

Supplementary File 3 – QUIPS Tool

QUIPS Risk of Bias Assessment Instrument for Prognostic Factor Studies

Modified from: Hayden JA, Côté P, Bombardier C. Evaluation of the Quality of Prognosis Studies in Systematic Reviews. *Annals of Internal Medicine*. 2006;144:427-437, with the assistance of the QUIPS-LBP Working Group.

Author and year of publication				
Study identifier				
Reviewer				
Biases	Issues to consider for judging overall rating of "Risk of bias"	Study Methods & Comments	Rating of reporting	Rating of "Risk of bias"
Instructions to assess the risk of each potential bias:	These issues will guide your thinking and judgment about the overall risk of bias within each of the 6 domains. Some 'issues' may not be relevant to the specific study or the review research question. These issues are taken together to inform the overall judgment of potential bias for each of the 6 domains.	Provide comments or text excerpts in the white boxes below, as necessary, to facilitate the consensus process that will follow.	Click on each of the blue cells and choose from the drop down menu to rate the adequacy of reporting as yes, partial, no or unsure.	Click on the green cells; choose from the drop-down menu to rate potential risk of bias for each of the 6 domains as High, Moderate, or Low considering all relevant issues
1. Study Participation	Goal: To judge the risk of selection bias (likelihood that relationship between PF and outcome is different for participants and eligible non-participants).			
<i>Source of target population</i>	The source population or population of interest is adequately described for key characteristics (LIST) .			
<i>Method used to identify population</i>	The sampling frame and recruitment are adequately described, including methods to identify the sample sufficient to limit potential bias (number and type used, e.g., referral patterns in health care)			
<i>Recruitment period</i>	Period of recruitment is adequately described			
<i>Place of recruitment</i>	Place of recruitment (setting and geographic location) are adequately described			
<i>Inclusion and exclusion criteria</i>	Inclusion and exclusion criteria are adequately described (e.g., including explicit diagnostic criteria or "zero time" description).			
<i>Adequate study participation</i>	There is adequate participation in the study by eligible individuals			
<i>Baseline characteristics</i>	The baseline study sample (i.e., individuals entering the study) is adequately described for key characteristics (LIST) .			

Summary Study participation	The study sample represents the population of interest on key characteristics, sufficient to limit potential bias of the observed relationship between PF and outcome.			
2. Study Attrition	Goal: To judge the risk of attrition bias (likelihood that relationship between PF and outcome are different for completing and non-completing participants).			
<i>Proportion of baseline sample available for analysis</i>	Response rate (i.e., proportion of study sample completing the study and providing outcome data) is adequate.			
<i>Attempts to collect information on participants who dropped out</i>	Attempts to collect information on participants who dropped out of the study are described.			
<i>Reasons and potential impact of subjects lost to follow-up</i>	Reasons for loss to follow-up are provided.			
<i>Outcome and prognostic factor information on those lost to follow-up</i>	Participants lost to follow-up are adequately described for key characteristics (LIST) .			
	There are no important differences between key characteristics (LIST) and outcomes in participants who completed the study and those who did not.			
Study Attrition Summary	Loss to follow-up (from baseline sample to study population analyzed) is not associated with key characteristics (i.e., the study data adequately represent the sample) sufficient to limit potential bias to the observed relationship between PF and outcome.			
3. Prognostic Factor Measurement	Goal: To judge the risk of measurement bias related to how PF was measured (differential measurement of PF related to the level of outcome).			
<i>Definition of the PF</i>	A clear definition or description of 'PF' is provided (e.g., including dose, level, duration of exposure, and clear specification of the method of measurement).			
<i>Valid and Reliable Measurement of PF</i>	Method of PF measurement is adequately valid and reliable to limit misclassification bias (e.g., may include relevant outside sources of information on measurement properties, also characteristics, such as blind measurement and limited reliance on recall).			
	Continuous variables are reported or appropriate cut-points (i.e., not data-dependent) are used.			
<i>Method and Setting of PF Measurement</i>	The method and setting of measurement of PF is the same for all study participants.			
<i>Proportion of data on PF available for analysis</i>	Adequate proportion of the study sample has complete data for PF variable.			

<i>Method used for missing data</i>	Appropriate methods of imputation are used for missing 'PF' data.			
PF Measurement Summary	PF is adequately measured in study participants to sufficiently limit potential bias.			
4. Outcome Measurement	Goal: To judge the risk of bias related to the measurement of outcome (differential measurement of outcome related to the baseline level of PF).			
<i>Definition of the Outcome</i>	A clear definition of outcome is provided, including duration of follow-up and level and extent of the outcome construct.			
<i>Valid and Reliable Measurement of Outcome</i>	The method of outcome measurement used is adequately valid and reliable to limit misclassification bias (e.g., may include relevant outside sources of information on measurement properties, also characteristics, such as blind measurement and confirmation of outcome with valid and reliable test).			
<i>Method and Setting of Outcome Measurement</i>	The method and setting of outcome measurement is the same for all study participants.			
Outcome Measurement Summary	Outcome of interest is adequately measured in study participants to sufficiently limit potential bias.			
5. Study Confounding	Goal: To judge the risk of bias due to confounding (i.e. the effect of PF is distorted by another factor that is related to PF and outcome).			
<i>Important Confounders Measured</i>	All important confounders, including treatments (key variables in conceptual model: LIST), are measured.			
<i>Definition of the confounding factor</i>	Clear definitions of the important confounders measured are provided (e.g., including dose, level, and duration of exposures).			
<i>Valid and Reliable Measurement of Confounders</i>	Measurement of all important confounders is adequately valid and reliable (e.g., may include relevant outside sources of information on measurement properties, also characteristics, such as blind measurement and limited reliance on recall).			
<i>Method and Setting of Confounding Measurement</i>	The method and setting of confounding measurement are the same for all study participants.			
<i>Method used for missing data</i>	Appropriate methods are used if imputation is used for missing confounder data.			
<i>Appropriate Accounting for Confounding</i>	Important potential confounders are accounted for in the study design (e.g., matching for key variables, stratification, or initial assembly of comparable groups).			
	Important potential confounders are accounted for in the analysis (i.e., appropriate adjustment).			

Study Confounding Summary	Important potential confounders are appropriately accounted for, limiting potential bias with respect to the relationship between <i>PF</i> and <i>outcome</i> .			
6. Statistical Analysis and Reporting	Goal: To judge the risk of bias related to the statistical analysis and presentation of results.			
<i>Presentation of analytical strategy</i>	There is sufficient presentation of data to assess the adequacy of the analysis.			
<i>Model development strategy</i>	The strategy for model building (i.e., inclusion of variables in the statistical model) is appropriate and is based on a conceptual framework or model.			
	The selected statistical model is adequate for the design of the study.			
<i>Reporting of results</i>	There is no selective reporting of results.			
Statistical Analysis and Presentation Summary	The statistical analysis is appropriate for the design of the study, limiting potential for presentation of invalid or spurious results.			