



## Supplementary File 4 - QUALITY ASSESSMENT TOOL FOR QUANTITATIVE, OBSERVATIONAL STUDIES

This tool has been developed on the basis of

- the quality assessment tool for quantitative studies of the Effective Public Health Practice Project (EPHPP 2018),
- criteria for potential study limitations (risk of bias) of observational studies as given in the GRADE Handbook [flawed measurements, failure to adequately control for confounding] (Schüneman et al. 2013),
- items which have to be reported in the publication of a study as recommended in the STROBE checklist (STROBE: Strengthening the reporting of observational studies in epidemiology; von Elm et al., Epidemiology 2007).

The aim of the tool is to assess the quality of **cross-sectional studies** in terms of risk of bias.

### A) SELECTION BIAS

(Q1) Are the individuals selected to participate in the study likely to be representative of the target population?

- 1 Very likely  
(e.g. randomly selected from resident's registration office or whole population of an area invited to participate)
- 2 Somewhat likely  
(e.g. systematic selection from a special source such as a clinic)
- 3 Not likely  
(e.g. self-referred or convenience sampling)
- 4 Can't tell  
(no information given in the publication of the study)

[STROBE: Cross-sectional study - Give the eligibility criteria, and the sources and methods of selection of participants]

(Q2) What percentage of eligible individuals agreed to participate (response rate)?

- 1 80 - 100% response rate
- 2 60 - 79% response rate
- 3 less than 60% response rate
- 4 Can't tell

### Quality rating of section Selection Bias

Quality	Good	Fair	Poor
	Q1=1 and Q2=1	[Q1=1 or=2] and [Q2=2 or =4]	Q1=3 or Q1=4 or Q2=3 or [Q1=4 and Q2=4]

## B) INFORMATION BIAS

(Q3) Were data collection tools shown to be valid?

- 1 Yes  
(validity of measures to collect data assessed within the study or reference to established, validated data collection tools)
- 2 No  
(no assessment of validity of data collection tools used in the study)
- 3 Can't tell  
(no reporting of validity in the study, no reference to other publication)

(Q4) Were data collection tools shown to be reliable?

- 1 Yes  
(reliability of measures to collect data assessed within the study)
- 2 No  
(no assessment of reliability of data collection tools used in the study)
- 3 Can't tell  
(no reporting of reliability in the study, no reference to other publication)

### Quality rating of section Information Bias

Quality	Good	Fair	Poor
	Q3=1 and Q4=1	Q3=1 and [Q4=2 or =3]	Q3=2 or [Q3=3 and Q4=3]

## C) CONFOUNDING BIAS

(Q5) Have potential confounders, relevant for the research topic, been considered?

- 1 Yes, with justification  
(confounders have been considered, reasons for inclusion in data analyses were given)
- 2 Yes, but no justification  
(confounders have been considered in data analyses, but reasons were not given; e.g. mechanical adjustment for age and sex without demonstrating relevance as confounders)
- 3 No  
(no consideration of confounder, although confounders might be relevant for research topic)
- 4 Not applicable  
(no consideration of confounders necessary for research topic, e.g. description of social inequalities in environmental exposure)
- 5 Can't tell  
(no reporting of potential relevance of confounding and/or consideration of confounders in analyses)

### Quality rating of section Confounding Bias

Quality	Good	Fair	Poor
	Q5=1 or =4	Q5=2	Q5=3 or =5

## GLOBAL RATING

### COMPONENT RATINGS OF QUALITY

<b>A</b>	<b>SELECTION BIAS</b>	<b>Good</b>	<b>Fair</b>	<b>Poor</b>
		1	2	3
<b>B</b>	<b>INFORMATION BIAS</b>	<b>Good</b>	<b>Fair</b>	<b>Poor</b>
		1	2	3
<b>C</b>	<b>CONFOUNDING BIAS</b>	<b>Good</b>	<b>Fair</b>	<b>Poor</b>
		1	2	3

Sum of ratings: \_\_\_\_\_

GLOBAL RATING FOR THIS PAPER according to sum:

3 - 4      Good quality

5 - 7      Fair quality

8 - 9      Poor quality

## References

EPHPP. Effective Public Health Practice Project. McMaster University. <https://merst.ca/ephpp/> (accessed 06.10.2019)

Schüneman H, Brozek J, Guyatt G, Oxman A (eds). GRADE Handbook. Updated October 2013. <https://gdt.gradepro.org/app/handbook/handbook.html#h.m9385o5z3li7> (accessed 06.10.2019)

von Elm E, Altman DG, Egger M, Pocock SJ, Gøtzsche PC, Vandenbroucke JP; STROBE Initiative. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: guidelines for reporting observational studies. *Epidemiology* 2007; 18(6): 800-804