING BIAS

- Problems with measurements or classification of outcome (missing information), numbers in figures and tables not adding up, and unreported participant dropouts.

AUTHOR(S) CONFLICT OF INTEREST

- Author(s) indicate there is a conflict of interest in their publication.

TIME-LAG BIAS

- The rapid or delayed publication of research findings, depending on the nature and direction of the results.

LANUGAGE BIAS

- The publication of research findings in a particular language, depending on the nature and direction of results, i.e., language bias risks ignoring key data and potential cultural context.

LOCATION BIAS

- The publication of research findings in journals with different ease of access or levels of indexing in standard databases, depending on the nature and direction of results.

MULTIPLE-PUBLICATION BIAS

- The multiple or singular publication of research findings. When studies are in multiple publications may inadvertently be included in the systematic review more than once.

OTHER BIAS

- These biases relate mainly to particular trial designs (e.g. carry-over in cross-over trials and recruitment bias in cluster-randomized trials); some can be found across a broad spectrum of trials, but only for specific circumstances (e.g. contamination, whereby the experimental and control interventions get 'mixed', for example if participants pool their drugs); and there may be sources of bias that are only found in a particular clinical setting.



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Risk of Bias Resources

- **Cochrane Handbook for Systematic Reviews of Interventions (version 6.2) 2021** - see **Chapter 7: Considering bias and conflicts of interest among the included studies**, **Chapter 8: Assessing risk of bias in a randomized trial**, **Chapter 13: Assessing risk of bias due to missing results in a synthesis** and **Chapter 25: Assessing risk of bias in a non-randomized study**.
- Aromataris E, Munn Z (Editors). **JBI Manual for Evidence Synthesis**. JBI, 2020. See appropriate chapter for type of review and the section on risk of bias.
- **Chapter: Assessing the Risk of Bias of Individual Studies in Systematic Reviews of Healthcare Interventions from AHRQ**. 2017 December. Methods Guide for Effectiveness and Comparative Effectiveness Reviews. Rockville, MD, AHRQ.
- **Chapter 3: Standards for Finding and Assessing Individual Studies in Institute of Medicine**. 2011. **Finding What Works in Health Care: Standards for Systematic Reviews**. Washington, DC: The National Academies Press.

How to assess the risk of bias?

1. Plan your approach
2. Identify an appropriate risk of bias assessment tool (ex. Covidence, Rayan, Revman etc.)
3. Be aware of related issues
4. Appraise each study
5. Report the assessment process
6. Use your appraisals to inform the guideline

Tools to Assess Risk of Bias

- **AMSTAR 2** - A Measurement Tool to Assess Systematic Reviews*
- **GRADE** - Grading of Recommendations Assessment, Development and Evaluation*
- **AHRQ RRB** - AHRQ tool for evaluating the Risk of Reporting Bias
- **AHRQ ORB** - AHRQ Outcome and analysis Reporting Bias framework
- **RoB 1.0** - Cochrane Risk of Bias tool for randomized trials
- **RoB 2.0** - Revised tool for Assessing Risk of Bias in randomized trials
- **JBI** - the Joanna Briggs Institute

*AAPD uses this measurement tool to assess Risk of Bias in systematic reviews.

Contact

For additional information on Risk of Bias assessments in systematic reviews, please contact Rachel Wedeward, MLIS, AHIP at rwedeward@aapd.org